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LESSON 1 INTRODUCTION TO E-COMMERCE CONTENTS 1.0 Aims and Objectives 1.1 Introduction 1.2 Electronic Commerce 1.3 Definition of e-Commerce 1.4

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z Describe e-commerce concept z Explain framework of e-commerce z Explain history of e-commerce
z Describe different types of e-commerce

6 e-Commerce 1.1 INTRODUCTION It is radically changing how people learn, work, play, enjoy and consume. The centre of revolution is browser technology. The "technology" has moved from the "Back office" to the front line. Increasingly, technology is shifting the firm's relationships, with its customers from "face to face" to "screen to face" interactions. The impact of Internet on business is akin to previous innovations that transformed not just one business sector but every sector. The Internet concerns every sector of economy as it changes the way business should sensibly organize its activities and go to market. In this lesson we will study the concept, advantages-disadvantages and history

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of e-commerce. 1.2 ELECTRONIC COMMERCE E-commerce is a selling and transfer process requiring several institutes. It is systematic and organized network for the exchange of goods between produces and consumers. The Net aims to establish the interconnections between producers and consumers directly and in this, the Internet embraces all those related activities which are indispensable for maintaining a continuous, free and uninterrupted distribution and transfer of goods. The Website or portals may be categorized into commercial and noncommercial. Any web site or portal that offers products and/or services for sale is a commercial web site. There are thousands of commercial web sites on the Internet. Some of them have been successful, and some weren't so lucky. What elements make up a good commercial

web site?

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Of course, web pages should look attractive to a customer. However, even the most attractive web pages will not make a person come back to a web site where it takes too long to find the right product or where order forms don't work. In this lecture we will discuss what functionality is needed for a successful commercial

web site and what technology implements various web site elements. 1.3

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DEFINITION OF E-COMMERCE E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT's). E-commerce takes place between companies, between companies and their customers, or between companies and public administration. E-commerce includes electronic trading of both goods and electronic material. "e-commerce denotes the use of electronic transmission media (telecommunication) to engage in the exchange of products and services requiring transportation either physically or digitally, from location to location", M. Greenstein and T.M. Feinman "e-commerce describes the process of buying and selling (or exchanging) of products, services and information via computer networks including the internet". E. Turban and others. E-commerce is the means to complete online transaction and integrate

the

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supply chain into the transaction management process such as receiving orders, making payments and tracking down the deliveries or order. "e-commerce

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can be defined as the technology-mediated exchanges between parties (individuals, organisations, or both) as well as the electronic based intra or inter organisational activities that facilitate such

exchanges". J.F. Rayport and B.I. Jaworski. According to World Trade Organization (WTO), “E-commerce as a commercial process includes production, distribution, marketing, sale or delivery of goods and services electronically.”

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E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, point of sale transactions in retailing, electronic banking, electronic insurance, fund raising, political Campaigning, on-line education and training,

on-line auctioneering, on-line lottery and so on. Many

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people use the term e-commerce and e-business interchangeably, which is factually wrong.

Introduction to e-Commerce 7 Check Your Progress 1 1. What is E-commerce?
.....
..... 2. Mention some uses of E-commerce.
.....
..... 1.4 ELECTRONIC COMMERCE FRAMEWORK The vision outlined above for electronic commerce assumes a set of basic infrastructure services and standards consistent with a broad architectural framework. This framework must permit the flexibility, interoperability, and openness needed for the successful evolution of electronic commerce. This framework and its services and products, will offer the consumer a diverse set of interoperable choices, rather than a collection of independent solutions that may not work in concert. Many of today's ambitious electronic commerce initiatives vary in their approach to security and privacy, their ability to handle micro payments, and their applicability to various types of transactions. They also differ in their business models – for example, in their pricing strategy and in their assumptions as to who bears the risk in case of insufficient funds or disputes. Such diversity promotes innovation and allows for provider and consumer choices. Still, to achieve wide acceptance and scale to truly mass markets, a broad framework is needed, which encompasses the following requirements and idiosyncrasies of conducting new forms of business in the emerging electronic environment. Some electronic commerce frameworks are discussed below: 1.4.1 Zwass's Hierarchical Framework Zwass (1998) presented a very comprehensive

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hierarchical framework of E-Commerce, consisting of three meta- levels: z Infrastructure z Services z Products and structures

Table 1.1: Hierarchical Framework of Electronic Commerce Level Function Examples Products and Structures 7 Electronic marketplaces and electronic hierarchies Electronic auctions, brokerages, dealerships, and direct-search markets interorganisational supply-chain management 6 Products and systems Remote consumer services (shopping, banking, stock brokerage) Infotainment-on- demand (fee-based content sites, educational offerings) Supplier-consumer linkages On-line marketing Electronic benefit systems Intranet-based collaboration systems Contd...

8 e-Commerce Services 5 Enabling services Electronic catalogs/directories, smart agents e-money, digital authentication services Digital libraries, copyright- protection services Traffic auditing Smart-card systems 4 Secure messaging EDI, e-mail, EFT Infrastructure 3 Hypermedia/multimedia object management World Wide Web with Java 2 Public and private communication utilities Internet and Value-added Networks (VANs) 1 Wide-area telecommunications infrastructure Guided- and wireless-media networks Infrastructure The infrastructure is continuously being upgraded to support a larger volume of information exchange and commerce. Services The services level of the hierarchy is far from static, especially in the enabling services sub-category. Various enabling services have been continued to be the subject of much research and development. The maturation of these enabling services will provide a strong base on which to build a rich variety of e-commerce products. Products and Structures The enabling services are similar to the API level of the OS stack. These services enable e-commerce products to perform increasingly complex but useful functions. The majority of products in this category are customised design, but a few off-the-shelf packages exist. A typical e-commerce solution would include leased access to the infrastructure and enabling services, and purchase of custom or semi-custom product for the customer. 1.4.2 Kalakota and Whinston's "Pillars" Framework Kalakota and Whinston have also developed a generic approach to providing a framework for Electronic Commerce (Kalakota & Whinston, 1996). Using a very different scheme from that taken by Zwass, they use the metaphor of "pillars" (public policy and technical standards), to support four infrastructures (network, multimedia content, messaging, and common business services) on top of which they place E-commerce applications. The framework for electronic commerce in Figure 1.1 is presented as an architectural edifice analogy, the applications shown at roof level cannot be attained if the structure below is missing or incomplete. The underlying requirement is a management perspective that is committed to electronic commerce—without this, individuals and groups will operate piecemeal, acting as early adopters in the innovation cycle but lacking in institutional support (whether that be in financial or human resources, for example). Even when there is a management commitment for electronic commerce in place, the foundations required are the technical and technological infrastructure.

Introduction to e-Commerce 9 Figure 1.1: A Framework for Electronic Commerce by Kalakota and Whinston 1.4.3 Riggins and Rhee's Domain Matrix Riggins and Rhee (1998) contributed the Electronic Commerce Domain Matrix (ECDM) to represent four dimensions of e-commerce. The matrix was developed by crossing the location of the application user (external or internal to organisation) with the type of relationship (technology enhanced or technology facilitated). The model is useful as a tool for classification, but is mainly representative of trading relationships. In the context of our research, the matrix suggests possible benefits in adopting e-commerce solutions. It provides us with a backdrop to examine an entity to determine if one of the merits will contribute positively to the entity's goals.

10 e-Commerce Improve Coordination with Existing Trade Partners Cell 3 Market Creation to Reach New Customers Cell 4 External Location of Application Users Internal Improve Coordination with Internal Business Units Cell 1 Information Exchange to Work with New Team Members Cell 2 Figure 1.2: Electronic Commerce Domain Matrix Check Your Progress 2 1. What are the three meta-levels of Zwass's hierarchical framework?

..... 2. What do you understand by Riggins and Rhee's Domain Matrix? .....

..... 1.5 BRIEF HISTORY OF ELECTRONIC

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COMMERCE There have been several key steps in the history of e-commerce.

The first step came from the development of the Electronic Data Interchange (EDI). EDI is a set of standards developed in the 1960's to exchange business information and do electronic transactions. At first there were several different EDI formats that business could use, so companies still might not be able to interact with each other. However, in 1984

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the ASC X12 standard became stable and reliable in transferring large amounts of transactions.

The next major step occurred in 1992 when

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the Mosaic web-browser was made available; it was the first 'point and click' browser. The

Mosaic browser was quickly adapted into a downloadable browser, Netscape, which allowed easier access to electronic commerce.

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The development of DSL was another key moment in the development to of e-commerce. DSL allowed quicker access and a persistent connection to the Internet.

Christmas of 1998 was another major step in the development of e-commerce.

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AOL had sales of 1.2 billion over the 10 week holiday season from online sales. The development of Red Hat Linux was also another major step in electronic commerce

growth. Linux gave users another choice in a platform other then Windows that was reliable and open-source. Microsoft faced with this competition needed to invest more in many things including electronic commerce. Napster was an online application used to share music files for free. This application was yet another major step in e-commerce. Many consumers used the site and were dictating what they wanted from the industry. A major merger, in early 2000,

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between AOL and Time Warner was another major push for electronic commerce.

The merger, worth $350 million, brought together a major online company with a traditional company. In February 2000

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hackers attacked some major players of e-commerce, including Yahoo, eBay and Amazon.

In light of these attacks the need for improved security came to the forefront in the development of electronic commerce. It is predicted that revenues, up until 2006, will grow 40% to 50% yearly. Expectations of higher prices as well as larger profits for e-commerce business are also present. Also, we will see a larger presence by experienced Introduction to e-Commerce 11 traditional companies, such as Wal-Mart, on the Internet. It is believed companies in general will take this mixed strategy of having stores online and offline in order to be successful. It can be seen that there will be a large growth in

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Business-to-Consumer (B2C) e-commerce, which online businesses is selling to individuals. However, even though B2C

electronic commerce may be the most recognizable there are different varieties. Today the largest electronic commerce is Business-to-Business (B2B). Businesses involved in B2B sell their goods to other businesses. In 2001, this form of e-commerce had around $700 billion in transactions. Other varieties growing today include Consumer-to-Consumer (C2C) where consumers sell to each other, for example through auction sites. Peer-to-Peer (P2P) is another form of e-commerce that allows users to share resources and files directly. 1.6 CLASSIFICATION
OF E-COMMERCE APPLICATION We divided
the application

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of e-commerce in the following categories: 1. Business to Business (B2B) 2. Business to Consumer (B2C) 3. Consumer to Consumer (C2C) 4. Consumer to Business (C2B) 5. Non-business E-commerce 6. Intra-business E-commerce 1.6.1 Business to Business (B2B)

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B2B indicates to the full spectrum of e-commerce operation that can occur between two organisations. Among other activities B2B e-commerce include purchasing and procurement, supplier management, inventory management, channel management, sales activities, payment activities, payment management

and service support

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example Chandex (www. chandex.com), Fast parts (www.fastparts.com). 1.6.2

Business to Consumer (B2C) These are retailing transactions with individual shoppers. It refers to exchange between business and consumer, e.g., Amazon.com, Yahoo.com etc. 1.6.3 Consumer to Consumer (C2C) It refers to exchanges involving transactions between and among consumers. These exchanges mayor may not include third party involvement as in the case of auction exchange eBay, classified ads e.g., www.numberoneclassified.com, www.Shadi.com. www.travelguru.com, www.tranders.com.etc. 1.6.4 Consumer to Business (C2B) Consumers can band together to form and present themselves as a buyer group to business in a consumer-to- business (C2B) relationship. Such groups may be economically motivated as with the demand aggregates, www.mercatta.com or socially oriented or with cause related advocacy groups at www.voxcap.com or professional advocacy group like www.icmain.org. 1.6.5 Non-business E-commerce An increased number of non-business institutions such as academic institutions, not-for-profit organizations, religious organizations, social organizations, and government agencies are using various types of EC to reduce
12 e-Commerce their expenses (e.g., improve purchasing) or to improve their operations and customer service. (Note that in the previous categories one can usually replace the word business with organization.) 1.6.6 Intra-business E-commerce In this category we include all internal organizational activities, usually performed on intranets, that involve exchange of goods, services or information. Activities can range from selling corporate products to Employees to online training and cost reduction activities. 1.7 INTERDISCIPLINARY NATURE OF E-COMMERCE Turban et al. (2002) explain how E-commerce is based on a number of disciplines and explain some of what they mean by each of them. These disciplines along with a brief description are shown in Table 1.2. Table 1.2: The Disciplines Comprising the Interdisciplinary Nature of E-commerce Disciplines Nature of E-Commerce Marketing Online marketing strategies and relevant issues of offline marketing Computer Sciences Programming languages, multimedia and network Consumer Behaviour & Psychology The behaviour of buyers and sellers in B2C E-Commerce. The relationship between cultures and consumer attitude. Finance The role of finance markets and banks Economics The economic impact of E-Commerce on firms and the application of micro and macro economic theories. Accounting & Auditing Issues of auditing electronic transactions and the development of cost benefit analysis methodologies Management Information Systems Systems analysis, planning, implementation, security and payment systems Management New approaches to management that may be required due to the interdisciplinary nature of E-Commerce Business Law & Ethics Legal issues related to intellectual property, contracts, jurisdiction and privacy and ethical issues surrounding the use of information 1.8 ADVANTAGES AND DISADVANTAGES OF ELECTRONIC COMMERCE

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E-commerce is now available everywhere every time. As soon as you click onto

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Net, some very attractive banner advertisement invites you to its web sites and tries to tell you products or services.

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Areas that are groceries by leaps and bounds are financial services, entertainment, travel, retailing grouses etc. It was estimated by to Forester Research, spending on new web sites will jump to Rs. 1330 billion in 2002 up from Rs. 300 billion in 1987, thus there is roughly 45 times growth in spending in five year period. 1.8.1 Advantages of E-commerce to Business Firms The major advantages of E-commerce are: z Economy: E-commerce is highly economical. Unlike the brick-and- mortar environment, in e-commerce there is no rental of physical store space, insurance, or infrastructure investment. All you need is an idea, a unique product, and a well-designed Web storefront to reach your cyber-customers, plus a partner to do fulfillment.

Introduction to e-Commerce 13 z

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Lower Cost: Doing e-business on the Internet is extremely cost effective; it reduces logistical problems and puts a small business on a par with giants like Amazon.com, Sears, General Motors, or Bank of America. In a commercial bank, for example, a basic over-the-counter transaction costs Rs. 52.95 to process; over the Internet, the same transaction costs about 1 rupee. Every financial transaction eventually turns into an electronic process. The sooner it makes the conversion, the more cost-effective the transaction becomes. z Better Customer

Service: E-commerce emphasizes better and quicker customer service. Web-

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based customer service makes customers happier. Instead of calling your company on the phone, holding for 10 minutes, then getting to a clerk who taps into you account, the Web merchant gives customers direct access to their personal accounts over the Web. It saves time and money. It is a win-win proposition. For companies that do business with other companies, adding customer service to the Web is a competitive advantage. The overnight package delivery

service,

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where tracking numbers allow customers to check the whereabouts of a package online, is one good example. z Greater Profit Margin: E-commerce means greater profit margins. For example, the cost of processing a conventional airline ticket is Rs. 400. According

to one travel agency,

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processing the same ticket (called e-ticket) over the Web costs Rs. 50 only. Along with

higher margins, business

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can gain more control and flexibility and are able to save time when manual transactions are done electronically. z Knowledge Markets: E-commerce helps create knowledge markets. Small groups inside big firms can be funded with seed money to develop new ideas.

For example, Daimler Chrysler has created small teams to look for new trends and products.

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A Silicon Valley team is doing consumer research on electric cars and advising car designers. z Swapping Goods and Services: Swapping is trading something you have for something you want more. Offering goods or services through

barter is gaining in popularity through sites like Web

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Swap, www.BarterTrust.com, and www.Ubarter.com. Here is how it works: Sam, a networking consultant, offers his technical services through a barter company. People pay currency into

Sam's

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account in exchange for his services. Instead of accepting the cash, he turns around and buys things (a PC, carpeting). The barter house keeps a modest commission to expedite the exchange.

z Information Sharing, Convenience,

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and Control: Electronic market places improve information sharing between merchants and customers and promote quick, just-in-time deliveries. Conveniences for the consumer is a major driver for changes in various industries: Customers and merchants save money; are online 24 hours a day, 7 days a week; experience no traffic jams, no crowds and do not have to carry heavy shopping bags. Control is another major driving factor. For example, instead of banks controlling the relationships with the customer, customers today can have

more control

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of their banking needs via Internet Web sites. Banks like Bank of America and ICICI now give customers access to their accounts via the

Web. z Quick

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Comparison Shopping: E-commerce helps consumers to comparison shop. Automated online shopping assistants called hopbots scour Net stores and find deals on everything from applesauce to printer ribbons. For example, mySimon (www.mysimon.com) learns the navigation preferences of its runner (a tool that fills out the request form asking the bot to search Web pages

for

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solutions). It lets you enter basic keywords such as "ladies dress" to search its database of Web stores for the best buys. z Teamwork: E-commerce helps people work together. E-mail is one example of how people collaborate to exchange information and work on solutions. It has transformed the way organizations interact with suppliers, vendors, business partners, and customers. More interaction means better overall results. A recent study of 40 corporate Internets by the MET A Group found that the typical Intranet (within-company network) had an average Return on Investment (ROI) of 38 per cent. Networks that provided collaborative capabilities had a 40 per cent ROI and those that gave people direct access to needed information had a 68 per cent ROI. The implication is that the more interactive and the more. "Collaborative-rich" the Web site, the higher the payoff for the business (www. IBM.com). 14 e-Commerce z Productivity Gains:

E-commerce means productivity gains. Weaving the Web throughout an organization means improved productivity. Take the example of IBM, which incorporated the Web into every corner of the firm-products, marketing, and practices. The company figured it would save $750 million by letting customers find answers to technical questions via its Web site. The total cost savings in 1999 alone was close to $1 billion (www. IBM.com for recent details).
z Customization:

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Digital products are highly customizable. They are easy to reorganize, revise, or edit. With information about consumer tastes and preferences, products can be differentiated (customized) and matched to individual needs. z Ensure Secrecy: EC devices invariably have in built security measures. For example password, encoding encryptography, cipher etc. are some of the mechanisms/measures which provide security and prevent unauthorized access and use of data, information and transactions. z Other Benefits: The other benefits include improved image, improved customer services, new found business partners, simplified processes, compressed cycle and delivery time, increased productivity, eliminating paper, expediting access to information, reduced transportation costs, and increased flexibility. 1.8.2 Benefits of E-commerce to Society It helps society in the following ways: z Enables individuals to work at home and to do less traveling for shopping, resulting in less traffic on the roads and lowers air pollution.

z

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Allows some merchandise to be sold at lower prices and helps in increasing standard of living. z Enables people in Third World countries and rural areas

to enjoy product and services that otherwise are not available to them.
z

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Facilitates delivery of public service such as health care, education and distribution of government social service at reduced cost and/or improved quality. 1.8.3 Benefits of E-commerce to Customers The customers can enjoy the following benefits of e-commerce: z Customer Convenience: A website is open 24 hours a day. It can take orders, keep an eye on deliveries, and receive payments, at any time of convenience to the customer. z Product/Service made to Customer's Order: E-commerce enables the customers to get the products/services made as per particular needs. Manufacturers may even invite customers to design the product/service exactly as they want it and thus earn their goodwill. z Wider Choice: Customers can access websites of as many competing suppliers as desired to, decide on which product/service would best meet their need. They do not need to drive to different shops for this purpose. In any case, a website can offer any number of products/services and in any detail without any space or inventory limits as in case of a shop or market place. z Quick Delivery: In case of digitized products, electronic commerce allows quick delivery. z Cheaper

Products/Services:

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Electronic commerce allows customers to visit websites of several business firms and make comparison of their offering. Thus, he can get cheaper products/services of required quality by visiting various websites. z Virtual Auction: The customers can participate in virtual actions through Internet. For example, several airlines put air tickets to specify destination on auction and the customers are free

to offer any price.
Introduction to e-Commerce 15 z

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Competition: Electronic commerce creates competition between product and service providers. The customers are benefited in the form of lower prices. 1.8.4

Limitations or Disadvantages of E-commerce There are some problems and drawbacks of e-commerce and these are: z High Risk of Internet start-up Organizations: Many stories unfolded in 1999 about successful executives in established firms leaving for Internet starts-ups, only to find out that their "get rich" dream with a dot.com was just that-a dream. However, many dot.com organisations bubble bursted in 2000 and onward due to various reasons like lack of good revenue model everything is not possible through dot.com, problem related to customer satisfaction etc. z Lack of a Blueprint for Handling E-commerce: There is a continuing shortage of e-literate people in the workplace. In a survey published in Computer world, nearly nine out of 10 respondents said only a few of their key managers have e-commerce skills, Internet experience, and foresight. Sixty-six per cent also said they are having a tough time attracting people wanting to take advantage of online opportunities. Finally, traditional organizational structures and cultures were found to inhibit progress in e-commerce. z E-commerce involves Cost: So far, success stories in e-commerce have favoured large businesses with deep pockets and good funding. According to a recent report, small retailers that go head-to-head with e- commerce giants are fighting a losing battle. As in the brick-and-mortar environment, they simply cannot compete on price or product offering. Brand loyalty is related to this issue, which is supposed to be less important for online firms. Brands are expected to lower search costs, build trust, and communicate quality. According to Blackmon, users have difficulty using online search engines such as Yahoo! to locate product information, and rely instead on recognized dot.com brands for purchases. A search engine can come up with the best music deals, for example, yet consumers continue to flock to trusted entities like CDNow. Despite a better-quality product offered by brand-weak, Miami-based FlowerNet, its lower prices generated suspicion about quality when compared with higher priced but better-known online floral giants. Early branding turned E-trade into a leading discount brokerage firm, while upstarts like Mr. Stock struggled to stay in business. z Security: Security continues to be a problem for online business. In a 2000 Economist article, 95 percent of Americans expressed reluctance to give out their credit card numbers via the futernet. For millions of potential cyber-customers, the fear of credit card theft is a real one. Consumers have to feel confident about the integrity of the process before they commit to the purchase. z Customer Relations Problems: Not many businesses realize that even an e-business cannot survive over the long term without loyal customers. In a 1999 Information Week Research Priorities survey of 300 IT executives, the key question was “What are your IT department's key strategic technology and business priorities in 1999?” Ninety-two percent of the respondents said “improve customer service,” and 90 percent said, “understand and meet the needs of customers” (Eckhouse, September 20, 1999, p. 119). Considering the medicare record on customer service during 2000, there is greater pressure on e-business to meet or exceed customer expectations on service. z System and Data Integrity: Data protection and the integrity of the system that handles the data are serious concerns. Computer viruses are rampant, with new viruses discovered every day. Viruses cause unnecessary delays, file backups, storage problems, and the like. The danger of hackers accessing files and corrupting accounts adds more stress to an already complex operation. z Products People Won't Buy Online: Imagine a Web site called furniture.com or www.living.com, where venture capitalists are investing millions in selling home furnishings online. For the case of a sofa, you'd want

16 e-Commerce to sit on it, feel the texture of the fabric, etc. Beside the "sofa road-test" factor, online furniture stores face costly returns, and the kinds of deliveries that cannot be expedited via FedEx. z Corporate Vulnerability: The availability of product details, catalogs, and other information about a business through its Web site makes it vulnerable to access by the competition. The idea of extracting business intelligence from the competitions Web pages is called Web farming, a term coined by Richard Hackathom. z Fulfillment Problems: Tales of shipping delays merchandise mix-ups, and Web sites crashing under pressure continue to be a problem e-tailing. Customer confidence in an e-commerce's ability to deliver during heavy shopping seasons continues to be a headache. Even happy customers say the experience could be improved. z System Scalability: A business develops an interactive interface with customers via a Web site. After a while, statistical analysis determines whether visitors to the site are one-time or recurring customers. If the company expects 2 million customers and 6 million shows up, Web site performance is bound to experience degradation, slowdown, and eventually loss of customers. To keep this problem from happening, a web site must be scalable, or up gradable on a regular basis. Consider the 1999 IBM chess match Web site, which attracted over 74 million, hits in just 9 days without noticeable slowdown. The 1999 U.S. Open Tennis Championship drew 70 million hits in 2 weeks, and the 1996 Atlanta Olympic Games drew 189 million hits in just 17 days. All these sites were successful due to their constant scalability with respect to performance, speed, and maintaining a sub-8-second response time. This takes effort and is not cheap to maintain. z Consumer Search is Not Efficient or Cost-Effective: On the surface, the electronic marketplace appears to be a perfect market, where worldwide sellers and buyers share information and trade without intermediaries. However, a closer look indicates that new types of intermediaries are essential to e-commerce. They include electronic malls that guarantee product quality, mediators for bargaining, and certification authorities to ensure legitimacy of transactions. All these intermediaries add to transaction costs. z Other Limiting Factors: ™

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Many legal issues are as get unresolved and government resolutions and standards are not refined enough for many circumstances. ™

E-

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commerce as a discipline is still evolving and changing rapidly. Many people are looking for a stable area before they enter into it. ™

E-

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commerce could result in a breakdown of human relationship. ™ Accessibility to the Internet is still expensive and/or inconvenient for many potential customers. ™

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There are not enough support services. For example, copy right clearance centres for EC transactions do not exist, and high quality evaluations or qualified EC tax experts are rare. 1.9

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LET US SUM UP E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT'

s). Electronic Commerce is a term

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popularized by the advent of commercial services of the Internet. E-commerce is a selling and transfer process requiring several institutes. It is systematic and organized network for the exchange of goods between produces and consumers. Any web site or portal that offers products and/or services for sale is a commercial web site. E-commerce is highly economical. Doing e-business on the Internet is extremely cost effective. E-commerce emphasizes better and quicker customer service. There are some problems and drawbacks of e-commerce like security, shortage of e-literate people, data protection and the integrity of the system etc. E-commerce takes place between companies, between companies and their

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customers, or between companies and public administration. E-commerce includes electronic trading of both goods and electronic material.

Today the largest electronic commerce is Business-to-
Introduction to e-Commerce 17 Business (B2B). The four

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types of e-commerce are: Business to Business (B2B), Business to Consumer (B2C), Consumer to Consumer (C2C), Consumer to Business (C2B). 1.10

KEYWORDS E-commerce:

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It is a general concept covering any form of business transaction or information exchange executed using information and communication technologies.

Business to Business (

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B2B): B2B indicates to the full spectrum of e-commerce operation that can occur between two

organisations. Business to Consumer (B2C): It refers to exchange between business and consumer. Consumer to Consumer (C2C): It refers to exchanges involving transactions between and among consumers. Consumer to Business (C2B): Consumers can band together to form and present themselves as a buyer group to business in a Consumer-to-business (C2B) relationship. 1.11

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QUESTIONS FOR DISCUSSION 1. What is e-commerce? Give a definition of your own

and discuss the history of e-commerce. 2. What are the advantages and limitations of e-commerce? Do you think the advantages outweigh the limitation? 3. What are the different types of e-commerce? Describe each type. 4. What is interdisciplinary nature of E-commerce? Check Your Progress: Model Answers CYP 1 1.

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E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT'

s). 2.

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E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, Point of Sale (POS) transactions in retailing, electronic banking, electronic insurance, fund raising, political Campaigning, on-line education and training,

on-line auction, on-line lottery and so on. CYP 2 1. Zwass (1998) presented a very comprehensive

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hierarchical framework of E-Commerce, consisting of three meta-levels: (

a) Infrastructure (b) Services (c) Products and structures 2. Riggins and Rhee (1998) contributed the Electronic Commerce Domain Matrix (ECDM) to represent four dimensions of e-commerce. The matrix was developed by crossing the location of the application user (external or internal to organisation) with the type of relationship (technology enhanced or technology facilitated). The model is useful as a tool for classification, but is mainly representative of trading relationships. In the context of our research, the matrix suggests possible benefits in adopting Contd...
18 e-Commerce e-commerce solutions. It provides us with a backdrop to examine an entity to determine if one of the merits will contribute positively to the entity's goals. 1.12

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History of Internet 19 LESSON 2 HISTORY OF INTERNET CONTENTS 2.0 Aims and Objectives 2.1 Introduction 2.2 The Internet 2.3 Essential Language of the Internet/Web 2.4 Advantages of Internet 2.5 Limitations/Disadvantages of Internet 2.6 The World Wide Web 2.7 Internet Service Providers (ISPs) 2.8 Ownership, Stability and Reliability of the Web 2.9 Basics Features of the Web 2.10 Using the Internet 2.11 Concept of Internet and Extranet 2.11.1 Intranet 2.11.2 Extranet 2.12 Internet Protocols 2.12.1 TCP/IP (Transmission Control Protocol/Internet Protocol) 2.12.2 File Transfer Protocol (FTP) 2.12.3 HTTP (Hyper Text Transfer Protocol) 2.12.4 Gopher (Protocol/Service) 2.12.5 WAIS (Wide Area Information Service) (Protocol/Service) 2.12.6 Telnet (Protocol/Service) 2.12.7 IPV6 2.13 Historical Development of Internet 2.13.1 Internet and E-commerce Milestones 2.14 Evolution of Internet 2.15

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Let us Sum up 2.16 Keywords 2.17 Questions for Discussion 2.18 Suggested Readings 20 20

e-Commerce 2.0

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AIMS AND OBJECTIVES After studying this lesson, you will be able to: z Explain the concept

of
Internet z Describe advantages and disadvantages of Internet z Define WWW z Explain basic features of web z Describe historical development of Internet 2.1 INTRODUCTION The first business computer appeared in 1960 and since then information technology has changed the way business or commerce is conducted across the globe.

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Companies are re-orienting themselves in the present competitive era

where product life-cycles are coming down everyday, globalisation of markets are faking

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place with formation of trade blocks across the globe, and world moving towards a global village.

Complex issues of cultural divide within even the same trade block forces the businesses to learn more about the customer, if possible to an individual level. 2.2 THE INTERNET When a network connects two or more computers, it's called internet (with a lower-case i). The Internet with a capital I refer

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to millions of computers connected to a gigantic network and communicating via TCP/IP protocols. A protocol is a pre-defined way

for a computer

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to communicate with another computer, for instance when requesting a service, s.a. an FTP service, or when forwarding some information to another machine. Each computer at any given time has a unique address on the Internet. This is its IP address. Internet

is revolutionising commerce. It provides the first affordable and secure way to link people and computers spontaneously across organizational boundaries. This has given rise to innovative enterprises – virtual companies, markets, and trading communities. The effective use of these technologies and the easy availability of internet further provide a boost in this direction making Electronic Commerce (E-commerce) a reality. The Internet is a vast computer network of many different computer networks existing in

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the world. It is collection of interconnected networks. Hence it is called inter network" or in short "Internet".

Through an Internet connection, one can communicate with any other subscriber of

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internet throughout the world. Many companies including VSNL, Essar, Bharti Telecom, and MTNL

provide Internet service in India. They are also known as Internet Service Providers (ISP).

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Any individual or organisation can open an account with any Internet Service Provider (ISP) who

will give an

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Account Number for monthly or yearly fees. Then the user may have access to the Internet and the e-mail through it. The user needs

his own computer, "modem" and a telephone line to send and receive messages. He can also have access to the World-Wide Web (WWW). The user can also send e-mails through the internet if the e-mail software (called a mailer) is installed on the user's computer. Modern Internet has over 32,000,000 registered domain names (according to domainstats.com/provided by ISOC). The size of Internet doubles every 10-12 months. According cnn.com, more than 50% American households are now connected to the Internet. The following pictures illustrate the growth of the number of Internet hosts:
21 History of Internet 21 Figure 2.1: Number of Internet Hosts Figure 2.2: Number of WWW Web Sites World Wide Web The world wide web is also known as the 'www' or the 'web'. It is an architectural framework of information system fully implemented in 1994 on the Internet. It contains millions of electronic documents called Web Pages. A web page contains text and graphics (drawings) which are linked to related information. The name 'web' is based on the fact that the text, pictures, animation, sound and information that make up a document may come from anywhere in the world. Thus, a single document can be perceived to stretch 'weblike' throughout the world. The Web

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is not internet. At times, people confuse the two terms that are related but not identical in meaning. The internet

evolved from the military ARPANet in 1960s with the purpose of' creating a network that would
22 22 e-Commerce continue to work as a whole, when parts of it collapse'. The Internet means a network infrastructure that is built on certain standards, which are followed by all participants to connect to each other. The Internet Protocol (IP) defines how the flow of information is organised. But it does not specify the types of information or services to be exchanged. World Wide Web lays down the specifications of information and services to be exchanged with its Hypertext Transfer Protocol (HTTP). Thus, the web offers the exchange of documents via HTTP. Besides the www, there are other protocols that enable people to communicate via e-mail (POP3, SMTP, IMAP), chat online (IRC) or participate in newsgroups (NNTP). The WWW is thus one of the numerous services offered on the internet. It does not specify if a certain web page is available in the internet intranet or extranet. The World Wide Web provides a simple-to-use web interface that allows people with very little knowledge in computing to access web services all over the Internet. The web services include content products and services, which can be viewed or ordered through the web browser. It may be noted that the web browser allows customers to self- service themselves over the web. Note that

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when you are on the Web, you are on the Internet but not the other way round. For example, those sending e-mail are not on the Web, unless they are sending e-mail via a Web

browser. 2.3 ESSENTIAL LANGUAGE OF THE INTERNET/WEB The commonly used terms of internet/web are: z Provider or Internet Service Provider (ISP): Internet service provider is an enterprise to provide an entrance ramp to the Internet. The ISP purchases expensive high-speed Internet network from a major Internet source and a number of telephone lines from a local phone company. By placing computers at the site that interface the phone lines with the Internet the ISP can begin to sell online commercial access. The faster Internet network promotes, more data or users, means more revenues coming from users. The ISP recoups its investment by selling WWW services, providing service to many people simultaneously, and selling major Internet hook-ups to large enterprises in their area of operation. The purchase of internet access from an ISP. You first receive an account that allows you to store files and do your Internet work. You are also connected to a NetNews network that brings you thousands of interest groups on virtually any topic imaginable. You also receive an e-mail address that links you with the world at large and, of course, access to the entire Internet. z Server:

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A server is the ultimate destination point on the Internet. It is where the information you are seeking is stored. When you send a message to retrieve a piece of information through the Internet, the browser picks up the message, reformats it, and sends it through various

layers to the

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physical layer where cables and wires transmit the message to the appropriate server. Once there,

the

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server retrieves the information and sends it back to the browser to be viewed by the user. There are various kinds of servers, depending on the information sought by the user. Since most of the focus in this book is on the World Wide Web, we will use the word "server" to refer to WWW servers. z Browser: A browser is a software program loaded on a PC which allows to access or read information stored on the Internet. It is the vehicle that enables you to interface with the Internet. The browser takes your instructions and converts them into a language and a format that can be sent to a remote site and

executed. z Hypertext Transfer Protocol: The World Wide Web (WWW) is a global network of millions of Web servers and Web browsers connected by the Hypertext Transfer Protocol or HTTP and its many derivatives. The WWW is like a client/server system: content is held by Web servers and requested by clients or browsers. Clients display the information sent by the Web server on their monitors. Web servers provide pages of multimedia information in seconds. The most important element of a Web site is its links to other pages within the site or across sites. By clicking on the link, a user can navigate from page to page without having to worry about the location of the information or how it travels across the network.

23 History of Internet 23 z Uniform Resource Locators or URLs represents the address of a specific website are central to the Web in e- commerce. For example, http://www.virginia.edu consists of two key parts: ™ http://. The http (Hypertext Transport Protocol) is a protocol designator: It is a special method used in moving files that contain links to other documents related to the material requested across the Internet. It simply tells the browser what protocol to use in connecting to the Web server (in this case, http). Web browsers can also use other protocols such as FTP (file transfer protocol) for file transfer and SMTP (simple mail transfer protocol) for electronic mail. ™ www.virginia.edu is the name of server: The series www after the double slash tells the network that the material requested is located on a dedicated Web server somewhere. Virginia is the name of the Web site requested, and edu is a code indicating that the site is an educational institution. Other codes like org (organization; e.g., www.ACM.org), gov (government e.g., www.whitehouse.gov), and mil (military, e.g., www.defenselink.mil) are also used. The most common code is com (commercial, e.g., www.dell.com). z Security

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Protocols: There are two main security protocols. The first is Secure Sockets Layer (SSL) – a protocol for transmitting private information in a secure way over the Internet. Developed by

Netscape Communications Corporation.

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To date, it is the most widely used security protocol on the Internet, providing security services for messages or streams of data. The second security protocol is S-HTTP secure HTTP (S-HTTP): an extension to HTTP that provides various security features such as client/server authentication and allows Web clients and servers to specify privacy capabilities.

z File Transfer Protocol (FTP): The FTP is a standard protocol that allows you to copy files from computer to computer. Like Telnet, FTP allows you to access remote computers. When your FTP to a remote computer, you log in as anonymous, which means simply entering your e-mail address as the password. The WWW makes heavy use of FTP protocol. Most browsers know how to access information from FTP sites. This feature allows you to store WWW homepages at low-cost FTP sites anywhere in the world. z

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Telnet: An Internet service that allows a visitor to access remote computers as if they were local. Telnet is a basic Internet service that allows you to access remote computers as if they were local.

To

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use Telnet, you must have the Internet address of the remote computer. Once you transmit the computer address, you are asked to login before being allowed to access computer files or use the computer. Login entering your user name

and

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password. Once logged in, the information you read and actions you take are acted upon by the remote computer.

z

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Bulletin Board Systems (BBS): BBS is a computer based meeting and announcement system that allows local people to exchange information free of charge. People often confuse Bulletin Board Systems (

BBS)

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and pay services. A BBS generally has a simple interface to the Internet for users to access services like e-mail and NetNews. By calling a BBS via your PC, you can locate all kinds of information. The e-mail part of this system, for example, accepts e-mail during the day, compiles it, and sends it once or twice a day as a batch. It also receives incoming e-mail the same way. This is probably satisfactory service for small-time users or those with no time requirements. An alternative type of BBS is service by subscription. These systems are so popular that system owners have added better computer hardware, better storage, more phone lines, etc. The cost of keeping the system current requires users to pay a set fee per month. Pay services like America Online and Prodigy have become household names, offering millions of users access to popular telecommunication offerings that include stock quotes, Internet access, setting up your stock portfolio, and other specialized services. Many pay services follow a similar procedure. First, you subscribe at

a fee,

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which covers basic access to the service. The fee allows you to do e-mail, interactive real-time communication, watch the news, and the like. Pay services offer other options that are hard to get on the Internet. For example, a live news feed and free 24 24

e-Commerce

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online (no delay) stock quotes are available at a membership fee; some are free. Security software is also included to ensure privacy, confidentiality, and integrity of the exchange process. z E-mail: Electronic Mail or e-mail is a system of electronic correspondence by which users send and receive messages over a network of computer and telecommunication links. The messages may consist of short notes and greetings, or extensive (huge) text files plus graphics (drawings) and photographic images, video clips, or sound. Thus, e-mail is an "electronic post office". It provides a "store-and-forward" service. It lets people communicate even in the absence of the receiver at the other end. It means that you can send e-mail message whenever you want. The person to whom you have sent the message, can read them (after opening his computer) whenever he wants. Thus, the sender and the receiver don't have to connect themselves at the same time to communicate. The ability to compose send and receive electronic mail is enormously popular on the Internet. Many people use this as the primary way of interacting with the outside world. Electronic mail eliminates most of the problems and delays of getting a physical document from one person to another. The message becomes available to the addresses as soon as it is sent. Unlike telephone call, both parties need

not be

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available simultaneously for communication to succeed. Some electronic mail packages have an "

Express mail" feature. When express mail is sent, the address is immediately notified on the PC's status line that mail is waiting. z Newsgroups: News Groups are specialized forums in which users with a common interest can exchange messages. Thousands of newsgroups exist, on technical and non-technical topics. Each news group has its own style and customs. The Usenet newsgroups have unique names. The names have two main parts – the first describes the main topic and the second part narrows down the topics in sub-groups. Some of the popular newsgroups are: rec.arts. theatre: Recreation concerning theatrical arts sci.environment: Newsgroup concerned with environmental science sac.history.war.world-war-ii: Newsgroup dealing with the history of World Warn. z Remote Login: By using Telnet or other login programs, users anywhere on the internet can login to any other machine on which they have an account. Thus, if you are connected to the Internet, and you are away from your computer, and if you have access to another computer on the Internet, you can have access to all the information, programs and utilities which resides in the other computer through the Telnet or through remote log-in. The term 'Telnet' is also referred to as remote log-in, which simply means connecting one machine to another so that one may interact with that other machine as though he or she were actually using it locally. Technically Telnet is a protocol. This means it is a language that computers use to communicate with one another in a particular way. This lets you log-in to a site on the Internet through your connection to teleport. It is a terminal emulation program, meaning that when you connect to the remote site, your computer functions as a terminal to that computer. It has no file-transfer capability .Once the connection is made, you can use you computer to access information, run programs edit files and use whatever resources are available on the other computer. z Internet Chatting: Several people may be located in different parts of the world and they can commence chatting with each other in real time by using Internet chat software. E-mail and newsgroups are not real time as the interacting parties are not online at the same time. Chatting is in real-time where the messages reach the destinations instantaneously and are responded by someone who is also online at the time. The messages may be textual or we may even have Internet telephone facility by transferring voice messages as
25 History of Internet 25 files instead of textual messages. The advantage is that voice messages can be exchanged anywhere in the world at the cost of a local telephone call. 2.4
ADVANTAGES

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OF INTERNET The Internet provides numerous advantages to managers they use it to glean intelligence about rivals,

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monitor sale, promote their products and services etc. The advantages of internet are: z Marketing and selling products and services. The "buy and sell" aspect of Internet commerce has attracted more media attention than any other networked

activity to date.

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Thousands of e-corporations have sold over $1 million each in 2000-02. The highest sales volume was in business-to-business commerce, and it is growing. The next highest sales were to government agencies, followed by colleges and universities. In terms of revenue, business-to-consumer ranks fourth in Internet revenue.

z Leveling the playing field.

61%	MATCHING BLOCK 87/390	W

By advertising the products/services on net, the enterprise is on equal footing with larger company. z Excellent customer support resource and service. The most common support resource created is FAQs (Frequently Asked Questions). Most web sites create customer feedback in the form of suggestions and complaints. z Doing business fast. Internet promotes e-selling in fraction of seconds. Thus, it promotes the growth of a customer base. z Obtaining users opinion.

It

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promotes interactive surveys. The users opinions can be gathered anywhere as it provides real-time

statistics to the

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user. z Promoting of economy and efficiency. The cost of establishing and maintaining the website is far less than off line trading. From a marketing view, the web site provides user information more quickly, in a more timely fashion, and the convenience of the user.

z Promotes a paper less environment. All the information an enterprise wants to communicate to customers could be communicated electronically with the help of internet. z Support to managerial/functions. The traditional managerial functions of planning, organizing, directing, and controlling require managers to collect, evaluate, and distribute management information, especially in organizations with branches worldwide. The Internet sends business information through a company's networks and across networks around the globe. E-mail is a convenient tool for managers to reach employees, bosses, customers and suppliers quickly and at no charge. z Triggering new business. Given the world wide networking of business and commerce, mere presence is bound to trigger one type of business activity or another. This includes business-to-business, business-to- government agencies at all levels business to college and universities as well as business to consumers. For example, a start up company owner by students generated $11 millions in revenues in 1999 from selling used books nationwide. 2.5 LIMITATIONS/DISADVANTAGES OF INTERNET The limitations of Internet are as follows: z It is difficult to detect the fake user/identify the forged transactions. z It is often difficult to provide security support to all users. z It is difficult to provide adequate privacy to all users as their Id accounts could be accessed by other users.

26 26 e-Commerce z It passes various threats like: the threat due to hackers, worms, Trojan Horses, viruses, and zombies are the Threats to the security and functioning of web sites. z The growth of e-business had put a constant demand on existing network infrastructure. Managers have been under great pressures to upgrade and maintain more complex networks to ensure continuous performance. 2.6 THE WORLD WIDE WEB In 1990 Tim Berners-Lee a programmer at Particle Physics Laboratory, wrote a program called a hypertext editor that allowed information highlighted in a document to link to other documents on a computer network with a mouse click. Soon, physicists associated with the lab began to use the hypertext editor and the Internet to send papers to each other. Later on, their electronic mail became more elaborate, as they built links that crossed the Internet to transmit information and documents. This virtual space became known as the World Wide Web. The World Wide Web, also known as the WWW or the Web, is an organization of files designed around a group of servers on the Internet programmed to handle requests from browser software that resides on users' PCs. The name is based on the fact that the sound, text, animation, pictures, or information that make up a document may come from anywhere in the world. A single document can be perceived to stretch-weblike throughout the world. A brief summary of the key events of creation of www as shown in Table 2.1 Table 2.1: Major Events in the Creation of the World Wide Web Date Events March 1989 WWW project originated by Timothy Berners-Lee November 1990 Revised version of the project developed NeXT computer March 1991 WWW released to a select group for testing September 1993 The National Center for Supercomputing Application (NCSA) released first working version of Marc Andreesen's Mosaic for all common platforms October 1993 More than 500 known HTTP (Hypertext Transfer Protocol) servers in operation October 1994 More than 10,000 known HTTM servers in operation When a document is accessed in Washington or Singapore or Madrid, all of the components are pulled from different computers worldwide and integrated in the document displayed on the user's screen. The request is received by one computer, which interprets its content to see if it has what is requested. If not, the request hops across other computers until the entire document IS assembled. The physical structure or architecture of the Internet is hierarchical: there are high-speed backbones at the top, with regional and individual networks at the bottom. The bulk of Internet traffic is fed onto the backbone via Network Access Points (NAPs), which are maintained by Sprint and other service providers at strategic locations throughout the United States. This grand network of networks shares a common set of communication protocols called Transmission Control Protocol/Internet Protocol (TCP/IP) suite. The TCP/IP allowed for a communication to be broken into packets that were routed separately to their destination as separate packets, and then reassembled to the communication's original form (Figure 2.3). The newness of the Web, alongwith its rapid, phenomenal growth, has been a challenge for corporations that want to create a presence on the Internet. They have found it difficult and too costly to invest employees' time in doing professional Web design work. The demand has created anew industry specializing in Web design and Web mastering. Because of the increasing number of Web sites, Webmaster or developer is a lucrative new career.
27 History of Internet 27 Source: Whitehead, Paul and Ruth Maran, 1997. Teach yourself the internet and the World Wide Web visually. Indianpolis: IDG Books Worldwide, Inc. Figure 2.3: How Information Transfers Over the Internet 2.7 INTERNET SERVICE PROVIDERS (ISPs) The ISPs are a specialized company that connects customers with PCs and browsers to the Internet.

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The ISPs offer a variety of services like: z Linking consumers and businesses to the Internet (e.g., America Online, VSNL, Ernet, Microsoft Network, CompuServe) z Network management and system integration z Monitoring and maintaining customers' Web sites z Backbone access services for other ISPs like PSI, BSNL, and UUNET

z

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Payment systems for online purchases. Initially the cost of Internet access was high, however with the increase in

traffic the costs are coming

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down. Many governments are funding the use of the internet because of

its political, education and commercial benefits. The internet provides variety of information almost free except those which are membership based.

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One can contact anyone, anywhere, anytime for a monthly fee. The exceptions are web sites that charge a membership fee or a fee for access to privileged

information. Almost

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everything one needs on the Internet is free. Among the free services are: z Hotlist that tell the user what is popular and what is not. z Comics that focus on entertainment

events.
28 28 e-Commerce z

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Software archives that list the latest free software available. z Weather services that provide free weather forecasts anywhere in the world. z Magazines and broadcasting stations

that constantly update the news. z Searchers that

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help locate items or subjects on the Internet. z Dictionaries that include thesauruses and "fact" books on almost all subjects. z Government services that publicize what is available from them. The problem for ISPs is sudden growth without advance planning

to accommodate that growth. Accordingly, response time slows down, triggering customer complaints. The challenge to them is to

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maintain profitability and meet or beat the competition, while maintaining

customer

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satisfaction. To do all this well requires professional management, a highly skilled

technical staff, and

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a healthy budget to bring the technology in line with the voracious appetite of today's consumer. The trick is to ensure a balance between creativity and control and between managing growth and a stable technical infrastructure. 2.8

OWNERSHIP, STABILITY AND RELIABILITY OF THE WEB There is no one single agency or company who owns the Internet. Each company on the Internet owns its own network. The links between these companies and the Internet are owned by telephone companies and ISPs. The organization that coordinates Internet functions is the Internet Society .It does not operate any of the thousands of networks that make up the Internet, but works with ISPs by providing information to prospective users. This association's Internet Architecture Board consists of work groups that focus on TCP/IP and other protocols. Various committees also handle technical issues and day-to-day operational aspects of the Internet. The Web itself, resides everywhere as well as nowhere at the same times, simply cannot cease functioning by itself. Also because it is based on the Internet, stability is as good as that of the Internet, which is fairly good so far. The Internet designed to be indefinitely extendable. Reliability depends primarily on the quality of service providers' equipment. Inadequate phone lines, bandwidth, or mediocre computers can affect the reliability of the overall service. 2.9 BASICS FEATURES OF THE WEB The web is one of the most flexible and exciting tools in existence for surfing the Internet. Using mosaic viewer, the www made it possible for a site to set up a number of pages of information containing text, pictures, sound and even video with embedded links to other pages. By clicking a link the user is suddenly transported to the page pointed to by that link. The basic features of the web are as follows: z Hypertext information system: The idea behind hypertext is that instead f reading text in a riding, linear structure (such as a book) you can skip easily from one point to another. You can get more information, go back, jump to other topics, and navigate through the text based on what interests you at the time. If the information did not take up much disk space, and if it was freely available, and you could get it reasonably quickly anytime you wanted, then things would be more interesting. z Graphical and easy to navigate: One of the best parts of the web is its ability to display both text and graphics in full colour on the same page. Before the web, using the internet involved simple text-only connections. Web provides capabilities for graphics, sound and video to be incorporated with the text and web browsers include even capabilities for multimedia and embedded applications. the interface to all this is easily navigable-just jump link to link, from page to page, across sites and servers.

29 History of Internet 29 z Cross-platform: If you can access the internet, you can access the world wide web regardless of whether you are running on a low-end PC or an expensive graphics workstation. You can be using a simple text-only modem connection, a small 14-inch black and white monitor or a 21-inch graphics accelerated display system. The world wide web is not limited to anyone kind of machine, or developed by anyone company the web is entirely cross-platform. z The web has global reach: The web is successful in providing so much information because that information is distributed globally across thousands of web sites, each of which contributes the space for the information it publishes. You, as a consumer of that information, go to that site to view the information. When you are done, you go somewhere else, and your system relives the disk space. You do not have to install it, or change disks, or do anything other than point your browser at that site. z The web is dynamic: Because information on the web is contained on the site that published it, the people who published it in the first place can update it at anytime. If you are browsing that information, you do not have to install anew version of the help system, buy another book, or call technical support to get updated information. Just browse and check out what is up there. z Accessing of many forms of internet information: There are dozens of different ways of getting at information on the Net namely, FTP, Gopher, Usenet news, WAIS databases, Telnet, and e-mail. Before the web became as popular as it is now, to get to these different kinds of information you had to use different tools for each one, all of which had to be installed and all of which used different commands. Although the web itself is its own information system, with its own internet protocol (HTTP, the Hyper Text Transfer Protocol) .Web browsers can also read files from other Internet Services and you can create links to information on those systems just as you would create links to information on web pages. z The web is interactive: Interactivity is the ability to "talk back" to the web server. Unlike the television, the web is interactive. It means the act of selecting a link and jumping to another web page to go somewhere else on the web. It also enables you to communicate with the publisher of the pages you are surfing. z Conferencing: In addition to an Internet telephone, we may also have a video communication. A digital camera and a video digitizer, which converts a picture into a digital message is required for the purpose. With a combination of Internet video communication and Internet audio phones we can have a conference between people who may be located in different continents. It can be observed that on the Net we can establish all kinds of contact instantaneously except physical contact. The Internet has thus promoted the understanding between the people in the world, by bringing them close together virtually. 2.10 USING THE INTERNET An individual can have access to the internet via an Internet Service Provider (ISP). If he has a telephone connection, he needs a computer and a modem to connect to the ISP's server. Telecom providers and cable companies are increasingly providing digital services and open-all-the-time connection, which give increased speed and convenience of access. The ISP provides easy access to the web, an e-mail address and very possibly user space for the client to set up his own home page. Some ISPs specialize in hosting business sites with services designed to meet the need of that market. The provision of Internet services has become very competitive and users have taken to shopping around for the best package. Users of the service get the ISP's home page displayed when they log on. This gives the service provider an opportunity to create revenue from advertising and hosting links to commercial sites. Many ISPs use the advertising revenue to support a free access service to the users. 30 30 e-Commerce A large organization may be wired with its own Local Area Network (LAN) and access to the internet is via the Server. A server is a computer system linked with the internet that could be accessed by the clients. There are two internet server applications: z Web Server: Software that takes requests from client’s browsers searches the web and passes back the resultant pages to the browser. The server will store a number of home pages that are available to local users and other Internet users. z Mail Server: Software that acts as a 'post office' for the e-mail system. Mail created on the client sites is passed to the appropriate post-box within the system or sent out over the Internet to its intended destination. Mail from outside is stored in post-box files and upload to the users machine when requested by the mail client. 2.11 CONCEPT OF INTERNET AND EXTRANET 2.11.1 Intranet An intranet is a private network that is contained within an enterprise. This is a network that is not available to the world outside of the Intranet. If the Intranet network is connected to the Internet, the Intranet will reside behind a firewall and, if it allows access from the Internet, will be an Extranet. The firewall helps to control access between the Intranet and Internet to permit access to the Intranet only to people who are members of the same company or organisation. In its simplest form, an Intranet can be set up on a networked PC without any PC on the network having access via the Intranet network to the Internet. For example, consider an office with a few PCs and a few printers all networked together. The network would not be connected to the outside world. On one of the drives of one of the PCs there would be a directory of web pages that comprise the Intranet. Other PCs on the network could access this Intranet by pointing their browser (Netscape or Internet Explorer) to this directory – for example U:\inet\index.htm. From then onwards they would navigate around the Intranet in the same way as they would get around the Internet. Figure 2.4: Intranet

31 History of Internet 31 2.11.2 Extranet An Extranet is actually an Intranet that is partially accessible to authorised outsiders. The actual server (the computer that serves up the web pages) will reside behind a firewall. The firewall helps to control access between the Intranet and Internet permitting access to the Intranet only to people who are suitably authorised. The level of access can be set to different levels for individuals or groups of outside users. The access can be based on a username and password or an IP address (a unique set of numbers such as 209.33.27.100 that defines the computer that the user is on). Figure 2.5: Extranet 2.12 INTERNET PROTOCOLS Internet Protocols are the sets of rules that govern the transfer of information across the network. The commonly used network protocols are discussed below: 2.12.1 TCP/IP (Transmission Control Protocol/Internet Protocol) This is the protocol which is used by internet for data transmission, using IP addressing mechanism. This protocol is composed of two basic protocols: (i) TCP (Transmission Control Protocol), and (ii) IP (Internet Protocol). The TCP part is used to break the data into small packets and IP part helps to address the packets to be transmitted. This is an International Standard for internet. TCP/IP provides a solution to the problem of how two computers attached to the same intranet but belonging to different physical networks can exchange data. TCP/IP divides data streams into chunks called TCP segments and transmits them using IP. 2.12.2 File Transfer Protocol (FTP) This protocol is a part of a TCP/IP protocol suite. This protocol is used for transfer of files between computers. This protocol is a very powerful tool for transfer of files. This protocol works on the principle of client/server technology. The client interacts with server for transfer of files, using FTP server program. When files are transferred they are compressed. 2.12.3 HTTP (Hyper Text Transfer Protocol) This protocol is the most commonly used protocol for the transmission of Hypertext between two or more computers. This protocol is used by world wide web (www) for transmission of hypertext. This is a simple
32 32 e-Commerce request/response protocol which is run over the TCP/IP protocol. This protocol is also based on client-server technology. The data transferred may be plain text, hypertext, images, graphics etc. HTTP protocol, supports a lot of formats. The data transmission takes place between the client, which can be browse also, which the HTTP protocol achieves by sending the list of formats, which the client can handle, to the server, which responds by giving data in the formats, which client can understand. The web server "www" is also known as "http serves" as they are based on http protocol. For other functionalities, the http protocol supports and provides access to variety of protocols like SMTP (Single Mail Transfer Protocol), POP (Post Office Protocol), WAIS etc. 2.12.4 Gopher (Protocol/Service) This protocol is used for searching, retrieving and displaying documents from remote websites on the internet. This protocol is based on the client/server technology, where the client software interacts with server to retrieve information. There are Gopher servers which store the information. The Gopher software is designated to work with a variety of different internet stand alone services. For searching and retrieving this information we need to run a Gopher client application. One can interact with Gopher through menus which also provide for search capabilities. 2.12.5 WAIS (Wide Area Information Service) (Protocol/Service) Pronounced as "ways", it is an internet search tool, used for information retrieval. The WAIS search engine searches for string of Text, provided by the user, WAIS uses English-Language based query-front end for search. As a software cannot understand sentences, WAIS breaks up the sentence into words and searches this word combination using indexing methods, which store the keywords of documents indexed. 2.12.6 Telnet (Protocol/Service) This protocol is used

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to connect to another computer. This process is called remote login. The computer, which makes the call for connection, is known as local computer and the computer, which accepts the connection, is known as remote computer or host.

This remote computer can be physically located at any place, may be within the same room, same premises, same town, country or anywhere. Usually telnet also authorises the users with account and password. This protocol also works on the client/server principle. The local computer uses telnet for even connecting to the Internet resources on other computers. 2.12.7 IPV6 The Internet connects together several hundred thousands of networks, and several tens of millions of computers. Several millions of users access the Internet from over more than hundred countries. The size of the Internet over the last few years has grown and continues to grow exponentially. IPV 4 is not sufficient to cope up with the growing size of the Internet and its user community .To address these limitations of IPV4, the Internet Engineering Task Force (IETF) developed and proposed anew version of the Internet Protocol. This version is popularly known as IPV6 (Internet Protocol Version 6) or Next Generation IP. The key features of IPV6 are: z It uses 128-bit address space instead of 32-bit in IPV 4, which is believed to ensure that the world will not run out of IP addresses. With this large address space, it is expected that the Internet under IPV6 can support 1015 (quadrillion) hosts and 1012 (trillion) networks (the Internet under IPV 4 can support maximum 232 hosts). Therefore the IPV6 address space is approximately 64 × 109 times more than that of IPV4. z It uses flow labeling and priority concepts to support real-time services. Senders can label packets that belong to high-priority traffic. By assigning higher priority to the packets belonging to real-time applications, 33 History of Internet 33 the necessity of time sensitiveness is restored. Packets that are time insensitive are assigned low priority and serviced by the best effort approach. Senders can also request special handling of packets by the routers by assigning flow labels to them, such as a non-default quality of service or real-time service. With this feature, video and audio data may be treated as flows whereas traditional data, such as file transfer and e-mail, may not be treated as flows. z IPV6 with its ancillary security protocol provides a better communication tool for secure business transaction over the Internet. With a longer address field, IPV6 permits extensions that would natively support authentication, data integrity, and data confidentiality, which would address a variety of critical security concerns. z The enhanced routing capability of IPV6 includes support for mobile hosts. This feature allows a node to move from one link to another without changing the address. Movement can even be heterogeneous, that is, a node can move from an Ethernet link to a cellular packet network. 2.13 HISTORICAL DEVELOPMENT OF INTERNET The beginning of the Internet dates back to the late 1960s,

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when the Advanced Research Projects Agency (ARPA) of the Department of Defense (

DOD) formed ARPANET. The agency was established in the late 1950s to develop information technologies to help the United States to counter the Soviet launch of Sputnik. Consequently, the early ARPANET consisted primarily of research universities and military contractors with computers linked by telephone lines leased from AT&T. The chronological development of the ARPANET and the milestones leading to the Internet reflect a history of top-down government sponsored initiatives. 2.13.1 Internet and E-commerce Milestones Early 1960s Genesis of networking at The RAND Corporation in a series of reports by Paul Baran. Also, Leonard Kleinrock's thesis "Communication Nets: Stochastic Message Early Flow and Delay" at MIT created the model for performance evaluation and network 1960 design. The concept of a "mesh network" of minicomputers that would use packet $ switching (in contrast to circuit switching used in phone connections) to communicate over phone lines was a revolutionary notion at the time. Until then, computer communications had centered on mainframes and point-to-point links. 1965: One of the first networking experiments took place when the TX-2 computer at M.I.T.'s Lincoln Laboratory was connected to a Scientific Data Systems Q-23 computer in Santa Monica, California [HAF96]. 1968: A request for proposal was floated to create the ARPANET; Bolt, Beranek, and Newman (BBN) were awarded the prime contract. ARPA awarded other contracts to AT&T for communications circuits, Network Analysis Corporation for designing the 1968 network topology, the University of California at Los Angeles (UCLA) for a "network measurement center", and Stanford Research Institute (SRI) for a "network information center" Other sites on the nationwide net included the University of Utah in Salt Lake City and the University of California at Santa Barbara (UCSB). 1969: The first ARPANET node was installed at UCLA in September 1969, thus launching the first packet switching network connecting SRI, UCSB, and University of Utah. The actual ARPANET network that resulted used special-purpose computers known as IMPs (interface message processors) to dismantle information into small chunks I called packets, transmit the packetized information to a destination computer known by an address, check for transmission errors, retransmit damaged packets, and reassemble packets at the destination sites. To interface between the IMPs and proprietary software on the multivendor host computers, the ARPANET researchers created Network Communication Protocol (NCP). 1971: In just two short years approximately twenty nodes were installed, and ARPA was funding thirty different university sites as part of the ARPANET program.
34 34 e-Commerce 1972: E-mail was invented by accident, when two programmers at BBN decided to send 1971 each other messages, not merely transfer files. Ray T omlinson (BBN is credited with using the ARPANET to place the world's first e-mail message in 1973). 1973-74: In the mid-1970s, the

Transport Control Protocol/Internet Protocol (TCP/IP) protocol was developed by Vint Cerf to link different packet networks.
The purpose of TCP/IP was to connect different networks (copper wire, radio, and microwave) and still enable the host computers to talk to each other coherently. TCP/IP is capable of connecting multiple independent networks through routers (or gateways). 1975: In July 1975 ARPA transferred management of ARPANET and Network Measurement Center from BBN and UCLA to the Defense Communications Agency (DCA; now called Defense Information Systems Agency). It was expected that direct experience with packet switching by DCA would ultimately be of wider benefit to the Department of Defense. 1978: The U.S. government decreed that TCP/IP be the preferred way to send information 1978?, from one computer to another. This caused computer vendors to wake up and realize that TCP/IP is here to stay. 1980:
DARPA funded the development of Berkeley UNIX. TCP/IP was made part of the 1980 operating system.
The government had considered buying AT&T UNIX but felt that it didn't have enough features, primarily TCP/IP. 1983: Transition from the original ARPANET protocol, the Network Communication Protocol (NCP), to TCP. At this time only a few hundred host computers were on the nascent Internet. 1980-86: From 1980 to 1986,
NSF supported the development of CSNET, a computer science research network. CSNET
was a network of networks, one component of which used the TCP protocols over an X.25 public data network showing the power of a 1980-86 layered architecture. CSNET also included the ARPANET and PHONENET, a telephone-based electronic mail relaying system. By 1985, CSNET had links to over 170 university, industrial, and government research organizations and numerous gateways to networks in other countries. 1982-86: In 1982 a report, "Large Scale Computing in Science and Engineering", recommended the establishment of NSF-funded supercomputing centers as well as a high-speed network to connect them. These centers would offer an opportunity to 1982-86 make progress in science and engineering research. Byearly 1985, NSF announced five awards, and by 1986 the Cornell Theory Center, the Illinois National Center for Supercomputing Applications (NCSA), the Pittsburgh Supercomputing Center, the San Diego Supercomputer Center, and the Princeton John von Neumann Center were up and running. 1986:
NSF initiated a new program of networking and computer support for
supercomputing centers to be used by researchers. This program began with a memorandum of understanding with

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ARPA to allow NSF-funded supercomputer centers and selected researchers

to

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use the ARP AN ET. Believing that ARP ANET was I not suitable, NSF instituted the NSF Connections program in 1986 to broaden the base of network users with their own computer facilities

and eventually

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to help universities achieve access to supercomputers (by supplying hardware and telecommunications lines for direct, point-to-point connections). In 1986, it launched the NSFNET network backbone program. 1987: CSNET merged with BITNET, a worldwide network connecting IBM mainframes that was initiated in 1980-81. CSNET operations were continued under the Corporation for Research and Education Networking (CREN), whose operating

costs

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were completely covered by member organizations' dues. 1987: After significant congestion was experienced in 1987, the backbone was upgraded from 56 kbps to TI service (1.5 Mbps) and became operational in 1988. 1988: The Internet virus is unleashed by a graduate student at Cornell University, focusing attention on network vulnerability to security threats. Immediate steps were taken to make the network more secure. 35

History of Internet 35 1990:

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Twenty years after its birth at UCLA, ARPANET was officially decommissioned; its descendant, the NSFNET, inherited its role as

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research and education 1990 communities' backbone network. The first relay between a commercial electronic mail carrier (MCI Mail) and the Internet took place through the Clearinghouse for Networked Information. Its mission accomplished, CSNET service was discontinued. For the first time, commercial networks were connected to the NSFNET backbone through the Commercial Internet exchange (CIX) Association. CIX was formed by General Atomics (CERFnet), Performance

Systems International,

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Inc. (PSINet), and UUNET Technologies, Inc. (AlterNet). 1991: Anew bread of distributed information services called Wide Area Information Servers (WAIS) released by the now-bankrupt Thinking Machines Corporation; Gopher was released

by the

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University of Minnesota, and the World Wide Web was announced on alt.hypertext by Tim Berners-Lee of CERN. The U.S. government made a decision to turn NSFNET into a faster research network called National research and Education Network (NREN) as defined in

the

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High-Performance Computing Act of 1991. 1993: National Information Infrastructure announcement sparks interest in the Information 1993 Superhighway. Businesses and media suddenly realized there was something called the Internet and began to take an interest in its exploitation. 1994: Two million copies of a freeware Mosaic – a multimedia browser for the WWW, written by Marc Andresen, at that time an undergraduate student

at the University 1993-94

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of Illinois at Urbana Campaign – were distributed over the Internet and attained incredible popularity. This milestone event represents anew chapter in electronic commerce. 1995: The old NSFNET backbone is decommissioned and anew architecture based on Network Access Points (NAPs) is installed. 2000: IT Act 2000 passed by the Government of India. 2.14

EVOLUTION OF INTERNET The Internet has evolved as a power tool, most user friendly and most commercially popular technology. Anyone with Personal Computer (PC) connected to the Internet, a browser (a program designed to search for and bring in internet resources) and few plugs-INS (specialized program) can surf the unique representation of an enterprise products or services on the Internet. Table 2.2: Evolution of Purpose of Network Type and Scope of Network Examples Experimental networking ARPANET Discipline-specific research CSNET, MILNET, HEPnet, MFEnet General research networking Early NSFNET, BITNET Privatization and commercialization Present NSFNET Restricted public data networks for research and education National Research and Education Network (NREN) and HPCC National information infrastructure Information Superhighway (I-way)
36 36 e-Commerce Check Your Progress Fill in the blanks: 1. The ..... is a vast computer network of many different computer networks existing in the world. 2. The world wide web is also known as the ..... 3. ..... is the ultimate destination point on the Internet. 4. ..... protocol is the most commonly used protocol for the transmission of Hypertext between two or more computers. 2.15 LET US SUM UP The Internet has revolutionized the business and its impact on development is increasing every day. However, the major users at present are from Latin America, Europe, North America, Korea etc. The Internet is the fastest growing, most user friendly and most commercially popular technology to date. This is new media of the ICE (Information Communication of Entertainment) age. Anyone with a PC connected to the Internet through an Internet Service Provider (ISP), a browser, and a few plug-ins can surf the Internet and download text, graphics, and even voice. The part of the Internet that can accomplish these tasks is called the World Wide Web (WWW), or the Web.

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When you are on the Web, you are on the Internet, but not the other

way around. The WWW is a global hypertext network of millions of Web servers and browsers connected by Hypertext Transfer Protocol (HTTP) and its many derivatives. The most important element of a Web site is its hypertext links to other pages within the site or across sites. The Internet is hierarchical. There are high-speed backbones at the top, with regional and individual networks at the bottom. The bulk of Internet traffic is fed onto the backbone via Network Access Point (NAPs). 2.16 KEYWORDS Internet: The physical network that links computers across the globe. It consists of the infrastructure of network servers and communication links between them that are used to hold and transport information between the client PCs and web servers. Intranet: A private network within a single organization using Internet standards to enable employees to share information using e-mail and web publishing. Extranet: Formed by extending selected intranet services beyond an organization to its customers, suppliers and collaborators. 2.17 QUESTIONS FOR DISCUSSION 1. What do you mean by world wide web? 2. Write short note on e-mail. 3. Describe advantages and disadvantages of Internet. 4. Explain various features of web.
37 History of Internet 37 Check Your Progress: Model Answers 1. Internet 2. 'www' or the 'web' 3. A server 4. HTTP 2.18

87% **MATCHING BLOCK 113/390** W

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e-Commerce

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LESSON 3 ELECTRONIC DATA INTERCHANGE CONTENTS 3.0 Aims and Objectives 3.1 Introduction 3.2 Electronic Data Interchange 3.3

Definition of EDI 3.4 EDI Architecture 3.5 EDI Transaction Steps 3.6 Benefits of EDI 3.7 Standardisation and EDI 3.8 Action Plan for Implementing EDI 3.9

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Electronic Data Interchange (EDI) Applications 3.10 EDI Application in Business 3.11 EDI Applications in e-Commerce 3.12

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Let us Sum up 3.13 Keywords 3.14 Questions for Discussion 3.15 Suggested Readings 3.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Describe EDI z Explain architecture of EDI z Describe benefits of EDI z Explain EDI standardization z Describe EDI applications 3.1 INTRODUCTION Electronic Data Interchange (EDI) is defined as the inter-process communication (computer application to computer application)
of business information in a standardized electronic form. The EDI, trading partners establishes computer – computer links that enables them to exchange information electronically. Electronic

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Commerce is a term popularized by the advent of commercial services of the Internet. Internet e- commerce is however, only the part of overall sphere of e-commerce. The commercial use of Internet is perhaps typified by once-off sale to consumers. Other types of transactions use other technologies. Electronic Markets 39

Electronic Data Interchange 39 (

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EMs) are in use in a number of trade segments with an emphasis on search facilities and Electronic Data Interchange (EDI) is used for regular and standardized transactions between organizations. In this lesson we will study the concept of EDI. 3.2 ELECTRONIC DATA INTERCHANGE EDI was developed in early 60s as a means of accelerating the movement of documents related to shipments and transportation. However, from the beginning of 80s it is now widely used in various other sectors like automotives, retails, and international trade. Its relevance and usage is growing at a very fast pace. EDI is based on a set of standardized messages for the transfer of structured data between computer applications. It may have many applications e.g., sending the test results from the pathology laboratory to the hospital or dispatching exam results from exam boards/university to school/college, but it is primarily used for the trade exchanges: order, invoice, payments and many other transactions that can be used in national and international trade exchange. Notable users of EDI are vehicle assemblers, ordering components for their production lines, and supermarkets (and other multiple retailers), ordering the goods needed to restock their shelves. EDI allow the stock control/material management system of the customer to interface with the stock control/production systems of the suppliers without the use of paper documents or the need of human intervention. The EDI is used for regular repeat transactions. EDI is a formal system and it does not really have a place in the search and negotiation phases. EDI, when initially introduced was seen by many as a universal, or at least a generalized form of trading. In the event its adoption has been limited to a number of trade sectors where the efficiency of supply chain is of vital importance. EDI is apart of schemes for just-in-time manufacture of quick response supply. Mature use of EDI allows for a change in the nature of the product or service being offered mass customization is such an example. 3.3

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DEFINITION OF EDI Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance between computers of independent organizations. (The Accredited Standards Committee for EDI of the American National Standards Institute)

Electronic

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Data Interchange is the interchange of standard formatted data between computer application systems of trading partners with minimal manual intervention. (UN/EDIFACT Training Guide) Electronic Data Interchange is the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard

to structure an EDI message.
40 40 e-Commerce Figure 3.1: The EDI Process 3.4

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EDI ARCHITECTURE The EDI architecture has four layers and these are:

z Semantic (Application) Layer z Standard Translation Layer z Packing (Transport) Layer z Physical Network Infrastructure Layer The EDI Architecture is shown in the following table: Table 3.1 EDI Semantic layer Application level Service EDIFACT business from standard EDI Standard Layer

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ANSI X!2 Business from standard Electronic mail X435 MIME Point to Point FTP, TELNET

EDI Transport layer World Wide Web HTML Physical Layer Dial Up lines, Internet, I-Way 3.5 EDI TRANSACTION STEPS The EDI transaction

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for a purchase, shipment and payment normally follows the following steps: Step 1 Buyer's computer send purchase order to seller computer. Step 2 Seller's computer sends purchase order confirmation to buyer's computer. 41 Electronic Data Interchange 41 Step 3 Seller's computer send booking request to transport company's computer. Step 4 Transport company's computer sends booking confirmation to seller's computer Step 5 Sellers computer sends advance ship notice to buyer's computer. Step 6 Transport computer sends status to seller's computer. Step 7 Buyers computer sends receipt advice to seller's computer. Step 8 Sellers computer sends invoice to

buyer's computer. Step 9 Buyers computer sends payment to seller's computer. 3.6

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BENEFITS OF EDI The various benefits are: z Reduction on use of paper usage z Greater emphasis on problem resolution and customer service

z

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Increase in customer/supplier base z Improvement in international trade z Bank checks z Interbank electronic fund transfer z Automated Clearing House (ACH) transfers: ™ Bankwire ™ FedWire ™ CHIPS (Clearing House Interbank Payment System) ™

SWIFT (Society for

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Worldwide Intebank Financial Telecommunication) z Usage in health care save lot of cost z Improvement in production by using just-in-time approach z Better business information and knowledge access z Better design of product and effective procurement z Improved legal services in terms of good postal service. The indirect benefit include the following: z Quick matching up of reduction in delay leading to better cash flow z The ability to order regularly and quickly reduces the stock holding. The reduced stock holding cuts the cost of warehousing z An established EDI system should be of considerable advantage to both customer and supplier. Shifting to a new supplier require that the electronic trading system and trading relationship be redeveloped

z

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There is a steady increase in the number of customers, particularly large, customers that will only trade with suppliers that do business via EDI. Supermarkets and vehicle assemblers are prime examples. Thus, being ready and bale to trade electronically can be a major advantage when competing for new business opportunities. 42 42

e-Commerce 3.7 STANDARDISATION

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AND EDI All the software, hardware and networks must work together so that the information flows from one source to another in desired manner. Thus, at the heart of any EDI application is the EDI standards. The essence of EDI is the coding and structuring of the data into a common and generally accepted format-anything less is nothing more than a system of file-transfers. Coding and structuring the documents for business transactions is no easy matter. There have been

a

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number of EDI standards developed in various industry sector or with in a specific country and there are more complex committee structures and procedures to

support.

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It was developed by the United Nations. Is a family of standards similar to ANSI X-12 (The Accredited Standard Committee in 1979). EDIFACT was based on TRADESCOMS, developed by the UK today EDIFACT and ANSI are working towards compatibility. 3.8

ACTION PLAN FOR IMPLEMENTING EDI A stepwise plan for implementing EDI: z Appoint an EDI project leader z Form the project team for EDI implementation z Study the existing flow of information within the organization and out of and into the organization z Analyze the internal and external information flows z Identify the information that is generated manually and that which is generated automatically z Identify the significant business organizations with whom the organization has dealings z Identify the sources of EDI information z Identify vendors dealing with EDI software z Identify network service providers z Discuss with EDI users z Assess the costs and benefits of EDI implementation z Plan pilot implementation based on all above z Decide on strategy for a pilot with selected business partners in a trail basis z Assess requirements for software, communications and standards z Develop the pilot implementation z Implement the pilot EDI system z Evaluate the efficiency of the pilot EDI system z Based on feedback received, identity improvements possible z Extend the EDI implementation to new business partners and additional business functions.
43 Electronic Data Interchange 43 3.9 ELECTRONIC DATA INTERCHANGE (

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EDI) APPLICATIONS Any EDI application – whether using EDI outsourcing or EDI software/managed services – involves four main components including: EDI and Infrastructure Layer (Software and hardware for converting data into and out of EDI) Like any other application, the EDI software needs hardware

to

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run on. The first piece of the EDI puzzle is the EDI software layer itself – the EDI translator itself. Like any other software application, the EDI software needs hardware to run on. These systems will need sophisticated antivirus, firewall, and possibly intrusion detection software. By definition, EDI

is a system that

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communicates with companies on the other side of the firewall, which leaves it immensely vulnerable to attack. EDI is also an application that must operate on a 24×7 basis since orders are often sent by customers during off-peak hours. Thus, system monitoring software is required

to ensure

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that the servers are performing optimally and send alerts the moment anything

goes wrong.

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EDI Mapping Layer (Software for reconciling data between you and your trading partners) The mapping layer is where the electronic trading parameters are set up for every EDI relationship

that is implemented.

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These maps, which sit on top of the translation layer, are slightly different for each trading partner due to particular supply chain or business process requirements of the relationship. Also, since a

map is

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needed for each transaction with every unique trading partner, the number of maps can add up quickly. For example, if Company A has 10 trading partners that it conducts business with using EDI, and each trading

partner requires Company

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A to conduct three transactions, 30 maps are needed. As companies add partners over time, those numbers keep going up; as do the requirements for keeping the maps and the data they're transmitting synchronized. EDI Connectivity Layer (Software and network technology for transporting data between you and your trading partner) The third EDI layer is connectivity. While the first two components have to do with data processing, the third is all about

transporting that data

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between Company A and its trading partners. The upfront costs here have to do with providing the numerous communications methods that trading partners might require. These include a VAN mailbox, which provides access to a specialized proprietary network, often called a value-added network; AS2 software support, which is a secure Internet protocol that large trading partners such as Wal-Mart often use; and even secure FTP sites available via

the Internet. Many companies

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today have to support all three to satisfy their full trading partner community. After setup, high

costs are often associated

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with the ongoing transaction fees for using a VAN, software maintenance fees for FTP and AS2 software, and staffing associated with upkeep. EDI Application Integration Layer (Software for exchanging data into and out of your accounting system) Application integration allows companies to move data between their own ERP and/or accounting systems and the EDI translator.

The

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last of the EDI pieces is application integration. In short,

application

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integration allows companies to move data between their own ERP or accounting systems

and the

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EDI translator to eliminate manual keying of data – an extremely valuable feature. In some cases, prebuilt software modules, called adapters, can be used to reduce development time for certain ERP and accounting systems. Once implemented, the integration layer has to be maintained to keep it current with accounting system version upgrades and changes to trading partner EDI specifications. 44 44

e-Commerce 3.10 EDI APPLICATION IN BUSINESS Electronic Data Interchange (EDI)

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is widely-used technology for the automated exchange of documents between dissimilar applications. It allows value chain partners to exchange purchase orders, invoices, advance ship notices,

and other

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business documents directly from one business system to the other, without human intervention. Proven advantages are fewer errors, lower administrative costs, and faster order-to-cash cycles. The high penetration levels of Electronic Data Interchange (

EDI),

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a mechanism for inter-organizational electronic commerce, has revolutionized the way organizational conduct their business. Major benefits derived from EDI, however, depend upon

the use

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of appropriate controls to overcome potential risks and exposures inherent in integrating and utilizing of the system. As many resources and skills are required for the implementation of EDI controls, their design should proceed carefully. A data envelopment analysis is the model to analyze the efficiency of controls in the context of finance and trade. The model uses eight variables of formal or automated EDI

controls

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as input and four variables of EDI implementation and performance as output. Automated

controls

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are more efficiently utilized in financial than in trade applications, while formal controls are more efficiently used in trade applications. Every company

can determine

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the relative amount of reduction in each mode or component of controls in order to make the control system efficient. z Business – commercial, industrial, or professional dealings

z Commerce –

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the buying and selling of goods, especially on a large scale z Trade – the act or instance of buying or selling These simple definitions make one thing very clear

to stay in business; a company must execute transactions with other parties. While all companies desire to engage

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in such transactions, advances in the use of certain technologies may actually

present barriers to their doing so – especially with specific trading partners. 3.11 EDI APPLICATIONS IN E-COMMERCE The

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dictionary mentioned above also defines e-commerce as "commerce that is transacted electronically, as over the internet." As larger suppliers and retailers have advanced their use of certain technologies – specifically Electronic Data Interchange (EDI) – they have been able to conduct business more efficiently. As these companies have

mandated the use of

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similar technologies by their trading partners, many small to mid-market companies have become disadvantaged in

their attempts to "trade"

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with such firms. EDI is a set of protocols for conducting electronic business over computer networks. Traditionally, these networks have been private WANS; but EDI is now done over the Internet. EDI defines the electronic exchange of structured business data, such as purchase orders, invoices, and shipping notices, typically between one organization and another. The relationship is usually between a vendor and customer. For example, EDI provides a way for a customer's computer to place orders

for goods with

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a vendor's computers, based on reorder levels. The EDI system coordinates the transaction, initiates deliveries, and generates invoices. It is important to differentiate between EDI and electronic commerce. Electronic commerce encompasses all aspects of electronic business exchanges, including person-

to-person interaction (collaboration), money transfers, data sharing and exchange, Web site merchant systems, and so on.

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EDI is a subset of electronic commerce that encompasses the exchange of business information in a standardized electronic form. Standard form defines things like the layout of information for an invoice or purchase order. EDI can reduce costs, workforce requirements, and errors associated with retyping orders, invoices, and other documents. With EDI, computer data already entered by one

organization is

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made available to a business partner. EDI is typically handled using store-and-forward technologies similar to e-mail.

A third party such as GEIS
45 Electronic Data Interchange 45 (General Electric Information

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Service) often serves as a "middleman" to help organizations establish business relationships and handle business transactions. EDI can be thought of in terms of messages exchanged between businesses that are engaged in electronic commerce. Within a message is a basic unit of information called the data element. A message may consist of many data elements. For example, each line item on an invoice is a data

element. All the

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data elements form a compound document, which is essentially a business form. An EDI message also includes a field definition table that provides information about the data elements in

the message,
such as whether an element is mandatory or optional, how many characters it has, and whether it is numeric or alphabetic. String identifiers define things like data element names and a data dictionary reference number. The data element dictionary defines the content and meaning of data elements.

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EDI was first developed by the automobile/transportation industry in the 1970s. Today, it is widely used in a variety of industries, including distribution, finance and accounting, health care, manufacturing, purchasing, retail, tax form filing, and shipping. Early EDI packages used rather simple standard forms that forced companies to convert data to fit the forms. Newer EDI systems allow companies to create custom systems using simple programming or authoring tools. Even more recently, EDI has been adapted for the Internet and to work with XML,

as discussed later. There are two approaches to implementing EDI. Many large organizations acquire or build their own proprietary systems, often in association
with their business

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partners. If a business partner is small, it may have little choice but to adopt the proprietary

system of

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its much larger business associate. The other approach is to work with a VAN (value added network) provider, which provides EDI transaction services, security, document interchange assistance, standard message formats, communication protocols, and communication parameters for EDI. Most VANs also provide a network on which to transmit information. In many ways, the Internet is a better medium for implementing EDI than using value added network providers or installing private leased lines. The Internet is already in place as a business-to-business communication

system. The startup

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costs are cheaper and, in most cases, the organization is already connected

to the Internet. This makes

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it easier for more businesses to join the electronic commerce web, especially those who previously could not afford the expense of EDI. The use of VPNs is growing for EDI and e-commerce-related traffic. A VPN can secure and give preferential

treatment to

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EDI traffic. The term extranet is usually used to refer to a secure Internet connection between trading partners. The protocol for VPNs are L2TP (Layer 2 Tunneling Protocol), PPTP (Point-to-Point

Tunneling Protocol), and

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the IETF's IPSec (IP Security). See "VPN (Virtual Private Network)."

Check Your Progress 1. What do you understand by EDI? .... 2. Mention some notable users of EDI. .... 3. What are the different layers of EDI Architecture? .... Contd... 46 46 e-Commerce 4. EDI stands for ..... 5. ACH stands for ..... 6. CHIPS stands for ..... 7. SWIFT stands for ..... 3.12 LET US SUM UP Electronic Data Interchange (EDI) is defined as the interprocess communication (computer application to computer

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application) of business information in a standardized electronic form. The EDI, trading partners establishes computer-computer links that enables them to exchange information electronically. Electronic

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Data Interchange is the interchange of standard formatted data between computer application systems of trading partners with minimal manual intervention. Electronic data interchange is the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard

to structure an EDI message. Electronic Data Interchange (EDI)

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is widely-used technology for the automated exchange of documents between dissimilar

applications. The high penetration levels of Electronic Data Interchange (EDI),

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a mechanism for inter- organizational electronic commerce, has revolutionized the way organizational conduct their business.

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EDI is a set of protocols for conducting electronic business over

computer networks.

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The EDI system coordinates the transaction, initiates deliveries, and generates invoices. It is important to differentiate between EDI and electronic commerce.

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EDI is a subset of electronic commerce that encompasses the exchange of business information in a standardized electronic form.

A message may consist of many data elements.

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The data element dictionary defines the content and meaning of data elements. 3.13

KEYWORDS Electronic Data Interchange (EDI): It is defined as the interprocess communication (computer application to computer application) of business information in a standardized electronic form. JCP: Job Control Programmes. 3.14 QUESTIONS

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FOR DISCUSSION 1. Discuss the EDI architecture. 2. Explain EDI transaction steps. 3. What is meant by EDI? 4. What are the advantages of EDI?

Check Your Progress: Model Answers 1.

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EDI is based on a set of standardized messages for the transfer of structured data between computer applications. It may have many applications e.g., sending the test results from the pathology laboratory to the hospital or dispatching exam results from exam boards/university to school/college, but it is primarily used for the trade exchanges: order, invoice, payments and many other transactions that can be used in national and international trade exchange.

Contd...
47 Electronic Data Interchange 47 2.

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Notable users of EDI are vehicle assemblers, ordering components for their production lines, and supermarkets (and other multiple retailers), ordering the goods needed to restock their shelves. EDI allow the stock control/material management system of the customer to interface with the stock control/production systems of the suppliers without the use of paper documents or the need of human intervention. 3. The EDI

architecture has four layers and these are: (a) Semantic (Application) Layer (b) Standard Translation Layer (c) Packing (Transport) Layer (d) Physical Network Infrastructure Layer 4. Electronic Data Interchange 5. Automated Clearing House 6. Clearing House Interbank Payment System 7. Society for Worldwide Interbank Financial Telecommunication 3.15

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e-Commerce LESSON 4 ENABLING TOOLS FOR E-COMMERCE CONTENTS 4.0 Aims and Objectives 4.1 Introduction 4.2 HTML 4.3 XML 4.4 WML 4.5 Overview of WML 4.6 WAP 4.7 Importance and Benefits of WAP 4.8 Origin of WAP 4.9

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Let us Sum up 4.10 Keywords 4.11 Questions for Discussion 4.12 Suggested Readings 4.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Describe HTML, WML and WAP z Explain importance of WAP 4.1 INTRODUCTION From mainframes to accounting systems, the Personal Computer (PC) revolution, local area networks, electronic data interchange, client/server design, and enterprise resource planning have all had a hand in shaping today's business organization. The past few years have been Internet years, however, when companies worldwide have embraced a change without equal. It is a change that I promises to have more impact and be more lasting than anything we have seen to date.

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Technology is setting the pace for how a company does business, how it launches new products and enters anew market, how it deals with suppliers, and how it communicates with customers and others in the new marketplace.

We are now living in the ICE age which reflects synergetic combination of Information, Communication and Entertainment. The primary technology for this transformation is Internet – the global data network. The customer has become more important with the advent of Internet and World Wide Web (WWW). These customers fall in the high-income groups and are more demanding on quality and price. This makes the business very unconventional and highly unpredictable.

49 Enabling Tools for e-Commerce 49 4.2 HTML HTML is a subset of Standard Generalized Mark up Language (SGML) which is an ISO Standard for defining the structure and managing the contents of HTML. SGML is an international standard for the definition of device independent, system independent methods of representing texts in electronic form. The word 'markup; is used to describe annotations or marks which are placed in the text to show how a particular passage/text should be printed or laid out. These days use Dynamic Hypertext Mark up Language (DHTML) to make websites more interactive and user friendly. HRML can be compared to word processor. Just as word processor help in formatting document files, similarly, HRML defines a way to format text in web pages HTML is standardized and portable. In other words, it means that a text, which is designed on one computer using HTML, will look exactly the same way when viewed on different computers using different operating systems and having different configurations. Some features of Web page designing include: z Styling of text z Images z Font size and type z Forms z Sound and multimedia z Frames z Video clips. 4.3 XML Extensible Markup Language is related to both SGML and HTML. It's related to SGML in that both HTML and XML are considered subsets of SGML. But HTML is a rather static SGML implementation – with fixed tags and focus primarily on the presentation of content in a browser rather than the meaning or context for the content. XML, on the other hand, has little or no focus on presentation. XML is all about context and meaning. This allows people to use XML to create custom markup tags (or "tagsets") designed for their specific needs, instead of trying to force their application to fit within the constraints of HTML or their document within the constraints of a word processing program. For example, imagine a bunch of chemists and chemistry teachers trying to design a web site that displayed the structure of molecules. Their choices for an HTML implementation might involve having a picture or image of every molecule and then displaying that static picture on demand. But that's a tedious process – and there are a lot of molecules! Better would be a way to describe the molecules and the molecular structure and have a program draw the molecule dynamically for a chemist or student. That's not do-able with HTML. However, given the expertise to write the "drawing" program and some agreement on how to represent a molecule it is do-able with XML. In fact, the CML or ChemML standard and the JUMBO browser accomplish the above task. Consider the ChemML file that describes the bufotenin molecule:

50 50 e-Commerce Partial bufotenin.xml file Following this standard for representing molecule information, now allows programmers to code a viewer to enable the display of the bufotenin.xml file in a graphical format. One such browser program was the JUMBO plug-in for Internet Explorer. >molecule convention="MDLMol" id="bufotenin" title="BUFOTENINE"< >date day="22" month="11" year="1995"< >/date< >atomArray< >atom id="a1"< >string builtin="elementType"<C>/string< >float builtin="x2"<-1.6045>/float< >float builtin="y2"<0.1596>/float< >/atom< >atom id="a2"< >string builtin="elementType"<C>/string< >float builtin="x2"<-1.6045>/float< >float builtin="y2"<1.6675>/float< >/atom< >atom id="a3"< >string builtin="elementType"<C>/string< >float builtin="x2"<-0.525>/float< >float builtin="y2"<-0.3738>/float< >/atom< >atom id="a4"< >string builtin="elementType"<C>/string< >float builtin="x2"<-2.7679>/float< >float builtin="y2"<-0.6972>/float< >/atom< >atom id="a5"< >string builtin="elementType"<N>/string< >float builtin="x2"<-0.525>/float< >float builtin="y2"<2.1043>/float< >/atom<

51 Enabling Tools for e-Commerce 51 When displayed using the Jumbo plug-in, the bufotenin.xml file looks considerably more usable: This is just one example of what is possible with XML. Similar to ChemML is MathML, which provides a way for math expressions to be included in Web pages. Both of these XML tagsets highlight the requirements for using XML successfully: z A specific group or community had a specific need that could not be readily met with word processor documents or HTML documents; z That group or community used XML to define a markup language specification (called a DTD or XML Schema) that was designed to meet their needs; z An application or program was designed (and written) to display or process XML files that conformed to this agreed-upon specification. 4.4 WML WML is based on XML, a markup language that has garnered enormous support due its ability to describe data (HTML, meanwhile, is used to describe the display of data...a big difference). While HTML predefines a "canned" set of tags guaranteed to be understood and displayed in a uniform fashion by a Web browser, XML allows the document creator to define any set of tags he or she wishes to. This set of tags is then grouped into a set of grammar "rules" known as the Document Type Definition, or DTD.
52 52 e-Commerce WML – the Wireless Markup Language – is the language now used to write content for WAP phones. The alternative, HDML (Handheld Device Markup Language), can be taken to be obsolete. WML is a 'markup' language. This means that WML pages are written and saved as text files, using 'tags' like those found in HTML. Anyone familiar with HTML should find learning WML fairly easy. There are, however, some important general differences between HTML and WML. These stem from the fact that WML is specified in XML (the eXtensible Markup Language). XML specifies a general way to define different types of markup languages, and has the following quirks: z XML-specified languages are case sensitive. So, for instance, a tag >Wml< is different from a tag >wml<. This is unlike HTML, where case is generally ignored. z XML-specified languages are strict. Most HTML editors are very forgiving about badly coded HTML pages, and do their best to show some content. WML editors, however, will just report an error if given a badly coded WML page. z All the attributes of elements must be contained within either double (") or single (') quotes. This is slightly different from HTML where attributes need not be contained within quotation marks for most browsers. z One way in which WML is strict is that all tags crave closure. For instance, an opening >wml< tag must have a closing >/wml< tag. Some tags don't come in pairs and are allowed to close themselves; these must have a forward slash at the end of their text, like >br/< The following script doesn't contain any viewable content, but demonstrates the elements that every WML page should have. The line numbers are given just for our benefit, and shouldn't be included in an actual script. Line 1 identifies that the document is written in the finalised version of XML. Line 2 states that the document is a WML document of version 1.1, which is the current standard. Until the newer versions of WAP are introduced, you can just copy lines 1 and 2 for each WML document you produce. Lines 3 and 4 contain the opening >wml< tag, and the closing >/wml< tag. There can only be one such pair of tags in any single WML document, and everything else in your WML document must be placed between these tags. 4.5 OVERVIEW OF WML WML is a markup language based on XML (Extensible Markup Language). It is designed for specifying user interface behavior and displaying content on

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wireless devices such as phones, pagers, and PDAs (Personal Digital Assistants). The

Wireless Application Protocol (WAP) Forum, an industry organization dedicated to developing open standards for wireless communication, has provided a formal specification for WML. 1. >?

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xml version="1.0"?< 2. >!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN" "http://www.wapforum.org/DTD/wml_1.1.xml"< 3. >wml< 4. >/

wml<

53 Enabling Tools for e-Commerce 53 WML Devices WML is designed to support a range of devices, which typically have the following characteristics: z Small display size (relative to conventional personal computers) z Limited memory and CPU size z Low bandwith, high-latency wireless connectivity The devices that currently support WML fall into two principal categories: z Phones – which typically feature text displays of 4 to 10 lines and support user input through numeric and function keys. z Personal Digital Assistants (PDAs) – which typically feature display resolutions of 100X100 pixels (or better) and support enhanced user input through keypads, pointers, or handwriting recognition. It is anticipated that as handheld devices with sophisticated capabilities, such as voice recognition, become available, many of them will also support WML. Because WML supports a variety of devices with different capabilities, this document describes it with reference to a "least common denominator device" or "reference device". The reference device has the following characteristics: z A display area having a width of 12 (fixed-size) characters and a height of 4 lines, including one line reserved for function key labels (described below) z Support for the ASCII printable character set z Numeric and alphabetic character entry z Choice selection (using arrow or numeric keys) z Two programmable function keys, referred to as ACCEPT and OPTIONS, the labels for which appear above the key in the phone display area z A PREV key for navigating backward z Vertical scrolling with arrow keys z Horizontal scrolling of non-wrapping lines. 4.6 WAP An important landmark in the world of communications came with the introduction of WAP for accessing the universal Internet-based information by means of wireless devices.

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Wireless Application Protocol (WAP) is an application environment and group of communication protocols for wireless devices modeled to activate manufacturer-vendor and technology-independent access to the Internet and advanced telephony services. 4.7

IMPORTANCE AND BENEFITS OF WAP WAP fills the void between the mobile world and the Internet as well as corporate intranets and provide the ability to present a wide range of mobile value-added services to subscriber-independent of their network, bearer and terminal. Mobile subscribers can access the same information from a pocketsize device as they can use with the desktop.
54 54 e-Commerce WAP bridges the gap between the mobile world and the Internet as well as corporate intranets and offers the ability to deliver an unlimited range of mobile value-added services to subscribers—independent of their network, bearer, and terminal. Mobile subscribers can access the same wealth of information from a pocket-sized device as they can from the desktop. 4.8 ORIGIN OF WAP WAP is a global standard and is not controlled by any single company. Ericsson, Nokia, Motorola, and Unwired Planet founded the WAP Forum in the summer of 1997 with

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the initial purpose of defining an industry-wide specification for developing applications over wireless communications networks. The

WAP specifications define a set of protocols in application, session, transaction, security, and transport layers, which enable operators, manufacturers, and applications providers to meet the challenges in advanced wireless service differentiation and fast/flexible service creation. There are now over one hundred members representing terminal and infrastructure manufacturers, operators, carriers, service providers, software houses, content providers, and companies developing services and applications for mobile devices. For more information, you can visit the WAP Forum at http://www.wapforum.org/. Check Your Progress 1. Define WML.
.....
..... 2. Define WAP.
.....
..... 4.9 LET US SUM UP Internet and associated technologies promise to revolutionize inter-enterprise business processes by enabling seamless information exchange between business partners. If the Intranet network is connected to the Internet, the Intranet will reside behind a firewall and, if it allows access from the Internet, will be an Extranet. 4.10 KEYWORDS Wireless Application Protocol (WAP): It

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is an application environment and group of communication protocols for wireless devices modeled to activate manufacturer-vendor and technology-independent access to the Internet and advanced telephony services.

Wireless Markup Language (WML): It

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is a lightweight markup language, analogous to HTML, but optimized for use in hand-held mobile terminals. 4.11

QUESTIONS FOR DISCUSSION 1. Briefly explain the concept of Internet. 2. Distinguish between Extranet and Intranet. 55 Enabling Tools for e-Commerce 55 3. What are the advantages of WML? 4. What is the importance of wireless application protocol? Check Your Progress: Model Answers 1. WML is a markup language based on XML (Extensible Markup Language). It is designed for specifying user interface behavior and displaying content on wireless devices such as phones, pagers, and PDAs (Personal Digital Assistants). 2.

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Wireless Application Protocol (WAP) is an application environment and group of communication protocols for wireless devices modeled to activate manufacturer-vendor and technology-independent access to the Internet and advanced telephony services. 4.12

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SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

Elias. M. Awad, Electronic Commerce, Prentice Hall of India Pvt. Ltd. 2002. Efraim Turban, Jae Lee, David King, H. Michael Chung, Electronic Commerce – A Managerial Perspective, Addison-Wesley, 2001. Elias M Award, Electronic Commerce from

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Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 56 56

e-Commerce LESSON 5 E-COMMERCE PROCESS CONTENTS 5.0 Aims and Objectives 5.1 Introduction 5.2 Computer System 5.2.1 Central Processing Unit (CPU) 5.2.2 Memory or Storage 5.2.3 Input/Output Devices 5.3 Client Server Concept 5.4 Consumer Oriented Applications 5.5 Mercantile Process Models 5.5.1 Pre-purchase Preparation 5.5.2 Purchase Consummation 5.5.3 Post-purchase Interaction 5.5.4 Issues in Customer Care and Service 5.6 Consumer's Perspective 5.7 Merchant's Perspective 5.7.1 Customer Enquiry and Order Generation 5.7.2 Pricing of Product 5.7.3 Receipt of Order and Entry 5.7.4 Acceptance of Order and Prioritisation 5.7.5 Production Schedule 5.7.6 Order Fulfilment and Delivery 5.7.7 Billing 5.7.8 Customer Service and Support 5.8

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Let us Sum up 5.9 Keywords 5.10 Questions for Discussion 5.11 Suggested Readings 5.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Explain

client server concept of computers z Describe the mercantile perspective approach z Describe consumer perspective approach
57 e-Commerce Process 57 5.1 INTRODUCTION E-Commerce business

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processes define interaction models between consumers and merchants for on-line commerce. This is essential as to buy and sell goods, a buyer, seller, and other parties must interact in ways that represent some standard business processes.

It is believed

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that a common way of doing business over the I-way will be essential to the future growth of e-commerce. A well-established standard process for processing credit,

debit and smart

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card purchases has contributed to the widespread dissemination of credit,

debit and smart cards. The war against ever-increasing on-line transaction-processing costs requires new technologies and

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weapons. Designing and implementing new mercantile processes is the most powerful weapon available to wage that war effectively. The designing and developing a common mercantile process (or set of processes) is expected to increase convenience for consumers.

Lack

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of a common process for managing and completing transactions will result in electronic commerce being entangled in a mesh of bilateral ad hoc mechanisms that are specific to every company doing business

on-line. Before designing and developing new e-commerce

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process models, it is prudent to review existing business process models used in the manufacturing and retailing industries.

It aims to

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provide the understanding required to determine the features needed in an architectural model designed specifically for electronic commerce. Within the scope of such architecture, demonstrate the ability to solve all the problems that the current

and future consumer-oriented business processes requirements.

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The idea behind a general architecture is that it would lead to a set of methods and tools from which specific protocols can be easily implemented. 5.2

COMPUTER SYSTEM Technological change is becoming a driving force in our society. Information technology is a generic term used for a group of technologies. James William (1982) has identified the following six major new technologies as most relevant in modern library and information system. 1. Processor, memory and input/out put channels, 2. Micro. Mini and Large scale computers, 3. Mass storage technologies, 4. Data communication, networking and distributed processing, 5. Data entry, display respond, and 6. Software. These technologies can also be grouped into three major areas: 1. Computer Technology, 2. Communication Technology and 3. Reprographic, Micrographic and Printing Technologies. A computer is a data processor. It can accept input (data and instructions), remember the input by storing it in memory cells, process the stored input by performing calculations and by making logical comparisons, and it can communicate or output information. In a simple way, a computer is a machine that carries out instructions. The set of instructions, which tell a computer to execute a series of specific tasks, is called a program. A computer is more accurately referred to as a computer system consisting of hardware, the physical components, and software, the programs that control it.

58 58 e-Commerce Computer hardware consists of input devices, output devices, circuitry, memory, and the Central Processing Unit (CPU) where processing and operations are performed. Input devices, such as a keyboard or mouse, are the means by which the computer takes in symbolic data and instructions. Output devices, such as the monitor or printer, are the means by which the computer sends out the symbolic results. Computer System Figure 5.1: Computer System 5.2.1 Central Processing Unit (CPU) The CPU is the brain that controls the rest of the hardware. It is made up of three different parts: the processor, Arithmetic Logic Unit (ALU) and internal memory. The processing unit or processor controls all the other parts of the computer. It accepts input and stores it in the memory and it interprets the instructions in a computer program. The Arithmetic Logic Unit (ALU) performs various operations, such as addition, subtraction, multiplication, division, as well as others. It performs logical operations by comparing two numbers. It can determine the smaller number, larger number or determine if the two numbers are equal. It can also check whether a number is positive, negative or zero. The processor and the ALU use a small amount of the internal memory; most data are stored in external memory devices using hard or floppy disk drives that are attached to the processor. 5.2.2 Memory or Storage Large amount of data is stored on a computer using various types of storage media. The storage media are distinguished by their relative speed and capacity. z Volatile Storage: Information residing in such storage needs continuous power supply. The contents are lost if power supply is switched off. Some of the eg. Are main memory and cache memory. Access to volatile storage is very fast, both because of the technology used and because of the access method z Non Volatile Storage: Such storage does not require power supply to retain their contents. E.g. Like storage media, disks and magnetic tapes. Disk is used for online storage, while tapes are used for archival storage. Disks and magnetic tapes are reliable storage media.

59 e-Commerce Process 59 Memory or storage refers to physical memory that is internal to the computer. The word main is used to distinguish it from external mass storage devices such as disk drives. Another term for main memory is RAM. The computer can manipulate only data that is in main memory. Therefore, every program you execute and every file you access must be copied from a storage device into main memory. The amount of main memory on a computer is crucial because it determines how many programs can be executed at one time and how much data can be readily available to a program. Because computers often have too little main memory to hold all the data they need, computer engineers invented a technique called swapping, in which portions of data are copied into main memory as they are needed. Swapping occurs when there is no room in memory for needed data. When one portion of data is copied into memory, an equal-sized portion is copied (swapped) out to make room. Table 5.1: Commonly Used Names and Abbreviations for Storage Capacity Name Abbreviation Number of Bytes Byte B 1 kilobyte KB 1024 Megabyte MB 1024×1024 Gigabyte GB 1024×1024×1024 Terabyte TB 1024×1024×1024×1024 Memory Types Figure 5.2: Memory Systems Types of Main Memory: Memory can be of various types like Random Access Memory (RAM) and Read-Only Memory (ROM). RAM has become the synonym for main memory. As the name suggests, any location of the memory can be accessed randomly and the access time too is independent of the location. It is very fast and the access time is in nano seconds. RAM is volatile which means that its contents are lost in absence of power. DRAM is most common kind of RAM. The data is stored in the cell of transistors and capacitors and the data has to be refreshed every few milliseconds. Static random access memory (SRAM) is a type of semiconductor memory where the word static indicates that it, unlike dynamic RAM (DRAM), does not need to be periodically refreshed, but is still volatile in the conventional sense that data is eventually lost when the memory is not powered. The term SDRAM, which stands for synchronous DRAM, should not be confused with SRAM. A part of computer storage is ROM that cannot be erased or changed. ROM is non volatile i.e. its contents are not lost when power is switched off. ROM is required for storing the boot program that should not be lost or Memory Types Random Access Memory (RAM) Read Only Memory (ROM) SDRAM DRAM EPROM PROM

60 60 e-Commerce changed due to any failure. ROM also comes in many flavors such as PROM and EPROM. PROM (Programmable Read Only Memory) is used for storing some specialized application. PROM can be written only once. EPROM (Erasable Programmable Read Only Memory) can be erased and reprogrammed many times. Secondary Storage: It acts as an extension/archive for primary memory and refers to peripherals with both input and output functions. This form of storage is semi-permanent. Examples include: magnetic tapes, magnetic disks (hard disks. floppy diskettes, etc.), optical disks (CD-ROMs, DVD), Flash Drive, Memory Cards, Pen Drive etc. 5.2.3 Input/Output Devices Table 5.2 Category Name of the Device Keyboard Keying Device Punch Card Reader Mouse Touch Screen Joy Stick Pointing Device Light Pen Bar Code Reader Optical Character Recognizer Optical Character Reader Cameras Digitizers (for maps a, graphs etc) Smart Cards Other Devices Telephone Output Devices Printer, Plotter, Fax, Monitor Some of these are explained below. Keying Device Figure 5.3: Keyboard In computing, a keyboard is an input device, partially modeled after the typewriter keyboard, which uses an arrangement of buttons or keys, which act as mechanical levers or electronic switches. A keyboard typically has characters engraved or printed on the keys and each press of a key typically corresponds to a single written symbol. However, to produce some symbols requires pressing and holding several keys simultaneously or in sequence. While most keyboard keys produce letters, numbers or signs (characters), other keys or simultaneous key presses can produce actions or computer commands.

61 e-Commerce Process 61 Figure 5.4: Punch Card Reader A punch card reader reads a punch card or punched card, is a piece of stiff paper that contains digital information represented by the presence or absence of holes in predefined positions. Now almost an obsolete recording medium, punched cards were widely used throughout the 19th century Pointing Device Figure 5.5: Mouse In computing, a mouse is a pointing device that functions by detecting two-dimensional motion relative to its supporting surface. Physically, a mouse consists of an object held under one of the user's hands, with one or more buttons. It sometimes features other elements, such as "wheels", which allow the user to perform various system-dependent operations, or extra buttons or features can add more control or dimensional input. The mouse's motion typically translates into the motion of a pointer on a display, which allows for fine control of a Graphical User Interface. Figure 5.6: Touch Screen A touch screen is a display which can detect the presence and location of a touch within the display area. The term generally refers to touch or contact to the display of the device by a finger or hand. Touch screens can also sense other passive objects, such as a stylus. However, if the object sensed is active, as with a light pen, the term touch screen is generally not applicable. The ability to interact directly with a display typically indicates the presence of a touch screen.

62 62 e-Commerce Figure 5.7: Joystick A joystick is an input device consisting of a stick that pivots on a base and reports its angle or direction to the device it is controlling. Joysticks are often used to control video games, and usually have one or more push-buttons whose state can also be read by the computer. A popular variation of the joystick used on modern video game consoles is the analog stick. Figure 5.8: Light Pen A light pen is a computer input device in the form of a light-sensitive wand used in conjunction with a computer's CRT TV set or monitor. It allows the user to point to displayed objects, or draw on the screen, in a similar way to a touch screen but with greater positional accuracy. A light pen can work with any CRT-based display, but not with LCD screens. Optical Character Recognizer Figure 5.9: Bar Code Reader A barcode reader (or barcode scanner) is an electronic device for reading printed barcodes. Like a flatbed scanner, it consists of a light source, a lens and a light sensor translating optical impulses into electrical ones. Additionally, nearly all barcode readers contain decoder circuitry analyzing the barcode's image data provided by the sensor and sending the barcode's content to the scanner's output port.
63 e-Commerce Process 63 Figure 5.10: Optical Character Reader Optical character recognition, usually abbreviated to OCR, is the mechanical or electronic translation of images of handwritten, typewritten or printed text (usually captured by a scanner) into machine-editable text. Other Devices Figure 5.11: Digitizers Digitizing or digitization is representing an object, image, document or a signal (usually an analog signal) by a discrete set of its points or samples. The result is called "digital representation" or, more specifically, a "digital image", for the object, and "digital form", for the signal. Figure 5.12: Smart Cards

in any pocket-sized card with embedded integrated circuits which can process data. This implies that it can receive input which is processed by way of the ICC applications and delivered as an output. Output Devices Figure 5.13: Printer
64 64 e-Commerce In computing, a printer is a peripheral which produces a hard copy (permanent human-readable text and/or graphics) of documents stored in electronic form, usually on physical print media such as paper or transparencies. Many printers are primarily used as local peripherals, and are attached by a printer cable or, in most new printers, a USB cable to a computer which serves as a document source. Some printers, commonly known as network printers, have built-in network interfaces (typically wireless or Ethernet), and can serve as a hardcopy device for any user on the network. Individual printers are often designed to support both local and network connected users at the same time. Figure 5.14: Plotter A plotter is a vector graphics printing device to print graphical plots that connects to a computer. There are two types of main plotters. Those are pen plotters and electrostatic plotters. Figure 5.15: Fax Fax (short for facsimile, from Latin fac simile, "make similar", i.e. "make a copy") is a telecommunications technology used to transfer copies (facsimiles) of documents, especially using affordable devices operating over the telephone network. The word telefax, short for telefacsimile, for "make a copy at a distance", is also used as a synonym. Although fax is not an acronym, it is often written as “FAX”.
65 e-Commerce Process 65 Figure 5.16: Monitor A visual display unit, often called simply a monitor or display, is a piece of electrical equipment which displays images generated from the video output of devices such as computers, without producing a permanent record. Most new monitors typically consist of a TFT LCD, with older monitors based around a Cathode Ray Tube (CRT). Almost all of the mainstream new monitors being sold on market now are LCD. 5.3 CLIENT SERVER CONCEPT Client/server network operating systems allow the network to centralize functions and applications in one or more dedicated file servers. The file servers become the heart of the system, providing access to resources and providing security. Individual workstations (clients) have access to the resources available on the file servers. The network operating system provides the mechanism to integrate all the components of the network and allow multiple users to simultaneously share the same resources irrespective of physical location. Novell Netware and Windows 2000 Server are examples of client/server network operating systems. Client/Server Network Figure 5.17: Client/Server Network Advantages of a Client/Server Network z Centralized - Resources and data security are controlled through the server. z Scalability - Any or all elements can be replaced individually as needs increase.

66 66 e-Commerce z Flexibility - New technology can be easily integrated into system. z Interoperability - All components (client/network/server) work together. z Accessibility - Server can be accessed remotely and across multiple platforms. Disadvantages of a Client/Server Network z Expense - Requires initial investment in dedicated server. z Maintenance - Large networks will require a staff to ensure efficient operation. z Dependence - When server goes down, operations will cease across the network. The following list includes some of the more popular peer-to-peer and client/server network operating systems. z Apple Share z Microsoft Windows Server z Novell Netware. 5.4 CONSUMER ORIENTED APPLICATIONS The customer-oriented application for E-Commerce system development presented here is a useful way to identify the customer needs and requirements and incorporate them into the E-commerce system. The aim of the application is to start the system development using a customer centered approach and adjust business practices and processes according to user experiences, competencies and expectations. In the application the customer is defined as the individual who can browse, request information and make a purchase thought the system. The E-Commerce system is managed and maintained by the system administrator. The system administrator is responsible for applying the business processes and logging and analyzing system usage by the customers. The process of system logging and analyzing is very important since it can identify potential problems and pitfalls of system, such as processes that discourage potential users, unjustified delays etc. The application identifies the user experience of the E-Commerce system through four basic sequential business processes, namely: information, ordering, payment and delivery (As illustrated in Figure 5.18). As Figure 5.18 illustrates, the customer activities are divided into four sequential business processes, the customer may exist the cycle at any point thus not completing the transaction. Using the application, we can explore the Web strategies in B2C E-Commerce activities. We shall the same application later on to add the socio-cultural aspects. During the information phase the customer retrieves information on the product/products he is interested in. The Internet as a medium of communication is capable of delivering huge amounts of information to the end user. The pitfall here is not to confuse the end user with complex and irrelevant information resulting in confusion. A confused customer will not continue to the next phase, thus resulting in the loss of business.
67 e-Commerce Process 67 Figure 5.18: Four Phases of the Customer-oriented Application The creation of e-catalogs is an art. The e-catalog should not only convey information on the product but should also reflect the business's quality and values. The design and appearance of the web site is extremely important too. The presentation should be friendly and inviting but also individualized to the company, the navigation through the system should be done in an also intuitive manner. The principles of Human Computer Interaction should be used and applied. Additionally, the system administrator and the system management team should take care for advertising and promoting the Web site through the appropriate channels. Customer use of the site should be monitored and analyzed to comprehend if the site is fulfilling its goals and targets. In the ordering phase the customer after having selected the required products through the use of shopping carts, decides to undergo through the process of providing and completing the order forms. The E-Commerce system should integrate the warehouse management system for instant stock information. The process of ordering should provide the user with simple and clear information on the pricing of the product after the addition of relevant taxes the cost of shipping and the expected delivery date of the product with order codes for quick tracking etc. The experience should be enjoyable as many users quit the ordering at this stage and never become customers. The payment phase completes the transaction and commits both customer and E-Commerce system. In the transaction activity during the payment phase, great emphasis is placed on secure electronic transactions, the facilities for settlement of online purchase and the ability to support a range of payment methods offered by various financial institutions. The local environment should be taken into account since not all payment methods are available everywhere. In certain countries (e.g. China) the use of credit cards is rather limited and customers prefer other methods of payment. The provision of different payment methods is appreciated by the customers. The delivery phase entails the delivery of goods to the customer. This is usually done thought another service provider postal service, courier of the company's own distribution channels. Information on the stage the delivery

68 68 e-Commerce of the product is at can be given through a tracking code. The customer uses the code to track his order online without having to make further inquiries. One of the most critical challenges for E-Commerce system managers is their capacity to create their own delivery channels. Delivery time correlates with web-site manager's creativity in putting together an ad-hoc distribution network. It is often a critical component of customer satisfaction in B2C E-Commerce. In all of these phases the customer requirements and needs are firstly taken into account, so that the experience focuses on the customer's satisfaction. Users from different socio-cultural backgrounds will experience the same site differently and will have different degrees of satisfaction. Check Your Progress 1 1. What is objective of consumer oriented applications? .... 2. Define customer in the context of applications. .... 5.5 MERCANTILE PROCESS MODELS This model help merchants and others understand: why consumers shop on-line, where they shop, and what they buy. What products and sizes do consumers purchase, and why? How often do they shop? How do they respond to promotions? Who shops the competition, and why? Each consumer has a distinct and unique way of doing business and different criteria define various products and services, some generalizations can be made about the way consumers make on-line purchasing decisions. The Mercantile Process Model is discussed in detail. 5.5.1 Pre-purchase Preparation A common mistake is assumptions that e-commerce business models are designed for the Internet. Thus, a direct or one-to-one relationship exists between predisposition to purchase and actual purchase. It would follow from these models that e-commerce could flourish simply by establishing the inclination to purchase a product by creating an attractive WWW pages for that product or service. These consumer behaviour models often fail to acknowledge that there are many types of consumers. There are some shoppers who shop quickly, visit on-line stores fewer times, and do not compare prices. Whereas, others take their time and examine everything minutely.

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Any major purchase can be assumed to involve some amount of pre purchase deliberation,

the extent of which is likely to vary across individuals, products, and purchase situations. The purchase deliberation is defined as the elapsed time between a consumer's first thinking about buying and the

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actual purchase itself information search activities should constitute the major part of

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duration, but comparison of alternatives and price negotiation would be included in

the continually evolving information search and deliberation process. For deliberation, customers should be watchful for new or existing information regarding variables that are important for the purchase decision process. For example, consumer who is currently active in the information search and deliberation process for a new automobile. The purchase of a new car involves an appreciable time lag between the initiation of the information search process and the decision. Through time, information gathered during the search process as well as changing exogenous conditions (an unexpected increase in income, the
69 e-Commerce Process 69 existence of a promotional sale, availability of loans) can either speed up the purchase decision or encourage the consumer to postpone the purchase decision in some fashion (because prices encountered were too high). The purchase deliberation process can often shape the way on-line shopping environments are designed and created. How much time are buyers allocating and spending on their purchasing decisions with respect to various products? What factors account for the differences in consumer decision time? What technology can be used or designed to reduce decision time? What is the right shopping environment that keeps customers happy and wanting to return? Moreover,

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information on customer characteristics associated with reduced purchase deliberation times can be quite valuable when attempting to target selective communications to desired audiences properly.

In brief little attention has been given to this important research area, which may dictate the success or failure of on-line shopping. The consumers can be categorized into three types: 1. Impulsive buyers, who purchase products and services quickly. 2. Patient buyers, who purchase products and services

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after making some comparisons. 3. Analytical buyers, who do substantial research before making the decision to purchase products or services.

The impulsive buying (or unplanned purchasing) fits particularly uneasily into current predisposition models of on-line consumer behaviour. There is no doubt that unplanned purchasing is a major factor in retailing and is said to account for around a third of total purchasing in non-electronic markets. In grocery sectors, impulse buying is in the region of one half or more of total purchases. While the statistics for different industries are not entirely compatible, there is little doubt that in most retailing sectors, impulse/unplanned purchasing is a major factor. The marketing researchers have identified several types of purchasing: 1.

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Generally planned purchases: The need was recognized, but the shopper decided in-store on the actual manufacturer of the item to satisfy the need. 2. Specifically planned purchases: The need was

recognised on entering the store and the shopper bought the exact item planned. 3. Entirely unplanned purchases: The need was not recognized entering

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the store. 4. Reminder purchases: The shopper was reminded of the need by some store influence. This shopper is influenced by in-store advertisements and can substitute products readily.

The important role of the in-store influences on purchasing is indisputable. To assume that the creation of a predisposition to buy is a sufficient explanation of buyer behaviour seems untenable. Creating a predisposition is just one side of the equation. In many instances search and discovery technology as well as organized catalogs or directories are important for inducements to purchasing decisions. Often, search and discovery mechanisms are oriented toward dynamic environments where change makes organisation difficult. Directories or catalogs are oriented toward fairly static environments. The technology for supporting search is extremely important. The existence of electronic commerce could remain unsatisfied unless more effective methods of information search and retrieval based on consumer preferences and behaviour are implemented. (a)

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Information Search Process by Consumers: The degree of care, perception, and effort directed toward obtaining data or information related to

the decision problem is referred to as information search. Earlier research on information search, primarily in the area of economics, focused on understanding search outcomes or results rather than the specific nature of the underlying search processes. The emphasis was on what rather than how. In e-commerce markets, the outcomes may be identical to those obtained in traditional markets, however the process of reaching them is significantly different. In brief, the nature and process

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of consumer search behaviour is undocumented in the existing literature and represents an area that must be better understood before

e-commerce applications can be designed effectively.
70 70 e-Commerce Purchase behaviour in electronic markets differs from traditional retail settings in two ways. First, a retailer is concerned with simply inducing purchase through the use of marketing mix variables (retail and/or manufacturer rebates, list, price discounts, trade-in allowances). Second, a retailer is interested in inducing purchase now, rather than later. Thus coupon books and other tools likely to induce a consumer to make decisions quickly can have important implications on the purchasing process. In electronic markets, in contrast, we have limited understanding of the marketing mix variables effective in inducing purchases. Also, the issue of information dissemination is major problem. If we create coupon books, how do we get them to the on-line customer without flooding the network with junk mail. To solve both problems, a better understanding of consumer behaviour in on-line markets technology is essential. In the context of e-commerce, information search can be classified into two categories: organisational and consumer search. (b) Organisational Search Process: Organisational search can be viewed as a process through which an organisation adapts to such changes in its external environment as new suppliers, new products, and new services. More narrowly, purchasing departments inside organisations search for information about specific courses of action, such as the purchase of equipment. In general, organisational

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search is an activity designed to balance the cost of acquiring information with the benefits of improved final decisions.

The search can characterized in terms of the overall effort made by the buyer to obtain information from the external environment and in terms of the overall duration, or the length of time between the first initiation of information gathering activities and the time when all of the information considered necessary to make a decision has been collected. The organizational search process is determined in part by market characteristics (such as pace of change and technological complexity) and by certain aspects of firm's present buying situation (switching costs and prior experience).

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Together, these dimensions impose a series of demands on the search process used.

Certain forces may represent disincentives to search. For example, organizational buyers commonly have strong vertical vendor relationships based on prior purchases of previous versions of a particular product. Such vendor relationships may involve non-trivial levels of switching costs that represent a disincentive for buyers to search outside the established vendor portfolio and may result in constrained search processes. Furthermore, current vendor relationships may constrain buyers' search processes indirectly by insulating them from market information. As a consequence, buyers with strong vendor relationships may generally perceive less change to be taking place and hence have a low incentive to engage in search. (c) Motivation of Search by Consumers: What motivates various types of search (e.g., impulse purchasing, compulsive shopping, window shopping, or browsing)? Consumer motivation can be viewed in terms of two questions: "Why is the consumer shopping?" and "What was in it for the consumer?" These questions imply that an on-line shopping experience can be valuable, or valueless, "fun" or a "chore". Broadly speaking, on- line shopping experiences can be categorized into two distinct dimensions: utilitarian and hedonic value. These dimensions reflect the distinction between carrying out a shopping activity "to achieve a goal" (utilitarian) as opposed to doing it because "you love it" (hedonic). Marketing experts acknowledge that shopping experiences can produce both utilitarian and hedonic value. Organisational search is often considered utilitarian. Generally, shopping's utilitarian aspects have garnered the majority of attention in the design of today's systems. Utilitarian behavior has often been portrayed as task-related and rational, implying that a product is purchased in a deliberate and efficient manner. It is also conceivable that a purchase is not a necessary motivator of shopping. For example, value may result from a consumer collecting information to get some ideas and prices on various possibilities. The utilitarian dimension is often equated with a work mentality and may be useful in explaining the "chore aspect of

71 e-Commerce Process 71 shopping" alluded to earlier. For example, utilitarian value may help explain why few consumers browse through on-line stores, which most feel is an arduous and time-consuming process. Compared to utilitarian aspects, the fun or hedonic aspect of shopping has not been explored much in the context of electronic commerce. Hedonic value is more subjective and personal than its utilitarian counterpart and results from fun and playfulness rather than from task completion. Thus hedonic shopping value reflects shopping's potential entertainment, increased arousal, heightened involvement, perceived freedom, fantasy fulfilment, and escapism. Here the purchase of products may be incidental to the entire experience of shopping. In other words, people buy so they can shop, not shop so they can buy. Furthermore, vicarious consumption through virtual reality can provide hedonic value by allowing a consumer to enjoy a product's benefits without purchasing it. Consumers may also receive hedonic value through bargain perceptions. Some people like to hunt for bargains and when they find a really cheap "bargain," that fact alone can provide increased excitement. (d) Role of Information Brokers: Intermediaries called information brokers or brokerages have come into existence

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to facilitate better consumer and organisational search. Information brokerages are needed for three reasons: comparison-shopping, reduced search costs, and integration.

Information formerly found at more or less the same high prices on all the on-line database search services can sometimes be found at other service bureaus at minute fractions of those charges. Why pay more when you can get information for less if you comparison shop? This is a good thing for consumers who want to save money and for business professionals whose bosses like to see more value for budget expenditures. Recently, many on-line information providers have moved to a consumer services model, where they provide not only inexpensive access but lots of free information. If information brokers are so great, why are we not seeing more of them? The primary reason is that most on-line services allow subscriber or account holders to utilize the information for their own betterment as long as they don't resell the information or claim it as their own. Nothing prohibits corporate or university librarians from checking stock quotes, researching newspapers, or reading PR Newswire, but information brokers are usually not welcome. This mindset has to change if e-commerce is to proliferate and become more efficient. 5.5.2

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Purchase Consummation After identifying the products to be purchased, the buyer and the seller must interact in some way to actually carry out the mercantile transaction. A mercantile transaction is defined as the exchange of information between the buyer and the seller followed by

the necessary payment. Depending on

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the payment model mutually agreed on, they may interact by exchanging

currency that is backed by a third party (a central bank) or by transferring authorisations for a credit billing organisation (VISA, MasterCard). Clearly, the actual details of the interaction would be different for these payment models.

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A single mercantile model will not be sufficient to meet the needs of

every one. Just as there are multiple mercantile models in the non-electronic world, it is quite possible that multiple mercantile models will eventually be used.

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In very general terms, a simple mercantile protocol would require the following transactions:

z Buyer contacts vendor to purchase product or service. This dialogue might be interactive on-line-through World Wide Web (WWW), e-mail, off-line through an electronic catalog and telephone. z Vendor states prices. z

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Buyer and vendor may engage in negotiation. z If satisfied, buyer authorises payment to the vendor with an encrypted transaction containing

a digital signature for the agreed price. z Vendor contacts his or her billing service to verify the encrypted authorisation for authentication.
72 72 e-Commerce z Billing service decrypts authorisation and checks buyer's account balance or credit and puts a hold on the amount of transfer. (Billing service may need to interact with buyer's bank). z Billing service gives the vendor the "green light" to deliver product and sends a standardised message giving details of transaction (e.g., authorisation number) for merchant's records. z

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On notification of adequate funds to cover financial transaction, vendor delivers the goods to buyer or in the case of information purchase provides a cryptokey to unlock the file. z On receiving the goods, the buyer signs and delivers receipt. Vendor then tells billing service to complete the transaction.

z

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At the end of the billing cycle, buyer receives a list of transactions.

Buyer can then either deny certain transactions or complain about overbilling. Suitable audit or customer service actions are then initiated depending on the payment scheme. Customers have two choices: to pay before receiving goods or services (by cash, debit card) or to receive goods or services and consume them before paying (by credit card). Note that in the first case there is no way of knowing the quality of goods or services until consumption, which occurs following payment. For instance, a customer who views a movie in a theater after paying in cash risks that the movie's technical quality is insufficient and then will have to spend time trying to convince the movie provider to refund the cash. Alternatively in a pay-per-view situation, the customer can view the movie and then pay, with the option of refusing to pay if the quality is not satisfactory .The provider has to provide better customer service in the second case than in the first because the customer can Inform the bank or credit card company to stop payment. Hence, depending on the payment form chosen, the specifics of the mercantile protocol vary .To understand the purchase process better, let us examine two types of the

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mercantile protocols where the payment is the form of electronic cash and credit cards. 1. Mercantile

Transaction using Digital Cash: Electronic currency (e-cash) is created by
a bank.

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Such currency is simply a series of bits that the issuing bank can verify to be valid. This currency is kept

secure (unforgeable)

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by the use of cryptographic techniques. After being issued some e-cash, a buyer can transfer

it to a seller in exchange for goods. Upon receiving the e-cash, the seller

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can verify its authenticity by sending it to the issuing bank for verification. E-cash issuing banks make money by charging either buyers or sellers a transaction fee for the use of their e-cash. Electronic cash is similar to paper currency and has the benefits of being anonymous and easily transmitted electronically. It still entails the risk of theft or loss, however, and so requires significant security by the buyer when storing e-cash.

The following is a generic mercantile protocol based on the use of e-cash: (a) Buyer obtains anonymous e-cash from issuing bank. (b) Buyer contacts seller to purchase product. (c) Seller states price. (d) Buyer sends e-cash to seller. (e) Seller contacts his bank or billing service to verify the validity of the e-cash. (f) Bank gives okay signal to seller after ensuring the e-cash hasn't been duplicated or spent on other products. (g) Seller delivers the product to buyer. (h) Seller tells bank to mark the e-cash as "used" currency. 2. Mercantile Transaction using Credit Cards: Two major components that comprise credit card transactions in the mercantile process are: electronic authorisation and settlement. In a retail transaction, a Third-Party
73 e-Commerce Process 73

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Processor (TPP) captures information at the point of sale, transmits the information to the credit card issuer for authorization, communicates a response to the merchant, and electronically stores the information for settlement and reporting. Once the information leaves the

merchant's premises, the entire process takes two to five seconds. The benefits of electronic processing include the reduction of credit losses, lower merchant transaction costs, and faster consumer checkout and merchant-to-bank settlement.

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Credit authorisation is processed at point-of-sale terminals using dial-up telephone access into the TPP networks

such as GEIS or Advantis network.

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The credit card number is checked against the database and the transaction is either approved or denied, typically within seven seconds. A similar procedure is

also used for debit cards and check verification. The transaction data are recorded at the time of authorization at both the point-of-sale location and the processor's data center in order to protect against potential loss of data. In addition to data capture redundancy, TPP provides multiple routing capabilities for a high level of access to electronic authorization.

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Once the electronic authorisation function is completed, the information is processed within the system for client reporting. The data are then transmitted for settlement to the appropriate institution or processor.

A retail transaction usually involves the following steps: (a) A customer presents a credit card for payment at a retail location. The card reader-either a freestanding "credit card terminal," the store's electronic cash register, or a PC-based point-of-sale device-scans the information on the card's magnetic stripe. (b) The point-of-sale software directs the transaction information to the local network access point. If the primary local point cannot make a connection to accept the transaction, it is automatically rerouted to a secondary access point. (c) Once in the network, the system verifies the source of the transaction and routes it to the appropriate authorization source, where the cardholders' account record is reviewed. An authorization code is then sent back through the network for display on the point-of-sale device. System redundancy provides alternative routing paths and data center processing capability if primary routing is unavailable. Transaction information is captured both in the network system and in the point-of-sale device. (d) Periodically, the retail location initiates a "close-out" transaction that bundles completed transaction information into a "batch". Transaction count and financial totals are confirmed between the terminal and the network, and a series of reports can be printed out at the retail location. This transaction clears the terminals software for anew batch of transactions. (e) The system gathers all completed batches and processes the data in preparation for settlement. The process identifies for each merchant the appropriate settlement location by card type and prepares detailed reports and files that are routed to the designated settlement bank for VISA and Master Card transactions. For the Discover Card, American Express, and other card types, settlement information is provided directly to the card issuer. For private label transactions, settlement occurs within the system.

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After the transaction is complete, a set of activities related to account settlement are initiated. In a credit or debit transaction, the merchant's account is credited and either

the card issuer is notified to enter the transaction on the cardholder's monthly statement or the cardholder's checking account is debited automatically. VISA and Master Card transaction data are transmitted to the settlement institution selected by the client (Citibank, for example). The

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settlement institution then enters the transaction data into the settlement process. In addition to data

capture and settlement functions, the electronic transaction processing business also provides other services including a twenty-four-hour network "help" desk, which responds to inquiries from merchant locations regarding terminal, communication, and training issues. Other services include terminal sales and
74 74 e-Commerce maintenance of point-of-sale equipment, customized reporting, debit card processing, check verification, and check guarantee. The pricing of electronic transaction services provided by TPP to merchant clients takes either of the following two forms: (a) In the first form, merchants are charged a flat fee per transaction for authorisation and data capture services. A merchant discount rate for the settlement function is contracted separately. The merchant discount rate is the difference between the amount charged by the cardholder and the amount the settlement institution pays to the merchant, usually expressed as a percentage of the credit card sale. (b) The other form of billing allows merchants to pay a "bundled" price for "authorization, data capture, and settlement. The merchant pays one fee in the form of a merchant discount rate to the settlement institution. An agreed-upon fee is then paid by the settlement institution to TPP. As technology improves, credit card usage is on the rise, even though card-based transactions carry higher direct costs than cash transactions. These costs accrue from sophisticated cash registers with modem attachments, phone charges for calls to the transaction center, bank charges, and staff time for paperwork completion. According to a recent study, the average direct cost of cash transactions is 7 cents, compared with 30 cents for online debit transactions and 81 cents for credit card transactions. 3.

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Cost of Electronic Purchasing: On the surface, cash seems to be preferable to electronic payments.

A more careful examination reveals why retailers are embracing electronic payment methods, such as on-line debit, credit, and electronic check authorisation. When indirect elements such as float gains, allocation of equipment costs, and accounting costs are factored in, many firms are finding that accepting debit is less expensive than pocketing cash for transactions. Another reason that firms may be attracted to electronic payment options is that

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consumers appear to spend more when using cards than when

a spending cash. 5.5.3

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Post-purchase Interaction As long as there is payment for services, there will be

refunds, complaints and

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other customer service issues that need to be considered. Returns and claims are an important part of

the

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purchasing process that impact administrative costs, scrap and transportation expenses, and

customer relations.

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In the ongoing relationship with the customer, this step can produce some of the most heated disagreements; every interaction becomes a zero-sum game that either the company or the customer wins. To compound the problem, most companies design their mercantile processes for one-way merchandise flow: outbound to the customer.

That means returns and claims must flow upstream, against the current, creating logistical messes and transactional snarls-and extremely dissatisfied customers. 5.5.4 Issues in Customer Care and Service z Inventory issues: To serve the

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customer properly, a company should inform a customer right away when an item ordered is sold-

not with a rain check or back-order notice several days later. On the other hand, if the item is in stock, a company must be able to assign that piece to the customer immediately and remove it from available inventory. Otherwise, the company will have a disappointed customer who knows he or she doesn't have to put up with such problems and tries to find alternative products. z

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Database access and compatibility issues: Unless the customer can instantly access all the computers of all the direct-response vendors likely to advertise on the Information Superhighway – on a real-time basis, with compatible software –

he or she is not likely to get the kind of service that customers normally get by calling an 800 number. Generally, when consumers call an 800 number, they are connected directly to an operator who has instant access to the merchant's inventory and database.
75 e-Commerce Process 75 z

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Customer service issues: Customers often have questions about the product (color, size, shipment),

want expedited delivery, or have one of a myriad of other things in mind that can be resolved only by talking to an order entry operator. In sum, ordering merchandise simply by pushing a button on a remote control device is inherently complex and is not likely for all types of products or services-despite the promises and hype. 5.6 CONSUMER'S PERSPECTIVE The online consumer expects value quality, convenience, low price, and control.

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To meet these expectations and understand the behaviour of the online shopper, there is a need for

a business process model that provides a standard product/services purchasing process from interactive and dynamic services and merchandising point of view.

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The business process model from a consumer's perspective consists of

seven activities that can be grouped into three

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phases: 1. Pre-purchase phase 2. Purchase consummation 3. Post-purchase interaction Pre-purchase Preparation Phase It includes search and discovery for a set of products in the larger information space capable of meeting customer requirements and product selection from the smaller set of products based on attribute comparison.

Purchase
Consummation Phase It includes e-commerce business

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protocols that specify the flow of information and documents associated with purchasing and negotiation with merchants for suitable terms, such as price, availability, and delivery dates; and electronic payment mechanisms that integrate payment into the purchasing process.

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Post-purchase Interaction Phase It includes customer service and support to address customer complaints, product returns, and

product defects. 5.7 MERCHANT'S PERSPECTIVE

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The order-to-delivery cycle from the merchant's perspective is generally managed with an eye towards standardisation and cost. This view,

developed over the last five decades, is based

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on the assumption that an organisation must create a set of operating standards for service and productivity, then perform to those standards while minimising the cost of doing so. Often, when orders

are delivered,

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the company measures how the actual delivery stacks up against the guidelines for that activity and what the action costs. If the service standards are met with minimal expense, the company judges the delivery successful. The strengths of this philosophy lie in:

z
A company's ability to take the position

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of low-cost provider z Its stress on benchmarking service z Its emphasis on responsiveness as well as continuous improvement. However, this model is incomplete for e-commerce. As an operations- focused, inward-looking vision, it's out of sync with the e-commerce accent on flexibility, customisation, and customer service. Those companies concentrating on performance standards and cost metrics may be headed for big trouble in the e-commerce environment, because the nature of products and services is dramatically different. Instead of asking whether the 76 76

e-Commerce customer's needs were met

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effectively, the traditional view is concerned with the percentage of cases of products that were shipped on time and at what cost. To fully realise and maintain a competitive advantage in the on-line environment, a company must build a robust vision of what its order-to-delivery

cycle, and all the business processes that support
it, should be. To achieve a

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better understanding, it is necessary to examine the Order Management Cycle (OMC) that encapsulates the more traditional order-to-delivery cycle. The typical OMC includes

eight distinct activities, although overlapping may occur. The actual details
of
OMC vary from industry to industry

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and may differ for individual products and services. However, OMC has the following generic steps. 5.7.1 Customer Enquiry and Order Generation The business process begins long before an actual order is placed by the customer. What happens in the first step, order planning, already shows how and why lack of cohesive operations

can cripple a company:

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Those farthest from the customer make crucial decisions and open up debate between interdependent functions right from the start. For example, people close to the customer, either in the sales force or in a marketing group at company headquarters, develop a sales forecast. At the same time, a group in the operations or manufacturing function drafts a capacity plan that specifies how much money will be spent, how many people will be hired, and how much inventory will be created. The production planners often develop the final forecast used to hire workers and build inventory. The lack of internal communication can cause the final result to differ significantly from what is actually needed. Order planning leads into order generation. Orders are generated in a number of ways in the e-commerce environment. The sales force broadcasts ads (direct marketing), sends personalised e-mail to customers (cold calls), or creates a WWW page. Regardless of the specific marketing approach, the result is almost always the same. The sales and marketing functions worry about order generation, and the other functions stay out of the way. Little coordination takes place across functional boundaries. 5.7.2 Pricing of Product Pricing is the bridge between customer needs and company capabilities. But most companies do not understand how to execute order-based pricing in

on-line

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markets. Pricing at the individual order level depends on understanding the value to the customer that is generated by each order, evaluating the cost of filling each order; and instituting a system that enables the company to price each order based on its value and cost. Although order-based pricing is difficult work that requires meticulous thinking and deliberate execution, the potential for greater profits is simply worth the effort. Often, battles erupt between engineers who do the estimation, accountants who tabulate costs, management that oversees pricing, and the sales force that actually quotes a price. Each group questions the judgement, competence, and goals of the others. Meanwhile, of course, the customer waits for the bid or quote, unattended. 5.7.3 Receipt of Order and Entry After an acceptable price quote, the customer enters the order receipt and entry phase of OMC. Traditionally, this was under the purview of departments variously titled customer service, order entry, the inside sales desk, or

customer

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liaison. These departments are staffed by customer service representatives, usually either very experienced, long-term employees or totally inexperienced trainees. In either case, these representatives are in constant contact with customers. 77

e-Commerce Process 77 5.7.4 Acceptance of Order

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and Prioritisation Customer service representatives are often responsible for choosing which orders to accept and which to decline. In fact, not all customer orders are created equals; some are simply better for the business than others. In particular, the desirable orders are those that fit the company's capabilities and offer healthy profits. These orders fall into the "sweet spot" region, which represents a convergence of great customer demand and high customer satisfaction, which in turn translates into customer retention. The importance of order selection and prioritisation is another important matter. Companies that put effort into order selection and link it to their business strategy stand to make more money, regardless of production capacity. In addition, companies can make gains by the way they handle order prioritisation-that is, how they decide which orders to execute faster. These decisions are usually made not by top executives who articulate corporate strategy but by staff who have no idea what that strategy is. While customer service reps decide which order gets filled when, they often determine which order gets lost in limbo. In sum, there is little recognition of the importance that should be placed on order selection and prioritisation in e-commerce. 5.7.5 Production Schedule During the ordering scheduling phase the prioritised orders get slotted into an actual production or operational sequence. This task is difficult because the different function departments-purchasing, marketing, customer service, operations, or production-may have conflicting goals, compensation systems, and organizational imperatives: Production people seek to minimize equipment changeovers, while marketing and customer service reps argue for special service for special customers. And if the operations staff schedules orders unilaterally, both customers and their reps are completely excluded from the process. Communication between the functions is often non-existent, with customer service reporting to sales and physically separated from production scheduling, which reports to

manufacturing or operations. The result is lack of interdepartmental coordination. Check Your Progress 2 Fill in the blanks: 1. The ..... is responsible for applying the business processes and logging and analysing system usage by the customers. 2. In the context of e-commerce, information search can be classified into two categories: ..... and ..... search. 3. Two major components that comprise credit card transactions in the mercantile process are: ..... and ..... 5.7.6 Order

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Fulfilment and Delivery During the order fulfilment and delivery phase, the actual provision of the product or service is made. Often, order fulfilment involves multiple functions and locations: Different parts of an order may be created in different manufacturing facilities and merged at yet another site, or orders may be manufactured in one location, warehoused in a second, and installed in a third. In some businesses, fulfilment includes third-party vendors. In service operations, it can mean sending individuals with different

talents to the customer'

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s site. The more complicated the task, the more coordination required across the organisation. And the more coordination required, the greater the chance that the order is delayed. 78 78 e-Commerce 5.7.7 Billing After the order has been fulfilled and delivered, billing is handled by the finance staff, who view their job as getting the bill out efficiently and collecting quickly. In other words, the billing function is designed to serve the needs and interests of

the company, not the customer.

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Often customers don't understand the bill they receive, or they believe it contains inaccuracies. The bill may not be inaccurate, but it is usually

constructed in away

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more convenient for the billing department than for the customer. 5.7.8 Customer Service and Support This phase plays an increasingly important role in all elements of a firm's profit equation: customer value, price, and cost. Depending on the specifics of the business, it can include such elements as physical installation of a product, repair and maintenance, customer training, equipment upgrading, and disposal. Because of the information conveyed and intimacy involved, posts ales service can affect

customer satisfaction and company

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profitability for years. But in most companies, the post sales service people are not linked

to any marketing operation, internal product-development effort, or quality assurance team. 5.8 LET US SUM UP E-commerce business processes define interaction models between consumers and merchants for on-line commerce. A well-established standard process for processing credit, debit and smart

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card purchases has contributed to the widespread dissemination of credit,

debit and smart cards. The system administrator is responsible for applying the business processes and logging and analyzing system usage by the customers.

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Information brokerages are needed for three reasons: comparison-shopping, reduced search costs, and integration.

Two major components that comprise credit card transactions in the mercantile process are: electronic authorisation and settlement. A customer presents a credit card for payment at a retail location. The point-of-sale software directs the transaction information to the local network access point.

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Pricing is the bridge between customer needs and company capabilities.

93% **MATCHING BLOCK 266/390** W

This task is difficult because the different function departments – purchasing, marketing, customer service, operations, or production – may have conflicting goals, compensation systems, and organizational imperatives: Production people seek to minimize equipment change-overs, while marketing and customer service reps argue for special service for special customers. 5.9

KEYWORDS E-commerce Business Process: It defines interaction models between consumers and merchants for on-line commerce. Impulsive Buyers: The person who purchases products and services quickly. Patient Buyers: The person who purchases products and services after making some comparisons. Analytical Buyers: The person

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who do substantial research before making the decision to purchase products or services.

E-commerce Customer: A person who can browse, request information and make a purchase thought the system. Mercantile Transaction: It

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is defined as the exchange of information between the buyer and the seller followed by

the necessary payment. 5.10 QUESTIONS FOR DISCUSSION
79 e-Commerce Process 79 1. What are the different types of purchasing? 2. What are the different types of buyers? 3. Describe the information search process by consumers. 4. Explain the issues in customer care and service of e-commerce. 5. Write the following steps of retail transaction. Check Your Progress: Model Answers CYP 1 1. The aim of the application is to start the system development using a customer centered approach and adjust business practices and processes according to user experiences, competencies and expectations. 2. In the application the customer is defined as the individual who can browse, request information and make a purchase thought the system. CYP 2 1. System administrator 2. Organizational, consumer 3. Electronic authorization, settlement 5.11

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e-Commerce LESSON 6 ENCRYPTION CONTENTS 6.0 Aims and Objectives 6.1 Introduction 6.2 Encryption 6.3 How Encryption Works? 6.4 Symmetric or Secret Key Encryption 6.5 Public Key Encryption 6.6 Digital Encryption Standards (DES) 6.7 Triple—DES 6.8 RSA System 6.9 Comparison between Symmetric and Public Key Encryption 6.10 Digital Signature 6.11 Digital Certificate 6.12 Certificate Authority 6.13 Enterprise Authentication using Digital Certificates 6.14

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Let us Sum up 6.15 Keywords 6.16 Questions for Discussion 6.17 Suggested Readings 6.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Understand the concept of
encryption z Describe secret and public key encryption z Describe DES z Describe digital signature z Describe digital certificate concept 6.1 INTRODUCTION Encryption is essentially the process of encoding – or hiding – the information you send across the internet in a way that it can only be read by the person or website it is meant for. There are various ways this is handled on the net.

81 Encryption 81 Encryption uses a “key” – a certain sequence of numbers that is unique and only "known" by your computer and the one you're sending information to. When your computer sends the information out, it scrambles it by using this key as a basis. This scrambled information would be gibberish to anyone who didn't have the correct key to unscramble it at the other end. When the information reaches its destination, it gets unscrambled by using the key. This lets the person or website read the information correctly at the other end. Websites that use an encrypted connection use something called SSL (Secure Sockets Layer) to secure the information going back and forth. This is how websites like Amazon or your bank can ensure your private information like passwords and credit card numbers are safe from prying eyes. There are different strengths of encryption codes. 40 bit encryption is the simplest, but it is relatively easy to crack. Most secure websites use 128 bit encryption, which is practically impossible to decode. You might even see 256 bit encryption is some very high-security cases. 6.2 ENCRYPTION Encryption is a process of coding information which could either be a file or mail message in into cipher text a form unreadable without a decoding key in order to prevent anyone except the intended recipient from reading that data. Decryption is the reverse process of converting encoded data to its original un-encoded form, plaintext. A key in cryptography is a long sequence of bits used by encryption/decryption algorithms. For example, the following represents a hypothetical 40-bit key: 00001010 01101001 10011110 00011100 01010101 A given encryption algorithm takes the original message, and a key, and alters the original message mathematically based on the key's bits to create a new encrypted message. Likewise, a decryption algorithm takes an encrypted message and restores it to its original form using one or more keys. When a user encodes a file, another user cannot decode and read the file without the decryption key. Adding a digital signature, a form of personal authentication, ensures the integrity of the original message. To encode plaintext, an encryption key is used to impose an encryption algorithm onto the data. To decode cipher, a user must possess the appropriate decryption key. A decryption key consists of a random string of numbers, from 40 through 2,000 bits in length. The key imposes a decryption algorithm onto the data. This decryption algorithm reverses the encryption algorithm, returning the data to plaintext. The longer the encryption key is, the more difficult it is to decode. For a 40-bit encryption key, over one trillion possible decryption keys exist. There are two primary approaches to encryption: symmetric and public-key. Symmetric encryption is the most common type of encryption and uses the same key for encoding and decoding data. This key is known as a session key. Public-key encryption uses

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two different keys, a public key and a private key.

One key encodes the message and the other decodes it. The public key is widely distributed while the private key is secret. Aside from key length and encryption approach, other factors and variables impact the success of a cryptographic system. For example, different cipher modes, in coordination with initialization vectors and salt values, can be used to modify the encryption method. Cipher modes define the method in which data is encrypted. The stream cipher mode encodes data one bit at a time. The block cipher mode encodes data one block at a time, although block cipher tends to execute more slowly than stream cipher.

82 82 e-Commerce 6.3 HOW ENCRYPTION WORKS? Encryption or encoding information helps prevent it by unauthorized user. Both the sender and receiver have to know what set of rules (called cipher) was used to transform original information in to its cipher text (code) form – cipher text. Simple cipher might to be add an arbitrary number of characters to all the character in the message. Ex: say "Udupa"—is the original name "Irida"—is the cipher text (arbitrary no. chosen is "!2") 1 2 3 4 5 6 7 8 9 10 11 12 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z The decrypt (decode) "Irido", First, start counting letter "I" & replace the letter "I" in the coded text with the letter which comes after the count 12. So, "I" is replaced by "U", similarly for other letters to get back the original name "udupa" It is clear from the above example that both the sender and recipient has to know the arbitrary number chosen in order to encrypt & decrypt the original message. Basically encryption has two parts: z Algorithm – a cryptographic algorithm is mathematical function. z Key – string of digit. In the above example counting forward (to decrypt) & backward (encrypt) is the algorithm part. Key used is 12. Cryptographic algorithm combines the plain text or other intelligible information with a string of digit called key's to produce unintelligible cipher text. But some encryption algorithms do not use a key. Encryption on key-based system offers two important advantages. z It is difficult to come up with new-algorithm each time to communicate privately with new correspondent. By using a key, same algorithm can be used with many people with different key for each correspondent. z It is easy to change the key in case of any mal-practice rather than going for a new algorithm. The number of keys each algorithm can support depends on the number of bits in the key. Ex-8 bit key allows only 256 possible numeric combinations, each key is called a key of 2 8 . Hence more the digits (bit – length) more the possible keys and more difficult to crack an encrypted message. For example, to unlock a physical number zero and nine, at one stage the lock-gets unlocked. If it is a three digit decimal number, the possible combinations vary from 000-999. Similarly if a 1000 bit (binary) key were used on a computer which is capable of guessing one million keys every second could still take many centuries to discover the right key hence the security of the encryption algorithm correlates with the length of the key. Trying each possible key to find the right one to get back original message is called Brute-force method. 6.4 SYMMETRIC OR

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SECRET KEY ENCRYPTION With secret key cryptography, a single key is used for both encryption and decryption. As shown in Figure 6.1, the sender uses the key (or some set of rules) to encrypt the plaintext and sends the ciphertext to the receiver. The receiver applies the same key (or

rule-set)

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to decrypt the message and recover the plaintext. Because a single key is used for both functions, secret key cryptography is also called symmetric encryption. With this form of cryptography, it is obvious that the key must be known to both the sender and the receiver; that, in fact, is the secret. The biggest difficulty with this approach, of course, is the distribution of the key. 83

Encryption 83

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Secret key cryptography schemes are generally categorized as being either stream ciphers or block ciphers. Stream ciphers operate on a single bit (byte or computer word) at a time and implement some form of feedback mechanism so that the key is constantly changing. A block cipher is so-called because the scheme encrypts one block of data at a time using the same key on each block. In general, the same plaintext block will always encrypt to the same ciphertext when using the same key in a block cipher whereas the same plaintext will encrypt to different ciphertext in a stream cipher.

Figure 6.1: Secret-key Cryptography

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Stream ciphers come in several flavors but two are worth mentioning here. Self-synchronizing stream ciphers calculate each bit in the keystream as a function of the previous n bits in the keystream. It is termed "self-synchronizing" because the decryption process can stay synchronized with the encryption process merely by knowing how far into the n-bit keystream it is. One problem is error propagation; a garbled bit in transmission will result in n garbled bits at the receiving side. Synchronous stream ciphers generate the keystream in a fashion independent of the message stream but by using the same keystream generation function at sender and receiver. While stream ciphers do not propagate transmission errors, they are, by their nature, periodic so that the keystream will eventually repeat. Block Ciphers can operate in one of several modes; the following four are the most important: 1. Electronic Codebook (ECB) mode is the simplest, most obvious application: the secret key is used to encrypt the plaintext block to form a ciphertext block. Two identical plaintext blocks, then, will always generate the same ciphertext block. Although this is the most common mode of block ciphers, it is susceptible to a variety of brute-force attacks. 2. Cipher Block Chaining (CBC) mode adds a feedback mechanism to the encryption scheme. In CBC, the plaintext is exclusively-ORed (XORed) with the previous ciphertext block prior to encryption. In this mode, two identical blocks of plaintext never encrypt to the same ciphertext. 3.

Cipher Feedback (CFB) mode is a block cipher implementation as a self-synchronizing stream cipher. CFB mode allows data to be encrypted in units smaller than the block size, which might be useful in some applications such as encrypting interactive terminal input. If we were using 1-byte CFB mode, for example, each incoming character is placed into a shift register the same size as the block, encrypted, and the block transmitted. At the receiving side, the ciphertext is decrypted and the extra bits in the block (i.e., everything above and beyond the one byte) are discarded. 4. Output Feedback (OFB) mode is a block cipher implementation conceptually similar to a synchronous stream cipher. OFB prevents the same plaintext block from generating the same ciphertext block by using an internal feedback mechanism that is independent of both the plaintext and ciphertext bitstreams.
84 84 e-Commerce 6.5 PUBLIC KEY ENCRYPTION

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Public-key cryptography has been said to be the most significant new development in cryptography in the last 300-400 years. Modern PKC was first described publicly by Stanford University professor Martin Hellman and graduate student Whitfield Diffie in 1976. Their paper described a two-key crypto system in which two parties could engage in a secure communication over a non-secure communications channel without having to share a secret key.

Public-key cryptography, also known as asymmetric cryptography, is a form of cryptography in which a user has a pair of

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cryptographic keys—a public key and a private key. The private key is

kept secret, while the public key may be widely distributed. The keys are related mathematically, but the private key cannot be practically derived from the
public key. A message

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encrypted with the public key can be decrypted only with the corresponding private key.

The two main branches of public key cryptography are: 1. Public key encryption: A message encrypted with a recipient's public key cannot be decrypted by anyone except the recipient possessing the corresponding private key. This is used to ensure confidentiality. 2. Digital signatures: A message signed with a sender's private key can be verified by anyone who has access to the sender's public key, thereby proving that the sender signed it and that the message has not been tampered with. This is used to ensure authenticity. An analogy for public-key encryption is that of a locked mailbox with a mail slot. The mail slot is exposed and accessible to the public; its location (the street address) is in essence the public key. Anyone knowing the street address can go to the door and drop a written message through the slot; however, only the person who possesses the key can open the mailbox and read the message. An analogy for digital signatures is the sealing of an envelope with a personal wax seal. The message can be opened by anyone, but the presence of the seal authenticates the sender. A central problem for public-key cryptography is proving that a public key is authentic, and has not been tampered with or replaced by a malicious third party. The usual approach to this problem is to use a Public-key Infrastructure (PKI), in which one or more third parties, known as certificate authorities, certify ownership of key pairs. Another approach, used by PGP, is the "web of trust" method to ensure authenticity of key pairs. Figure 6.2: Public-key Cryptography

85 Encryption 85 Public key techniques are much more computationally intensive than purely symmetric algorithms. The judicious use of these techniques enables a wide variety of applications. In practice, public key cryptography is used in combination with secret-key methods for efficiency reasons. For encryption, the sender encrypts the message with a secret-key algorithm using a randomly generated key, and that random key is then encrypted with the recipient's public key. For digital signatures, the sender hashes the message (using a cryptographic hash function) and then signs the resulting "hash value". Before verifying the signature, the recipient also computes the hash of the message, and compares this hash value with the signed hash value to check that the message has not been tampered with. 6.6 DIGITAL ENCRYPTION STANDARDS (DES) The Data Encryption Standard (DES) specifies a FIPS (Federal Information Processing Standards) approved cryptography algorithm.

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Encrypting data converts it to an unintelligible form called cipher. Decrypting cipher converts the data back to its original form called plaintext. The algorithm described in these standards specifies both enciphering and deciphering operations which are based on a binary number called a key. A key consists of 64 binary digits (“O”s or “1”s) of which 56 bits are randomly generated and used directly by the algorithm. The other 8 bits, which are not used by the algorithm, are used for error detection. The 8 error detecting bits are set to make the parity of each 8-bit byte of the key odd, i.e. there is an odd number of “1”s in each 8-bit byte.

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Authorized users of encrypted computer data must have the key that was used to encipher the data in order to decrypt it. The encryption algorithm specified in this standard

is commonly known among those using the standard. The unique key chosen for use in a particular application makes the results of encrypting data using the algorithm unique. Selection of a different key causes the cipher that is produced for any given set of inputs to be different. The cryptographic

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security of the data depends on the security provided for the key used to encipher and decipher the data. Data can be recovered from cipher only by using exactly the same key used to encipher it. Unauthorized recipients of the cipher whop know the algorithm but do not have the correct key cannot drive the original data algorithmically. However,

anyone who does have the key and the algorithm can easily decipher the cipher and obtain the original data. A standard algorithm based on a secure key thus provides a basis for exchanging encrypted computer data by issuing the key used to encipher it to those unauthorized to have the data. Data that is considered sensitive by the responsible authority, data that has a high value, or data that represents a high value should be cryptographically protected if it is vulnerable to unauthorized disclosure or undetected modification during transmission or while in storage. A risk analysis should be performed under the direction of a responsible authority to determine potential threats. The costs of providing cryptographic protection using this standards as well as alternative methods of providing this protection and their respective costs should be projected. A responsible authority then should make a decision, based on these analyses, whether or not to use cryptographic protection and this standard.

DES divides the message into 64 bit block of plain text and a 56-bit key is used on the blocks to encrypt the block. The same key is used for encryption and decryption. The algorithms available as a software product and also as hardware chip. A simplified DES algorithm is presented below, in Figure 6.3. The DES algorithm is well known. However, since the key is only 56 bit long, there is some concern about security of data. A modification to DES is triple-DES and this improves the security aspects considerably.
86 86 e-Commerce Block of 64 bits Encryption Key Figure 6.3: Data Encryption Standard Algorithm Plain text 56 bit key Left 32 bits Right 32 bits 26 bits 28 bits XOR Process further New Left 32 bits New Right 32 bits Repeated 15 times? 64 bit Cipher text block Encrypt key split into two parts In every iteration bits from part shift by 1 bit Yes No
87 Encryption 87 6.7 TRIPLE—DES To strengthen DES, the DES encryption and decryption are done three times using either two keys or three keys as shown in Figure 6.4. 3 Key DES encryption 2 Key DES encryption Figure 6.4: 2 and 3 key DES Encryption Algorithm 6.8 RSA SYSTEM RSA is an Internet encryption and authentication system that uses an algorithm developed in 1977 by Ron Rivest, Adi Shamir, and Leonard Adleman. The RSA algorithm is the most commonly used encryption and authentication algorithm and is included as part of the Web browsers from Microsoft and Netscape. It's also part of Lotus Notes, Intuit's Quicken, and many other products. The encryption system is owned by RSA Security. The company licenses the algorithm technologies and also sells development kits. The technologies are part of existing or proposed Web, Internet, and computing standards. How the RSA System Works The mathematical details of the algorithm used in obtaining the public and private keys are available at the RSA Web site. Briefly, the algorithm involves multiplying two large prime numbers (a prime number is a number divisible only by that number and 1) and through additional operations deriving a set of two numbers that constitutes the public key and another set that is the private key. Once the keys have been developed, the original prime numbers are no longer important and can be discarded. Both the public and the private keys are needed for encryption/decryption but only the owner of a private key ever needs to know it. Using the RSA system, the private key never needs to be sent across the Internet. The private key is used to decrypt text that has been encrypted with the public key. Thus, if I send you a message, I can find out your public key (but not your private key) from a central administrator and encrypt a message to you using your public key. When you receive it, you decrypt it with your private key. In addition to encrypting messages (which ensures privacy), you can authenticate yourself to me (so I know that it is really you who sent the message) by using your private key to encrypt a digital certificate. When I receive it, I can use your public key to decrypt it. A table might help us remember this. (Table 6.1). Plain text Encrypt with key 1 Encrypt with key 2 Encrypt with key 3 Cipher text Plain text Encrypt with key 1 Encrypt with key 2 Encrypt with key 3 Cipher text

88 88 e-Commerce Table 6.1 To do this Use whose Key Send an encrypted message Use the receiver's Public key Send an encrypted signature Use the sender's Private key Decrypt and encrypted message Use the receiver's private key Decrypt an encrypted signature (and authenticate the sender) Use the sender's Public key Check Your Progress 1 1. FIPS Stands for .....
..... 2. List important block ciphers.
.....
..... 6.9 COMPARISON BETWEEN SYMMETRIC AND PUBLIC KEY ENCRYPTION Symmetric Key Encryption Symmetric cryptography involves a single, secret key, which both the message-sender and the message-recipient must have. It is used by the sender to encrypt the message, and by the recipient to decrypt it. Symmetric cryptography provides a means of satisfying the requirement of message content security, because the content cannot be read without the secret key. There remains a risk exposure, however, because neither party can be sure that the other party has not exposed the secret key to a third party (whether accidentally or intentionally). Symmetric cryptography can also be used to address the integrity and authentication requirements. The sender creates a summary of the message, or 'Message Authentication Code (MAC)' encrypts it with the secret key, and sends that with the message. The recipient then re-creates the MAC, decrypts the MAC that was sent, and compares the two. If they are identical, then the message that was received must have been identical with that which was sent. A major difficulty with symmetric schemes is that the secret key has to be possessed by both parties, and hence has to be transmitted from whomever creates it to the other party. Moreover, if the key is compromised, all of the message transmission security measures are undermined. The steps taken to provide a secure mechanism for creating and passing on the secret key are referred to as 'key management'. The technique does not adequately address the non-repudiation requirement, because both parties have the same secret key. Hence the other, and a claim by either party not to have sent a message is credible, because the other may have compromised the key expose each to the risk of fraudulent falsification of a message. Public Key Cryptography (Encryption) Whereas symmetric cryptography has existed, at least in primitive forms, for 2,000 years asymmetric approaches were only invented in the mid-1970s.
89 Encryption 89 Public key cryptography involves two related keys, referred to as a 'key-pair', one of which only the owner knows (the 'private key') and the other which anyone can know (the 'public key'). The advantages of asymmetric encryption are: z Only one party needs to know the private key; and knowledge of the public key by a third party does not compromise the security of message transmissions. z The crack a mere 40 or 56 bit asymmetric key would be trivially simple, because there are far fewer of keys available (or, expressed more technically, the 'key-space' is relatively 'sparse'). It is currently conventional to regard a 1024-bit asymmetric key-length as being necessary to provide security. Because of the much greater key-length, encryption and decryption require mush core processing power, or, for a given processor, significantly more processing time. Messages are sent in large volumes; so the resulting delays are of considerable consequence. 6.10 DIGITAL SIGNATURE Like the conventional signature, the digital signature assures all concerned that the contents of the electronic messages are authentic, are really sent by the sender on the date and time recorded. All these functions can be performed using the public-key encryption techniques and the message digests techniques. As the message exchange and electronic commerce applications grow, the importance of digital signatures will increase. Let us take the case that you ordered a few dresses from an electronic store. The seller wants to make sure that your order is genuine and has come from you, the information in the order is accurate and has been modified on the network, and finally you will not disown the order. Signing Process z Prepare the message. All the mail and messaging software including messaging programs like Microsoft exchange have all the needed software for handling digital signatures. z Create a message digest for the message using the secret key, which the sender is sharing with the recipient. z Encrypt the message and the digest with the private key of the sender. At this stage the document is signed as the message is authenticated with the private key of the sender. If required, send also the digital certificate of the sender, as it contains the public key of the sender. The sender should not encrypt this digital certificate, so as top facilitate easy retrieval of the sender's public key by the recipient. z Send the cipher text and the digital certificate to the recipient. z The recipient retrieves the public key of the sender using his/her private key. z The recipient decrypts the cipher text. z Recipient runs the message digest algorithm on the message, using the secret key shared with the sender. z Compare the computed message digest with the received message digest. If they are the same, then the message reached intact. Otherwise the message was tampered.

90 90 e-Commerce Figure 6.5: Transaction with Signature Each message produces a random message digest using the conversion formula. Private key is used to encrypt that digest to obtain digital signature. Or in other words encrypts message digest (private key is used for encryption) called digital signature. encrypt with sender private key (hash function message digest) Digital signature → _____→ Verification of Digital Signature Say person X is sending the message to person Y. Message Message digest algorithm Message digest 9673 1045 Encryption algorithm Cipher text Secret key of the sender, shared with the recipient Private key of the sender Message Mess Dig Algorithm Computed Mess Dig Mess Digest Comparison Decryption Algorithm Cipher text and Dig Cert Send Cipher and Dig Cert Public Key Dig Cert 5 and 6 Decrypt message and Dig using Pub Key of the 4 E-Mail from sender to recipient Tampered if both inputs are not equal Not tempered if the inputs are equal 1. Prepare message 2. Create message digest 3. Encrypt the message and the digest with the private key of the sender
91 Encryption 91 Steps z To send the message (X sends to Y) ™ Develop message digest for each message. Using hash function. ™ Encrypt the digest using "X"-private key [digital signature] ™ Combine the plain text (X's-message) with signature, and send it to person 'Y' through Internet. z To receive message (Y receive) ™ Decrypt the 'digital signature' with 'X' public key ™ Calculate the message digest using hash function. [person Y uses the same hash-functions as that of person X, which was agreed upon before hand] ™ Compare the each message digest, calculated and decrypted. ™ If both message digest's are same (one which is sent by X, and the one which is generated by Y) – then it is authentic – if not signature or message has been tempered. Advantages of Digital Signature Unauthorized person's can access to the public key of person 'X", but cannot have his (X) hash function, which makes the digital signature authentic.
Disadvantages As the body of the message is sent as plain text, privacy is not maintained. To overcome this difficulty when privacy is important one could use symmetric algorithm for plain text. 6.11 DIGITAL CERTIFICATE Digital certificates, or certs, simplify the task of establishing whether a public key truly belongs to the purported owner. A certificate is a form of credential. Examples might to your driver's license, your passport, or your birth certificate. Each of these has some information on it identifying you and some authorization stating that someone else has confirmed your identity. Some certificates, such as your passport, are important enough confirmation or your identity that you would not want to lose them, lest someone use them to impersonate you. A digital certificate is data that functions much like a physical certificate. A digital certificate is information included with a person's public key that helps others verify that a key is genuine or valid. Digital certificates are used to thwart attempts to substitute one person's key for another. A digital certificate consists of three things: 1. A public key certificate information ("Identity" information about the user, such as name, user ID and so on). One or more digital signature (of the CA) 2. The purpose of the digital signature on a certificate is to state that the certificate information has been attested to by some other person or entity. The digital signature does not attest the authenticity of the certificate as a whole, it vouches only that the information, which the certifying authority has signed, goes along or is bound to the public key listed in the certificate. 3. Basic aim to conduct secure and safe electronic transaction. Asymmetric cryptography allows a merchant distribute his (merchants) public key to all his correspondents, may be e-mail, or server, while keeping the private key secure (confined to himself only). But these key pairs can be generated by any one, third person may generate a pair of key and send that public key to the merchants correspondent, claiming that it has come from the merchant. This allows the third person or party to forge the message in the name of merchant. This is where a "certificate authority" comes into existence.
92 92 e-Commerce 6.12 CERTIFICATE AUTHORITY The certifying authority is a digital entity that binds the identity of a person to his public key. The certifying authority certifies that a person is the holder of a valid key pair and that person's identity has been authenticated by the certifying authority or its agents. The certifying authority thus performs functions that are quasi-governmental and by their very nature require a high amount of trust and security. A certifying authority creates the digital certificate and digitally signs it using its own private key. When any third person wishes to verify the authenticity of a subscriber's certificate, he uses the CA's public key. The certifying authority thus validates the certificate and establishes a trust model for the third party into a transaction with the subscriber. Digital certificate is defined as a method to verify (ex. Public Key's) electronically for authenticity. A certificate authority will accept merchant public key, along with some proof of the identity of the merchant who sends it. Others (correspondents) can request fro verification of merchant's public key from the certificate authority. Contents of ONES Digital Certificate It includes: z Holder's name, organization, address. z The name of certificate authority. z Public key of the holders for cryptographic use. z Time limit, these certificates are issued for 6 months to a year long. z Class of certificate. z Digital certificate identification number.
Table 6.2: Class: Based on Degree of Verification Class 1

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Easiest to obtain, it involves the fewest checks on the user's back-round. (only the name of e-mail address are verified Class 2 I includes user's driver's license. Social security number & date of birth

along with the other (class 1) Class 3 In addition to class 2 checks, user's credit card check is added. Class 4 In addition to class 3 checks, user's position within the organization is added. Higher the class, higher the degree of verification and hence higher the fee payable to commercial or government certificate authorities. Certificate Revocation List (CRL) is maintained by certificate authority. So that the user know which certificate are no longer valid. The CRL doesn't include expired certificate, because each certificate has a built in expiration. Certificate lost may be revoked. One encryption system is not ideal for all situations. One can use more than one encryption method. Table 6.3 shows few algorithms for encryption used by PGP (Pretty Good Privacy). Table 6.3 Function Algorithms used Process Message encryption IDEA, RSA Use IDEA with one time session key generated by sender to encrypt message Encrypt session key with RSA using recipient's public key Digital signature MD5, RSA Generate hash code of message with MD5 Encrypt message digest with RSA using sender's private key.
93 Encryption 93 6.13 ENTERPRISE AUTHENTICATION USING DIGITAL CERTIFICATES When one connects to a secure web server such as https://www.Amazom.com and requests that server to authenticate itself, it has to so complex process involving public keys, private keys and a digital certificate (also known as electronic credentials or digital IDS). They allow verification of the claim that a given public key does in fact belong to a given individual or entity. In other words the digital certificate tells you that an independent third party has agreed that the server belongs to the company it claims to belong to. A valid certificate means that you can have confidence that you are sending information to the right place. Check Your Progress 2 1. Define public key encryption.
.....
..... 2. Define certificate authority.
.....
..... 6.14 LET US SUM UP Encryption is essentially the process of encoding – or hiding – the information you send across the internet in a way that it can only be read by the person or website it is meant for. There are various ways this is handled on the net. There are two primary approaches to encryption: symmetric and public-key. Symmetric encryption is the most common type of encryption and uses the same key for encoding and decoding data. This key is known as a session key. Public-key encryption uses

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two different keys, a public key and a private key.

One key encodes the message and the other decodes it. The public key is widely distributed while the private key is secret. 6.15 KEYWORDS Encryption: Encryption is a process of coding information which could either be a file or mail message in into cipher text a form unreadable without a decoding key in order to prevent anyone except the intended recipient from reading that data. Decryption: Decryption is the reverse process of converting encoded data to its original un-encoded form, plaintext. Digital Signatures: A message signed with a sender's private key can be verified by anyone who has access to the sender's public key, thereby proving that the sender signed it and that the message has not been tampered with. This is used to ensure authenticity. 6.16 QUESTIONS FOR DISCUSSION 1. Explain the concept of digital encryption standards. 2. Write short note on RSA system. 3. Briefly explain digital signature in details. 4. What do you mean by digital certificate?
94 94 e-Commerce Check Your Progress: Model Answers CYP 1 1. Federal Information Processing Standards 2. The important block ciphers are (a) Electronic Codebook (ECB) (b) Cipher Block Chaining (CBC) (c) Cipher Feedback (CFB) (d) Output Feedback (OFB) CYP 2 1. A message encrypted with a recipient's public key cannot be decrypted by anyone except the recipient possessing the corresponding private key. This is used to ensure confidentiality. 2. The certifying authority is a digital entity that binds the identity of a person to his public key. The certifying authority certifies that a person is the holder of a valid key pair and that person's identity has been authenticated by the certifying authority or its agents. 6.17

87%	MATCHING BLOCK 285/390	W

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Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 95

Electronic Payment System 95 LESSON 7 ELECTRONIC PAYMENT SYSTEM CONTENTS 7.0 Aims and Objectives 7.1 Introduction 7.2 Electronic Payment Systems (EPS) 7.3 Virtual Pin 7.4 Digicash (or E-cash) 7.5 Properties of E-cash 7.6 Electronic Cash in Action 7.7 Purchasing E-cash from Currency Servers 7.8 Operational Risk of E-cash 7.9 Cybercash/Cybercoin 7.10 SET (Secure Electronic Transactions) 7.11 PayPal 7.12 Millicent Protocol: Small-amount Internet Payments 7.13 Conventional Payment Process 7.14 EPS Types 7.14.1 Payment through an Intermediary – Payment Clearing Services 7.14.2 Payment Based on EFT – Notational Funds Transfer 7.14.3 Payment Based on Electronic Currency 7.15 Designing EPS 7.16 Smart Cards and EPS 7.17 Credit Card and EPS 7.18

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Let us Sum up 7.19 Keywords 7.20 Questions for Discussion 7.21 Suggested Readings 7.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Describe electronic payment system concept z Explain various types of EPS z Describe the concept of e-cash 96 96 e-Commerce 7.1 INTRODUCTION Most of online purchases are paid for by a credit card. Merchants like credit card payments because an instant authorisation guarantees that the card is valid (as opposed to a check which may bounce). Customers like paying by credit cards because they can easily cancel a transaction in case when they don't receive products or services according to the agreement in the transaction. While some of credit card payments for online services are performed by phone, filling makes most of such payments in an online form. Credit card information submitted by the customer is sent to the bank, which has issued the credit card to verify. If the transaction is approved, the merchant notifies the customer that the order has been placed. The actual transfer of money from the credit card bank to the merchant may happen in a few hours, or even in a few days. Merchants who accept credit card payments pay fee (between 1 and 7 percent of the card charge) for each card charge. In addition, in some cases merchants pay authorization fee for each credit card authorization attempt, as well as other fees related to credit card processing. In case when a customer is not satisfied with the product or a service, or for other reasons, merchants may issue a refund or a charge-back to the customer's account. 7.2 ELECTRONIC PAYMENT SYSTEMS (EPS) Electronic payment systems are non-credit-card online payment systems. The goal of their development is to create analogs of cheque and cash on the Internet, i.e. to implement all or some of the following features: z Protecting customers from merchant's fraud by keeping credit card numbers unknown to merchants. z Allowing people without credit cards to engage in online transactions. z Protecting confidentiality of customers. z In some cases providing anonymity of customers ("electronic cash"). The problems in implementing electronic payment systems, especially anonymous electronic money, are: z Preventing double spending: copying the "money" and spending it several times. This is especially hard to do with anonymous money. z Making sure that neither the customer nor the merchant can make an unauthorized transaction. z Preserving customer's confidentiality without allowing customer's fraud. While electronic payment systems have not gained a very wide popularity, except for PayPal system used on online auctions, such as eBay, they may become more popular in the future if more businesses start using them. Electronic payment systems may be more convenient for international online business due to differences in credit card customer protection laws in different countries. Below we look at examples of online payment systems. Most of these products are no longer used, but the ideas developed by their authors are used in other products. 7.3 VIRTUAL PIN Virtual PIN, started in 1994 by a company called First Virtual Holding, was a system for making credit card payments over the Internet without exposing the credit card number to the merchant. It required no special software for a customer to make a purchase. Virtual PIN relied on difficulty of intercepting and forging e-mail.

97 Electronic Payment System 97 To enroll, a customer gives their credit card information and their e-mail address to the First Virtual (this was done by phone). After the credit card information has been verified, the customer receives their PIN by e-mail. The procedure for purchasing an item using Virtual PIN is as follows: z The customer gives the merchant their Virtual PIN. z The merchant sends the Virtual PIN and the amount of transaction to First Virtual. z First Virtual sends an e-mail to the customer asking to confirm the purchase. z The customer answered "Yes", "No", or "Fraud". If the answer is "Yes", the merchant is informed that the charge has been accepted. If "No", the charge is declined. If the answer is "Fraud", the charge is investigated. Even though no encryption was involved, an eavesdropper could not use a virtual PIN without being able to intercept and answer the e-mail message to confirm the purchase. Unlike credit cards, which carry the customer's name, Virtual PIN provided a customer's anonymity from the merchant. The e-mail confirmation of the transaction served as a protection against merchant's fraud. Unfortunately, while the system has been created for all kinds of online business, the main use of Virtual PIN at the time was for buying and selling pornography. Virtual PIN tried to disassociate itself from this market. Eventually the company abandoned the Virtual PIN and became specialized in sending promotional e-mail. 7.4 DIGICASH (OR E-CASH) The DigiCash (also known as E-cash) is an electronic payment system developed by Dr. David Chaum, who is widely regarded as an inventor of digital cash. The digital cash is very popular in present day business operation. The system was based on digital tokens called digital coins. DigiCash operated as follows: z A customer establishes an account with the bank or other organization that could mint and receive digital coins. The customer's account was backed by real money in some form, for instance it could be linked to the customer's checking account. z The customer also needs to download and install software called electronic wallet. z To obtain DigiCash, the customer uses the electronic wallet to create digital coins. The coins are sent to the bank to sign. When the coins are signed, the equivalent amount of money is withdrawn from the customer's account. In the proposed protocol the customer also had an option of "blinding" the coins. To blind a coin, the customer multiplies it by a random number r before sending it to the bank to sign. The bank signs the data. After the data and its digital signature are sent to the customer, the customer computes the digital signature of the original (non- multiplied) coin by dividing the bank's signature by r. This way the bank doesn't know the coin, but the customer, who knows r, can trace his/her payments. Blind signatures have not been implemented. When the customer wants to make a purchase, he/she sends signed digital coins to the merchant. The merchant verifies the bank's signature and deposits the coins to the bank, where they are credited to the merchant's account. The DigiCash (or E-cash), produced by the company DigiCash BV based in Amsterdam, has never created a market. The company eventually declared bankruptcy. However, the algorithms used in DigiCash are considered fundamental in development of digital money.

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E-cash focuses on replacing cash as the principal, payment vehicle in consumer-oriented electronic payments. Although it may be surprising to some, cash is still the most prevalent consumer payment instrument even after thirty years of continuous developments in electronic payment systems. 98 98

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Cash remains the dominant form of payment for three reasons: 1. Lack of trust in the banking system 2. Inefficient clearing and settlement of non-cash transactions, 3. Negative real interest rates paid on bank deposits.

These reasons seem like issues seen primarily in developing countries. Not true. Even in the most industrialized countries, the ratio of notes and coins in circulation per capita is quite large and is estimated to range from $446 to $2748. Consider the situation in two of the most industrialized nations in world: the United States and the United Kingdom. In the United States, there supposedly was about $300 billion of notes and coins in circulation in 1992. Interestingly, this .number is not shrinking but growing at approximately 8 percent per year. Deposits by check are growing by only 6 percent per year. It has been reported that in the United Kingdom about a quarter of all “spontaneous” payments over 100 pounds sterling are still made with cash. For payments under five pounds sterling, the percentage is 98 percent.

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The predominance of cash indicates an opportunity for innovative business practice that revamps the purchasing process where consumers are heavy users of cash. To really displace cash, the electronic payment systems need to have some qualities of cash that current credit and debit cards lack. For example, cash is negotiable, meaning it can be given or traded to some-one else. Cash is legal tender, meaning the payee is obligated to take it. Cash

is a bearer instrument, meaning that possession is prima facie proof of ownership.

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Also, cash can be held and used by anyone even those who don't have a bank account, and cash places no risk on the part of the acceptor that the medium of exchange may not be good. Now compare cash to credit and debit cards. First, they can't be given away because, technically, they are identification cards owned by the issuer and restricted to one user. Credit and debit cards are not legal tender, given that merchants have the right to refuse to accept them. Nor are credit and debit cards bearer instruments; their usage requires an account relationship and authorization system. Similarly, checks require either personal knowledge of the payer or a check guarantee system. Hence, to really create a novel electronic payment method, we need to do more than recreate the convenience that is offered by credit and debit cards. We need to develop e-cash that has some of the properties of cash. 7.5

PROPERTIES OF E-CASH Of the many ways that exist for implementing an e-cash system, all must incorporate a few common features.

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Specifically, e-cash must have the following four properties: monetary value, interoperability, irretrievability, and security. 1. E-cash must have a monetary value, bank authorized credit, or a bank-certified cashier's check. When e-cash created by one bank is accepted by others, reconciliation must occur without any problems. Stated, another way, e-cash without proper bank certification carries the risk that when deposited, it might be returned for insufficient funds. 2. E-cash must be interoperable-that is, exchangeable as payment for other e-cash, paper cash, goods or services, lines of credit, deposits in banking accounts, bank notes or obligations, electronic benefits transfers, and the like. Most e-cash proposals use a single bank. In practice, multiple banks are required with an international clearinghouse that handles the exchange-ability issues because all customers are not going to

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the same bank or even be in the same country. 3. E-cash must be storable and retrievable. Remote storage and retrieval (e.g., from a telephone or personal communications device) would allow users to exchange e-cash (e.g., withdraw from and deposit into banking accounts) from home or office or while traveling. The cash could be stored on a remote computer's memory, in smart cards, or in other easily transported standard or special-purpose devices.

Because it might
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be easy to create counterfeit cash that is stored in a computer, it might be preferable to store cash on a dedicated device that cannot be altered. This device should have a suitable interface to facilitate personal authentication using passwords or other means and a display so that the user can view the card's contents.

One example of a device that can store e-cash is the Mondex card-
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pocket-sized electronic wallet. 4. E-cash should not be easy to copy or tamper with while being exchanged; this includes preventing or detecting duplication and double-spending. Counterfeiting poses a particular problem, since a counterfeiter may, in the Internet environment, be anywhere in the world and consequently be difficult to catch without appropriate international agreements. Detection is essential in order to audit whether prevention is working. Then there is the tricky issue of double spending. For instance, you could use your e-cash simultaneously to buy something in Japan, India, and England. Preventing double spending from occurring is extremely difficult if multiple banks are involved in the transaction. For this reason, most systems rely on post-fact detection and punishment.

Now we will see the concept of Electronic Cash actually works. 7.6 ELECTRONIC

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CASH IN ACTION Electronic cash is based on cryptographic systems called “digital signatures”. This method involves a pair of numeric keys (very large integers or numbers) that work in tandem: one for locking (or encoding) and the other for unlocking (or decoding). Messages encoded with one numeric key can only be decoded with the other numeric key and none other. The encoding key is kept private and the decoding key is made public. By supplying all customers (buyers and sellers) with its public key, a bank enables customers to decode any message (or currency) encoded with the bank’s private key. If decoding by a customer yields a recognizable message; the customer can be fairly confident that only the bank could have encoded it. These digital signatures are as secure as the mathematics involved and have proved over the past two decades to be more resistant to forgery than handwritten signatures. Before e-cash can be used to buy products or services, it must be procured from a currency server. 7.7 PURCHASING E-CASH FROM CURRENCY SERVERS The purchase of e cash from an

on-line

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currency server (or bank) involves two steps: 1. Establishment of an account and 2. Maintaining enough money in the account to back the purchase. Some customers might prefer to purchase e-cash with paper currency, either to maintain anonymity or because they don’t have a bank account. Currently, in most e-cash trials all customers must have an account with a central on-line bank. This is overly restrictive for international use and

multi-currency

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transactions, for customers should be able to access and pay for foreign services as well as local services. To support this access, e-cash must be available in multiple currencies backed by several banks. A service provider in one country could then accept tokens of various currencies from users in many different countries, redeem them with their issuers, and have the funds transferred back to banks in the local country. A possible solution is to use an association of digital banks similar to organizations like VISA to serve as a clearinghouse for many credit card issuing banks. And finally, consumers use the e-cash software on the computer to generate a random number, which serves as the “note.” In exchange for money debited from the customer’s account, the bank uses its private key to digitally sign the note for the amount requested and transmits the note back to the customer. The network currency server, in effect, is issuing a “bank note,” with a serial number and a dollar amount. By digitally signing it, the bank is committing itself to back that note with its face value in real dollars. This method of note generation is very secure, as neither the customer (payer) nor the merchant (payee) can counterfeit the bank’s digital signature (analogous to the watermark in paper currency). Payer and payee can verify

that the payment is valid, since each
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knows the bank's public key. The bank is protected against forgery, the payee against the bank's refusal to honor a legitimate note, and the user against false accusations and invasion of privacy. How does this Process Work in Practice? In the case of DigiCash, every person using e-cash has an e-cash account at a digital bank (First Digital Bank) on the Internet. Using that account, people can withdraw and deposit e-cash. When an e-cash withdrawal is made, the PC of the e-cash user calculates how many digital coins of what denominations are needed to withdraw the requested amount. Next, random serial numbers for those coins will be generated and the blinding (random number) factor will be included. The result of these calculations will be sent to the digital bank. The bank will encode the blinded numbers with its secret key (digital signature) and at the same time debit the account of the client for the same amount. The authenticated coins are sent back to the user and finally the user will take out the blinding factor that he or she introduced earlier. The serial numbers-plus their signatures are now digital coins;

their

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value is guaranteed by the bank. Electronic cash can be completely anonymous. Anonymity allows freedom of usage—to buy illegal products such as drugs or pornographic material or to buy legal product and services. This is accomplished in the following manner. When the e-cash software generates a note, it masks the original number or "blinds" the note using a random number and transmits it to a bank. The "blinding" carried out by the customer's software makes it impossible for anyone to link payment to payer. Even the bank can't connect the signing with the payment, since the customer's original note number was blinded when it was signed. In other words, it is a way of creating anonymous, untraceable currency. What makes it even more interesting is that users can prove unequivocally that they did or did not make

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particular payment. This allows the bank to sign the "note" without ever actually knowing how the issued currency will be used.

For those readers who are mathematically inclined, the protocol behind blind signatures is presented. The customer's software chooses a blinding factor, R, independently and uniformly at random and presents the bank with (XR) E (mod PQ), where X is the note number to be signed and £ is the bank's public key. z The bank signs it: (XRE) D = RXD (mod PQ). D is the bank's private key. z On receiving the currency, the customer divides out the blinding factor: (RXD)/R = XD (mod PQ). z The customer stores XD, the signed note that is used to pay for the purchase of products or services. Since R is random, the bank cannot deter-mine X and thus cannot connect the signing with the subsequent payment. While blinding works in theory, it remains to be seen how it will be used in the real business world. 7.8 OPERATIONAL RISK OF

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E-CASH Operational risk associated with e-cash can be mitigated by imposing constraints, such as limits on:

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The time over which a given electronic money is valid,

z How much

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can be stored on and transferred by electronic money, z The number of exchanges that can take place before

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money needs to be redeposit with a bank or financial institution, z The number of such transactions that can be made during a given period of time.

These constraints introduce a whole new set of implementation issues For example, time limits could be set beyond which the electronic money, would expire and become worthless. The customer would have to redeem or exchange the money prior to the expiration deadline. For this feature to work; electronic money would have to be time-stamped, and time would have to be synchronized across the network to some degree of precision. The objective of imposing constraints is to limit the issuer's liability. A maximum upper limit could be imposed on the value that could be assigned to any single transaction or that could be transferred to the same vendor within a given period of time. Since the user's computer could be programmed to execute small transactions continuously
101 Electronic Payment System 101 at a high rate over the network, a strategy of reporting transactions over a certain amount would be ineffective for law enforcement. However, a well-designed system could enforce a policy involving both transaction size and value with time. For example, an "anonymous coin-purse" feature might be capable of receiving or spending no more than $500 in any twenty-four hour period. Alternatively, the "rate ceiling" for the next twenty-four hours could be made dependent on the rate of use or on the number of exchanges that could be permitted before any electronic money would have to be redeposit in a bank or financial institution and reissued. Finally, exchanges could also be restricted to a class of services or goods (e.g., electronic benefits could be used only for food, clothing, shelter, or educational purposes). The exchange process should allow payment to be withheld from the seller upon the buyer's instructions until the goods, or services are delivered within a specified time in the future. 7.9 CYBERCASH/CYBERCOIN CyberCash is a system that allows customers to pay by a credit card without revealing the credit card number to the merchant. To achieve this, a credit card number is sent to the merchant in an encrypted form. To enroll, a customer installs software called CyberCash wallet on their computer. At the time of the installment the wallet generated a pair of a public and a private key. The wallet was protected by a pass phrase, and a backup key was stored encrypted on a floppy disk. A CyberCash account was linked to the customer's credit card. A variation of this scheme called Cyber Coin was linked to the customer's checking account. A purchase was conducted the following way: z When the purchase was initiated, the CyberCash wallet displayed the amount, the merchant's name, and other information. After the customer approved the transaction, an encrypted payment order was sent to the merchant. z The merchant could decrypt some of the information in the order, such as the product list, the address, etc., but not the other (such as the credit card information). The merchant's software would add its own payment information to the order, digitally sign it, and then send it to the CyberCash gateway. z The CyberCash gateway would decrypt the information. The order would be checked for duplicate requests. The gateway would verify that the customer's and the merchant's order information match (i.e. no fraud was committed on either side). Then it would perform the money transfer and send the approval message to the merchant. The main point of this scheme was to prevent merchant's fraud, and thus allow customers to do business with more merchants without fear of scam. However, CyberCash and Cyber Coin were not able to find the market. The main reasons for the failure were the large size of customer's software and the fact that very few merchants would accept CyberCash payment. The company was eventually bought by VeriSign. 7.10 SET (SECURE ELECTRONIC TRANSACTIONS) SET is the Secure Electronic Transaction protocol for sending money over Internet. It has been developed jointly by MasterCard, Visa, and several computer companies. SET uses mechanisms similar to CyberCash. However, being a standard protocol, it is built into a wide variety of commercial products. In SET the order information consists of two parts: the part, which is private between the customer and the merchant (such as the items being ordered) and information, which is private between the customer and the bank (such as the customer's account number). SET allows both kinds of information to be included in a single signed

102 102 e-Commerce transaction: the part private between the customer and the merchant is encrypted using the merchant's private key, and the part private between the customer and the bank is encrypted using the bank's public key. To prevent changing the order information, the customer computes message digests of each part of the message separately, then takes the message digest of the two message digests, and then signs the resulting message digest. This mechanism, called a dual signature, allows either the merchant or the bank to read and validate the signature on its half of the purchase request without having to decrypt the other half. The reason why SET never became popular was pretty much the same as for CyberCash: the trouble of getting digital wallet software and setting it up for each credit card was not worth it for a customer, because very few merchants would accept SET payments. 7.11 PAYPAL PayPal is an electronic payment system, which can transfer money between its accounts. In order to use PayPal, one has to obtain a PayPal account, which is associated either with the customer's credit card or with their regular bank account. The validity of a credit card is checked by the usual ways. The validity of a checking account is checked as follows: the customer gives PayPal their account number; PayPal makes two small-amount (less than $1) deposits to the account. If the customer is able to tell PayPal the value of these deposits, then the customer is assumed to be a legitimate user of the account. PayPal provides easy interface to send money to anyone by giving the person's e-mail account. In order for the person to retrieve the money, they must have a PayPal account. To avoid fraud, PayPal sends an e-mail message to both the initiator and the recipient of the transaction. PayPal is used to settle online auctions, such as eBay auctions. The ease of use and the fact that no credit card is required to use it makes PayPal increasingly popular. 7.12 MILLICENT PROTOCOL: SMALL-AMOUNT INTERNET PAYMENTS The payment systems that we have considered in the previous section can be thought of as digital analogs of checks (virtual PIN, CyberCash/CyberCoin, PayPal) and of cash (DigiCash). MilliCent protocol is a system for small amount payments, which is similar to prepaid calling cards. Motivation for a System for Small Amount Payments Recently people get more and more of their everyday information on the Internet. One can easily imagine that instead of reading newspapers, more and more people will be reading their daily news on the Internet. Getting driving directions, bus and train schedules, weather reports, horoscopes, searching an archeive of a mailing list are all online services that people use every day. Most of these services are free, but more and more web sites that provide such services try to collect money by making all or a part of their web site accessible for a membership fee. While they are making some money, this is not an ideal solution, because they are loosing customers who are interested in their services, but don't use them frequently enough to make it worth a membership fee. A better way of making money on such services would have been to charge a customer on a service-per-service basis: every time the customer accesses a service, they pay a small fee. Such fees would be very small, possibly less than a cent for a one-time access to a service. However, there are reasons why such fees are very difficult to implement. Many existing payment systems are linked to credit card accounts or bank accounts. However, credit card transactions require the merchant to pay fee. Even if a fee is a few cents, it makes transactions of amounts less than a dollar to be non-profitable for the merchant. A withdrawal from a checking account may result in a fee for a customer. It may also be cumbersome for the bank to process many small- amount transactions.

103 Electronic Payment System 103 Another possible solution is to use digital coins, along the lines of DigiCash. However, the only way to check for double spending of digital coins (whether blind, or not) is to check with the issuing bank. Such verification takes time, which makes it inconvenient to use digital coins. MilliCent protocol is a scheme for secure and convenient small-amount payments. "Small" means that each transaction is within $10 (and possibly as small as fractions of a cent). Main Ideas behind MilliCent Protocol There are three participants in the protocol: z Customer. z Vendor (another name for "merchant", the difference in name stresses the fact that a vendor may not have a full-scale business, but just sells some products or services at their web site). z Broker a bank or another large trusted organization, which has contracts with vendors and customers. In this model there are many customers and vendors, but just a few brokers. MilliCent money is called scrip. The main difference between MilliCent and other digital money protocol is that each vendor issues their own scrip, and a particular scrip token can be spent only at the vendor who has issued it. In this sense scrip is similar to a prepaid calling card. A scrip token consists of the following information: z Vendor: The name of the vendor who accepts the scrip. z Value: The monetary value of the scrip token. z ID number: A unique ID of the scrip token. All scrip tokens of the same vendor have different ID numbers. z Customer ID: The ID of the customer. z Expiration date: Similarly to a prepaid calling card, scrip is valid only within a few months from the date of issue. z Properties: Any other information about the customer that the vendor needs, such as age (in case when some product may be sold only to those older than a certain age) or discount information (if a customer is eligible for a discount). z Certificate: A "signature" which verifies the scrip. Expiration date is used to prevent customers from accumulating large amounts of scrip and to make it easier for the vendor to check for double-spending (the less valid scrip there is, the shorter are the lists that the vendor has to check). If a scrip token is about to expire, the vendor or a broker can exchange it for a new one. Issuing Scrip A vendor or a broker may issue scrip. A broker has a contract with a vendor for issuing scrip. The broker "buys" the right to produce scrip for a certain amount, the vendor tells the broker the information needed to produce this scrip (i.e. the range of scrip ID numbers and the master secrets needed to compute the certificates for these ranges, see below). For the broker to make profit, the vendor sells the scrip to the broker at a discount, compared to the price of scrip for the customer. A customer opens an account with a broker, deposits some money into this account, and gets an equivalent amount of broker's scrip. This transaction requires some means of payment other than MilliCent (with a credit card or another form of digital money) and means of encryption and authentication, which are stronger than those used in MilliCent. Such transactions will be performed rarely, only when the customer first opens the account or moves money to the account. The customer then uses broker's scrip to buy (as needed) scrip for the vendors that he/she uses.

104 104 e-Commerce We assume that a broker has contracts with many vendors and that many customers have accounts with the same broker. Checking Validity of Scrip The vendor or the broker who produces a scrip token creates a certificate for it. The certificate is computed as follows: the vendor has a table of master secrets: strings of digits known only to the vendor and to the broker (the broker might actually know only some of the master secrets). There is a simple procedure to choose a master secret in the table for each scrip ID number (for instance, one master secret may correspond to a range of scrip ID, such as all IDs greater than 10000, but less than 20000). The certificate for scrip token is computed as follows: the master secret is appended to the text of scrip (the text includes the vendor ID, the value, the ID number, the customer ID, the expiration date, and the properties). Then the certificate is the value of a hash function (such as MD5) of the result. For instance, if the scrip text is x, the master secret for x is M, and the vendor uses MD5 as the hash function, then the certificate of x is MD5 (x, M), where x, M is x followed by M. When a customer buys scrip, he/she gets x and the certificate of x. The customer does not know M, and therefore cannot change x without invalidating the certificate. When the customer pays with scrip, he/she sends both x and the certificate of x to the vendor. The vendor checks the expiration date of the scrip, and if the scrip is still valid, recomputes the certificate (takes the master secret which corresponds to the scrip ID number, appends it to the scrip, and computes the value of the hash function). If the certificate matches to the one sent with the scrip, then the scrip is valid. Even if the scrip token is valid, the vendor still needs to check if the scrip with this ID has not been spent yet. Since scrip is vendor-specific, it is easy for the vendor to check the list of spent scrip IDs. Scrip is not valid after its expiration date, so the vendor can discard records about scrip IDs that have expired. Three Protocols for Using Scrip There are three protocols for making a purchase using scrip: 1. Scrip in the clear: The customer sends a request for a product, a scrip token as a payment, and the certificate for the scrip. The merchant sends back the product (if any) and the change (another scrip token). All of this information is sent unencrypted. This protocol doesn't provide customer's privacy (all information is sent in the clear). It is also vulnerable to theft: the scrip token sent back as a change can be copied by an eavesdropper and used before the real owner spends the original scrip token. Then the original will not be accepted, since it will be considered to be double-spent. 2. Private and secure: The next two protocols make use of a customer secret: a number, which is different for each customer and is sent (securely) to the customer when their account is created. A customer secret can be recomputed by the vendor based on the customer's ID. This computation requires the knowledge of a master secret known only to the vendor (and possibly to the broker). The customer secret can be used as a key for symmetric encryption. In this protocol, the customer uses their customer ID to encrypt parts of the scrip which they would like to keep private (they cannot encrypt the customer ID, since it's needed for the vendor to determine the customer secret, i.e. the encryption key) and the request. The vendor computes the customer secret, decrypts the request and the encrypted parts of the scrip, and sends back the product and the change encrypted with the customer's secret. Symmetric encryption is used in this protocol to avoid long and expensive computations of public key cryptography. 3. Secure without encryption: Even though the above protocol uses symmetric encryption, it still may be slower and more expensive than needed for the kinds of applications MilliCent is proposed for. This protocol uses
105 Electronic Payment System 105 customer secret (just as the protocol Private and secure), but instead of encryption, this secret is used for message verification. To make a purchase, the customer sends to the vendor three pieces of information: the request, the scrip (with the scrip certificate), and the request signature, which is computed by putting together the request, the scrip, and the customer secret, and computing the value of the hash function (such as MD5) of the resulting string. The vendor checks the customer's signature by performing the same computations as the customer did to compute the signature, and if the signature matches, then the merchant proceeds to verify the scrip as usual. If the scrip is valid, the product and the change are sent back in the clear, but since in this protocol every request requires a digital signature of the customer, an eavesdropper cannot create a valid request (even if they copy the scrip), since they don't know the customer's secret. The protocol doesn't provide customer's privacy (all requests and products are sent in the clear). However, it's faster and less expensive than the Private and secures protocol. Factors for Designing Electronic Payment Systems (EPS) The various factors to be considered for EPS are: z System should be secure z System should give value to privacy z It should have good intuitive convenient interface z It must provide database integration z Network banker should be broker of goods and services z It should be cost effective z The standards of high quality customer satisfaction are used. Check Your Progress 1 1. What is Virtual PIN?

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..... 2. What do you understand by Paypal?

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..... 7.13

CONVENTIONAL PAYMENT PROCESS A conventional process of payment and settlement involves a buyer-to-seller transfer of cash or payment information (e.g. credit card or check). The actual settlement of payment takes place in the financial processing network.

A cash payment requires a buyer's withdrawal from his bank account, a transfer of cash to the seller, and the seller's deposit of
the payment to his account. Non-cash payment mechanisms are settled by adjusting, i.e. crediting and debiting, the appropriate accounts between the banks based on payment information conveyed via check or credit card.
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Figure 7.1 is a simplified diagram for both cash and non-cash transactions. Cash moves from the buyer's bank to the seller's bank through face-to-face exchanges in the market. If a buyer uses a non-cash method of payment, payment information instead of cash flows from the buyer to the seller, and ultimately payments are settled between affected banks who notationally adjust accounts based on the payment information. In real markets, this clearing process involves some type of intermediaries such as credit card services or check clearing companies. Schematically then most payment systems are based on similar processes. The 'information' conveyed to settle payments can be one of the following: z Information about the identities of the seller and the buyer and some instruction to settle payments without revealing financial information z Financial information such as credit card or bank accounts numbers (including checks and debit cards) z Actual values represented by digital currency. Figure 7.1: A Simplified Model of Transaction 7.14
EPS TYPES Electronic commerce, especially that involving consumers and digital products, places stringent demands on a payment system. Electronic commerce payment systems must be convenient for Web purchasing, transportable over the network, strong enough to thwart electronic interference, and cost effective for extremely low value transactions. Despite this impressive set of requirements, there have been over two dozens proposed Internet payment standards or protocols. These range from Anonymous Internet Mercantile Protocols by AT&T Bell Labs (http://www.bell-labscom) to Conditional Access for Europe (CAFE) for the European community, to Secure Electronic Transaction (SET) promoted by MasterCard (http://www.mastercard.com) and Visa (http://www.visa.com). Many software and hardware products based on these open standards are being offered, including CyberCash, Digicash, Mondex, NetBill and NetCheque. While the diversity of these products is an indication of healthy competition, it does make it confusing for ordinary Internet users and merchants to choose an appropriate
107 Electronic Payment System 107 payment mechanism. To structure the following discussion of types, we suggest all electronic payment systems can be broadly classified into three groups: 1. Payment through an intermediary 2. Payment based on EFT 3. Payment based on electronic currency. 7.14.1
Payment through an Intermediary – Payment Clearing Services When face-to-face purchase is replaced with on-line commerce, many aspects of a transaction occur instantly, under which various processes of a normal business interaction are subsumed. For example, a typical purchase involves stages of locating a seller, selecting a product, asking a price quote, making an offer, agreeing over payment means, checking the identity and validity of the payment mechanism, transferring of goods and receipts. In order to be used as a substitute for face-to-face payments, online payment systems must incorporate all or some of these stages within their payment functions. The lack of face-to-face interaction also leads to more secure methods of payment being developed for electronic commerce, to deal with the security problems for sensitive information and uncertainty about identity. Consequently, electronic commerce transactions require intermediaries to provide security, identification, and authentication as well as payment support. Figure 7.2 shows a stylized transaction for online commerce using an intermediary. In this model, the intermediary not only settles payments, it also takes care of such needs as confirming seller and buyer identities, authenticating and verifying ordering and payment information and other transactional requirements lacking in virtual interactions. In the figure, two boxes delineate online purchasing and secure or off-line payment clearing processes. Payment settlement in this figure follows the example of the traditional electronic funds transfer model which uses secured private value networks. The intermediary contributes to market efficiency by resolving uncertainties about security and identity and relieving vendors of the need to set up duplicative hardware and software to handle the online payment clearing process. The payment information transmitted by the buyer may be one of three types. First, it may contain only customer order information such as the identity of the buyer and seller, name of the product, amount of payment, and other sale conditions but no payment information such as credit card numbers or checking account numbers. In this case, the intermediary acts as a centralized commerce enabler maintaining membership and payment information for both sellers and buyers. A buyer need only send the seller his identification number assigned by the intermediary. Upon receiving the purchase order, the intermediary verifies it with both the buyer and seller and handles all sensitive payment information on behalf of both.
This is the electronic commerce model followed by First Virtual Holdings, Inc. (http://www.fv.com).
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Figure 7.2: Transactions with an Intermediary The key benefit of this payment clearing system is that it separates sensitive and non-sensitive information and only non-sensitive information is exchanged online. This alleviates the concern with security that is often seen as a serious barrier to online commerce. In fact, First Virtual does not even rely on encryption for messages between buyers and sellers. A critical requisite for this system to work is the users' trust in the intermediaries. 7.14.2 Payment Based on EFT – Notational Funds Transfer The second type of payment systems does not depend on a central processing intermediary. Instead, sensitive payment information (such as credit card or bank account number) is transmitted along with orders, which is in effect an open Internet implementation of financial Electronic Data Interchange (EDI) (see Figure 7.3). An Electronic Funds Transfer (EFT) is a financial application of EDI, which sends credit card numbers or electronic checks via secured private networks between banks and major corporations. To use EFTs to clear payments and settle accounts, an online payment service will need to add capabilities to process orders, accounts and receipts. In its simplest form, payment systems may use digital checks – simply an image of a check – and rely on existing payment clearing networks. The Secure Electronic Transaction (SET) protocol – a credit card based system supported by Visa and MasterCard – uses digital certificates, which are digital credit cards. We call this type of payment system as notational funds transfer system since it resembles traditional electronic fund transfers and wire transfers which settle notational accounts of buyers and sellers.
109 Electronic Payment System 109 Figure 7.3: Notational Funds Transfer
System Notational funds transfer systems differ from payment clearing services in that the 'payment information' transferred online contains sensitive financial information. Thus, if it is intercepted by a third party, it may be abused like stolen credit cards or debit cards. A majority of proposed electronic payment systems fall into this second type of payment systems. The objective of these systems is to extend the benefit and convenience of EFT to consumers and small businesses. However, unlike EFTs, the Internet is open and not as secure as private Value Added Networks (VANs). The challenge to these systems is how to secure the integrity of the payment messages being transmitted and to ensure the interoperability between different sets of payment protocols. 7.14.3 Payment Based on Electronic Currency The third type of payment systems transmit not payment information but a digital product representing values: electronic currency. The nature of digital currency mirrors that of paper money as a means of payment. As such, digital currency payment systems have the same advantages as paper currency payment, namely anonymity and convenience. As in other electronic payment systems, here too security during transmission and storage is a concern, although from a different perspective, for digital currency systems double spending, counterfeiting, and storage become critical issues whereas eavesdropping and the issue of liability (when charges are made without authorization) are important for notational funds transfers. Figure 7.4 shows a digital currency payment scheme.
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Figure 7.4: Digital Currency Payment System The only difference from Figure is that the intermediary in Figure 7.4 acts as an electronic bank which converts outside money (e.g.
U.S. currency),
into inside money (e.g. tokens or e-cash) which is circulated within online markets. However, as a private monetary system, digital currency will have wide ranging impact on money and monetary system with implications extending far beyond mere transactional efficiency. Already digital currency has spawned many types of new businesses: software vendors for currency server systems; hardware vendors for smart card readers and other interface devices; technology firms for security, encryption and authentication; and new banking services interfacing accounts in digital currency and conventional currency,
e.g. Mark Twain Bank (http://www.marktwain.com). Many of these new players navigate through areas uncharted by researchers and government policy makers. Old maps used to inscribe unknown territories with "Here Be Dragons," a cartographic term for uncertainty. What kinds of dangerous as well as fascinating "dragons" we will encounter in this new world of electronic payments is the subject of the remaining sections. 7.15 DESIGNING EPS Despite that electronic commerce is a growing phenomenon, its future development is, to a large extent, hampered by the lack of appropriate payment systems. Since most of business-to-consumer payments over the Internet are performed currently via credit cards, an admittedly problematic payment medium due to costs, security and trust. Research and development in Internet-based payments tried to resolve this situation by conjuring numerous online EPSs, a good proportion of which has been put to use. This was possible due to the stimulating factors listed above, and in the first place due to the availability and reduced costs of the enabling technology. However, the new payment systems, purposely crafted for the Internet, also could not avoid their own share of problems. This has led to the reluctant use of new online electronic payment systems, i.e. resulted in low user acceptance of newly introduced payment systems by customers.

111 Electronic Payment System 111 At this stage the situation with the development of online EPSs is far from ideal. A survey on electronic money developments by the Bank for International Settlement reports a rather low level of EPSs use, even in the most advanced countries. According to the European Central Bank, the proportion of online payments among cashless payment instruments in the European Union is rather low. The report admits that although there has been a lot of discussion on the use of EPSs and their importance "it is still not a widely used medium". The lack of customer demand, the diversity of technological standards and the lack of support by financial institutions are mentioned among the reasons preventing the development of electronic payment systems. Some experts estimate that about 85% of all Internet transactions are done with credit cards that were not originally designed for the Internet. According to a survey by marketing research firm Jupiter Research, credit cards are still the dominant payment method for online purchases, accounting up to 95% of online transactions in the United States. This demonstrates still low user acceptance of alternative electronic payment systems, designed specifically for e-commerce. End user acceptance of such sensitive technology as money-circulating payment systems is the critical key aspect of the whole path of payment systems' establishment. Without such acceptance no technology can successfully exist on the market, and payment systems are not an exception. Issues such as trust, usability, applicability, security, and convertibility are extremely important because they can influence subsequent decisions of people whether to use a payment system or not. There are several obstacles to user acceptance of EPSs: developers not only have to sell the service to potential users, they also have to convince the users to entrust their money to a third party institution, to rely on the payment system in their business and personal finance, and to use it frequently for convenience, reliability, specific applications, services and for a variety of other reasons. To achieve this high standard of user acceptance, the creators of a payment system should bear in mind user-related factors from the very beginning of the conception of the payment system. Designing for user acceptance of online electronic payment systems is thus the main issue put forward by research described in this thesis. An open challenge remains for designers and developers of novel Internet-based payment systems to meet user expectations, requirements, preferences and needs in design and operation of the systems. Resolving these issues is critical for the development and operation of new payment systems and future growth of e-commerce. However, the nature of security issues is changing with the constant improvement of information technology. While security technology is becoming increasingly sophisticated and tamper-proof, experts in information security admit that user factors are the most important issues for security problems. The vast majority of all security issues in IT environments is caused or assisted by users inside organisations, rather than hackers and other outsiders. Security experts know many stories about people exchanging their passwords, or IT managers attaching notes with logins and passwords to their monitors, or about hackers finding these notes in the trash. To avoid this kind of mistakes, experts are talking about enforcing security policies in organisations, to be able to address user-related factors in security. Therefore, security practices have embraced user-related factors. This example helps to illustrate the importance of user-related factors in the design and operation of information systems. There are several factors that can contribute to user acceptance of an EPS: innovative and reliable technology, effective business practices, smart marketing and promotion, good usability, and a carefully carried out interaction design. Currently, consumer e-commerce is done mainly via the WWW (Web) service of the Internet. The market for conducting e-commerce payments via wireless PDAs, mobile phones and other Internet services is still under development and therefore does not have a wide user basis and usage experience. Thus, in the scope are Web-oriented online e-commerce EPSs and Web e-commerce applications.
112 112 e-Commerce Figure 7.5: Design of EPS The diagram in Figure 7.5 illustrates a combination of the research and design activities. These activities included acquiring design knowledge on ecommerce EPSs, applying the knowledge to a commercial payment system designed by an industrial party, and empirical validation of the design knowledge. There is still the lack of specific design knowledge that will prescribe how to construct payment systems and what aspects should be implemented to achieve user acceptance. Check Your Progress 2 1. Why merchants like credit card payments?
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..... 2. Mention two payment security requirements for Consumer and Merchant. .....
..... 3. Mention two factors to design EPS.
.....
..... 7.16 SMART CARDS AND EPS A smart card is a card that is embedded with either a microprocessor and a memory chip or only a memory chip with non-programmable logic. The microprocessor card can add, delete, and otherwise manipulate information on the card, while a memory-chip card (for example, pre-paid phone cards) can only undertake a pre-defined operation.

113 Electronic Payment System 113 Smart cards, unlike magnetic stripe cards, can carry all necessary functions and information on the card. Therefore, they do not require access to remote databases at the time of the transaction. Today, there are three categories of smart cards, all of which are evolving rapidly into new markets and applications. Some observers believe that the only way in which payments over the Internet can be made secure is to physically separate authentication from the process which provides the communication links between buyer and seller. A number of companies are therefore examining the use of smart card readers linked to a personal computer. A smart card used to store money in the same way as a phone card would make it possible to separate authentication from the payment process. Smart cards technology would permit them to be charged up with cash at an ATM or separately using a proprietary bank network. The value in the smart card could then be transferred securely and anonymously over the Internet. National Westminster Bank is one of several organizations developing smart card technology to create what is referred to as an 'electronic purse'. While the magnetic strip on a credit card can only hold one or two lines of information, smart cards can store several pages of text. This permits credit card-sized smart cards to be used to transfer cash amounts which can then be 'spent' using special terminals. The initial applications will involve replacing small cash payments made to retailers (e.g., for newspapers, confectionery) or to pay for services like public telephones or public transport. NatWest's longer range vision is for Mondex to be used on a more global basis to buy goods from suppliers on the Internet. Payments would involve having a special smart card reading device linked to the PC and software that recognized the card reader. Although this may prove a cumbersome alternative compared with more direct payment methods, NatWest and other smart card developers believe there would be a key benefit from the inherent security which is built into smart cards. Smart cards could also be moore readily integrated into the existing networks of ATMs, integrating with what is likely to remain the predominant form of payment transaction, namely cash. Figure 7.6: Smart Card

114 114 e-Commerce 7.17 CREDIT CARD AND EPS Credit cards in their present form emerged in the United States in 1960s. However, it was not until more recently that credit card usage has expanded significantly outside North America and until the late 1970s the level of penetration in most of Europe was quite limited. Debit cards have been introduced more recently and together they represent the most rapidly growing method of payments in the United Kingdom as well as several other OECD countries. Credit and debit cards are rapidly growing in significance as the preferred method of settling small value payments associated with the purchase of specific goods and services. Separate electronic clearing and settlement systems have been established by the major credit card companies. Both MasterCard and Visa have established their own networks which are used for verifying transactions world-wide. Electronic point of sale terminals permit card details to be verified in less than 15 seconds with networks linking the merchant, the credit card processor and the card issuer world-wide. For example, Visa's system, VisaNet, operates out of three super-computer centers, one in the UK at Basingstoke and two in the USA, including San Mateo in California. Extensive communications networks link the centers and merchants using the system. These networks are growing rapidly as the trend for consumers to make payments by credit card in place of writing a cheque continues to grow. The number of credit cards in use is growing rapidly world-wide. In Europe, credit card ownership stood at around 200 million at the end of 1990. The figure will have increased to 350 million by the end of 1995, according to Battelle, a London-based consultancy. In addition, credit card-holders will use their cards more frequently in place of more traditional payment means such as cash and cheques. Battelle predicts that the number of payment card transactions will rise to 8 billion by the end of 1995, representing a 300% increase over 1990. The number of Visa cards in Italy doubled in 1990; in Spain and France it rose by half. Eurocheque and Eurocard (Visa's smaller rival, which is also owned by banks) are launching a joint electronic debit card to compete with Visa's growing debit business in Europe. Despite increasing volumes, the credit card business has become increasingly competitive with fees being driven down by new, often non-bank entrants. The growth in credit card usage confirms the basic demand which exists for more efficient electronically based payment systems. However, there are certain constraints which are likely to prevent credit cards from becoming the comprehensive solution to a global electronic system for making low value payments. Credit cards developed from oil company, restaurant and department store charging accounts which predated the present electronic systems by several decades. In the 1960s and 1970s their use expanded as consumer finance was made more readily available and became an important source of revenues for banks. Credit cards are distinguished from debit cards by having access to a line of credit made available to the card holder by the card issuer. They generally require four separate parties to each transaction, the card holder, the merchant selling the goods or services, the merchant acquirer processing the credit card payment and the card issuer. In certain cases the merchant acquirer and credit card issuer will be the same company although generally trading under a different legal entity. Credit card payment systems have proved to be highly vulnerable to fraud. Credit cards can be stolen from their owners and then misused, and merchants accepting credit card payments can fraudulently fail to deliver goods (e.g., when placing orders over the telephone). In either case, credit card issuers or merchant acquirers effectively stand the loss. Losses from credit card fraud by merchants have been significant. As a result merchant acquirers are highly selective in which merchants they are prepared to authorize to receive credit card payments. Similarly, issuance of credit cards has become much more controlled to curtail misuse and fraud by card holders. Despite these limitations, credit card companies like Visa and MasterCard are currently most active in developing secure payment systems using the Internet. Secure methods of transferring credit details and ensuring effective authorization will be represent a major improvement over the off-line systems presently in use for making sales of consumer goods and services by phone or by fax. However, credit and also debit cards were designed at a time when the emphasis in the financial services industry was on transaction-based automation. Credit cards may

115 Electronic Payment System 115 represent too cumbersome and restrictive a system for achieving the possibilities presented by truly global low value electronic payment systems. Figure 7.7: Credit Card 7.18 LET US SUM UP Electronic payment systems are non-credit-card online payment systems. It protects customers from merchant's fraud by keeping credit card numbers unknown to merchants. CyberCash is a system that allows customers to pay by a credit card without revealing the credit card number to the merchant. A CyberCash account was linked to the customer's credit card. PayPal is an electronic payment system, which can transfer money between its accounts. Many existing payment systems are linked to credit card accounts or bank accounts. However, credit card transactions require the merchant to pay fee. There are several technical issues involved in online credit card payments. This way the merchant doesn't know the customer's credit card number. International large value payments are increasingly intertwined. Separate electronic clearing and settlement systems have been established by the major credit card companies. Credit cards are distinguished from debit cards by having access to a line of credit made available to the card holder by the card issuer. Credit card payment systems have proved to be highly vulnerable to fraud. Credit cards may represent too cumbersome and restrictive a system for achieving the possibilities presented by truly global low value electronic payment systems. Payment and settlement systems will permit transactions to be instantly verified and settled through a global payments system. A number of companies are developing payment systems which permit direct payments to be made anonymously. In addition to facilitating debit or credit card payments, CyberCash will also provide independent electronic payment services. CyberCash accounts are particularly suitable for electronic cash payments that are too small to be processed cost effectively as discrete credit card or debit card payments. Telephone-based credit card payments currently account for the majority of Internet commercial transactions. In common with other credit card-based systems, Visa's Internet payment system will be limited to merchants who have been approved by the organization to accept their credit cards. 7.19 KEYWORDS Electronic Payment System: It is a secured money transferring system which facilitates the transfer of money from the buyer’s account to the Internet active seller’s account and delivers, in the same time, other services to the online merchant.

116 116 e-Commerce SET: It is the Secure Electronic Transaction protocol for sending money over Internet which has been developed jointly by MasterCard, Visa, and several computer companies. CyberCash: It is a system that allows customers to pay by a credit card without revealing the credit card number to the merchant. PayPal: It is an electronic payment system, which can transfer money between its accounts. MilliCent Protocol: It is a system for small amount payments, which is similar to prepaid calling cards. Smart Card: It is one of a number of automatic vending machines run by one or more operators accepts payment for the goods it dispenses by creditable and debitable cash card. 7.20 QUESTIONS FOR DISCUSSION 1. Write an essay on Electronic Payments. 2. What is meant by Credit Card? What are the various technical issues involved in the payment made through credit card? 3. What is meant by Electron Payment System? What are the various types of Electronic Payment Systems? 4. Write an essay on MilliCent protocol system for small amount payments. 5. What is meant by Electronic Payment System? What are the various technical issues involved in the Electronic Payment? Check Your Progress: Model Answers CYP 1 1. Virtual PIN, started in 1994 by a company called First Virtual Holding, was a system for making credit card payments over the Internet without exposing the credit card number to the merchant. It required no special software for a customer to make a purchase. Virtual PIN relied on difficulty of intercepting and forging e-mail. 2. PayPal is an electronic payment system, which can transfer money between its accounts. In order to use PayPal, one has to obtain a PayPal account, which is associated either with the customer's credit card or with their regular bank account. CYP 2 1. Merchants like credit card payments because an instant authorization guarantees that the card is valid. 2. Confidentiality and integrity. 3. System should be secure and give value to privacy. 7.21

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e-Commerce LESSON 8 WEB CONTENT CREATION CONTENTS 8.0 Aims and Objectives 8.1 Introduction 8.2 Creating Web Pages 8.2.1 Determining Objectives of Website's Design 8.2.2 Purpose of Website Design 8.2.3 Deciding whether to Outsource or Do it Yourself 8.2.4 Dividing Website into Logical Sections 8.2.5 Developing a Site Navigation System 8.2.6 Giving Website an Attractive 'Look and Feel' 8.3 Building Basic Webpage Templates 8.3.1 Constructing Site to be Search Engine Friendly 8.3.2 Using Search Engine Savvy Navigation Systems 8.3.3 Writing Fine-tune Focused Content Pages 8.3.4 Incorporating Customer Communication Systems 8.3.5 Creating Test Effective Sales Pages 8.3.6 Conducting Usability Trials and Incorporating Changes 8.3.7 Planning the Maintenance of Site for the Long Haul 8.4 Launching a Business on

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the Internet 8.5 Let us Sum up 8.6 Keyword 8.7 Questions for Discussion 8.8 Suggested Readings 8.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to: z Explain

how to create web pages z Describe business launch on Internet 8.1 INTRODUCTION The designing of website is essential for the growth and development of organization in modern business scenario. One may be on first website design; however more likely one may be forced with redesigning a website that isn't functioning as well as it should. There are critical principles in building an effective website where one
119 Web Content Creation 119 must make the right decision, or one has to repeat this task again and again until you get it right. The better grasping of these essential points, will work better and the happier one will be. 8.2 CREATING WEB PAGES World Wide Web entered in our vocabulary in 1995. Since then, everybody wants to create his or her own Web page and "to publish" it. A Web page is a file that contains the text, the images and links to other pages or documents. A Web site is a group pages on a subject, a business, an organization. A Web site has also a main page. It's the Web page that helps the readers to navigate on the site to find the desired information. A site should be also structured. How is a Web page connected with the other one? Are there one or several ways for the readers to navigate through the site? At the beginning and end of every page, there are several navigation buttons you can press to go to the previous or next page of the subject in question then to return to the training page. The learning material Web page gives you the choice of the various subjects and returns you to this page after the "tour" of the pages of the subject. You've certainly heard the expression to “surf the Web”. In fact, the users quickly glance through Web pages until they find what they need. So, it's necessary to structure a site to help them find easily and quickly what they need. This can be made by using a “site map”, a search tools for the site, the good main page and especially the good structure to navigate the site. 8.2.1 Determining Objectives of Website's Design When you begin designing a website, you must have your main purpose clearly in mind. It is essential to state because it's easy to have conflicting purposes, which often clashes with. z If you're a website design firm, you may want to show off your high tech goodies with your client's site as the showpiece. z If you're an employee stuck with this task, you may want to look good for your bosses and not do anything for which you can be blamed – you've got to protect your backside. z If you're a volunteer, you may just want an excuse to tinker and be praised for it. z If you're a business owner, you probably care about the bottom line. You're wondering, how much this will cost? And will be worth it in the long run? Thus, recognize your own needs – they're legitimate. But to build an effective website, you've got to look at the business or organization needs and make those primary. From the organization's perspective, what must this website do in order to be successful? 8.2.2 Purpose of Website Design Here are some common website purposes: z Build your brand: Create an online brochure that will help potential clients, customers, and partners learn about your company and look at it in a favourable light. The aim is to enhance brand or organization image. But this is very legitimate for some kinds of companies; especially local businesses or organizations that aren't trying to conduct national or international commerce. You want people to know who you are, what you do, where to find you, and how to contact you. Provide product information to drive local sales of your products and services at dealer locations. Auto sites are a good example. Many manufacturers don't sell on their sites, but point people to retailers who carry their products.

120 120 e-Commerce z Sell advertising: A few sites are designed to sell advertising – Yahoo, Google, and other portal sites are examples. But these days, there's far too much advertising space and not nearly enough money to fill it all. Internet advertising is in the doldrums. You may be able to sell a little advertising if you're a portal site for an industry, but even that's iffy. Look at advertising sales as a hopeful bonus, not as a sure thing. z Sell products or services directly over the Internet: You want to conduct e-commerce and sell to a national or international market. You'll have some kind of ordering system for one or more products, or perhaps an extensive online catalog. You may offer an online service that can be delivered over the Internet or that can be initiated online. z Earn affiliate commissions for sales and leads generated through links on your website: Savvy marketers are building microsites designed to generate search engine traffic for a particular hot product or service. When a visitor clicks on one of their links, they are referred to an e-commerce site, and, if a sale results, the affiliate gets a commission. Perhaps a form on your site generates leads or subscriptions for another company. z Provide customer service and support: Websites are a great place for troubleshooting guides, FAQs (Frequently Asked Questions), technical information, etc. You can generate Return Merchandise Authorization (RMA) labels. You can provide multiple ways for your customers to contact you. z Save money by means of online efficiencies: Companies have used the Internet to save billions of dollars. Taking orders online with real-time credit card authorization saves paying call center operators and cuts entry errors. Online catalogs save lots in paper, printing, and distribution costs. Online FAQs and knowledge bases cut the number of customer service personnel you need. And I'm just scratching the surface here. What's the design decision here? To be clear and focused about your site's objectives and purposes. 8.2.3 Deciding whether to Outsource or Do it Yourself After clarifying your purposes, you need to decide whether to outsource the design of your website or to do it yourself. Let me tell you my bias. For nearly all businesses and larger non-profits we recommend outsourcing initial website design, but be very sure that you bring site maintenance back in-house. Website design done right is complex and requires a number of different skill sets that aren't commonly found in any one person, especially someone that doesn't do this for a living. Some of these skills include: z HTML savvy: Good web design software can help. But the kind of HTML code produced by many WYSIWYG ("what you see is what you get") programs can be kludgy and hard to maintain. Fine-tuning your design requires you to get into the raw HTML code. z Graphic design, colour experience and good artistic taste: No software package bestows artistic taste on its user, but good taste is indispensable for an attractive site. Of course, graphic software expertise is required to produce attractive and clean photos and site graphics, optimised to the smallest possible file size for quick loading. z Website navigation design and implementation: Helping visitors get where they need to go quickly and efficiently is difficult, especially on sites over 20 web pages or so. Good navigation design comes from experience, not from good software. z CGI and database programming: Even smaller sites use a "contact us" form and often a site search program that require CGI program installation and configuration. Larger sites may need to be integrated with an online database, which is no job for the faint of heart. z JavaScript and Flash programming: Flash and JavaScript features such as animation and small windows that open to answer a hyper linked question dramatically help functional websites. Automatic pop-up windows that encourage e-zine subscriptions can be effective, but can be annoying if you don't make them to turn off after one pop – and these days are increasingly blocked by pop-up blockers. 121 Web Content Creation 121 z Marketing and business experience: An outside company doesn't really understand your business like you do. Make sure you communicate exactly what you need to achieve. The best website design firms understand how to build Web marketing into the site design to make it search engine friendly, to make the sales pages really sell, etc. What does outsourcing cost? For a simple five or six page website, expect to pay Rs. 10000 to Rs. 35000. For a more complex site you may pay Rs. 250,000 to Rs. 500,000 and up. For database-driven sites you'll need custom programming. Of course, sites designed for high traffic or for Internet-focused companies can cost much more. Another approach is to build site using built-in templates and site-building wizards. It has the added advantage of a dozen tools to help increase your rank on the search engines. Another approach is to hire a website design firm to design the website templates, navigation system, CGI and JavaScript programming, and perhaps do usability testing. They would set up the basic structure and you could build it out using their template and design. The design development contract is developed to enlist the business issues that may come up when outsourcing, be well thought. If you do outsource, be sure to conduct a "due diligence" investigation of the design firm by talking to previous clients, looking at their work, etc. Make sure they spell out in writing exactly what they agree to do for how much money, and provide a firm deadline by which their work will be completed. Partial payments should be made as specific milestones are reached and approved. 8.2.4 Dividing Website into Logical Sections

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People put lot of pages on their first website, which may have many pages and it is very common mistake people do of dumping all the web pages into a single directory. It is learned quickly that one need to organize the site both logically and with multiple directories, one for each section. Here's a typical small-site structure: Figure 8.1: Structure of a Website However, this site layout is only suggestive and not prescriptive. Get a blank piece of paper and begin to lay out what the website should look like, with similar functions grouped together. Don't be afraid to create multiple subdirectories to keep your site organized. When you're setting up newsletter archives, for example, create a directory for each year of issues so a single directory doesn't get too

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cluttered. Remember, you're not designing for just the present moment, but for the growth your site may undergo over the next two or three years. 122 122

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Home page should provide a statement of exactly what company or organization does. Preparing a Unique Selling Proposition (USP) for your company is a great way to begin. You may be amazed at how many websites don't really tell us what they really do. We have to nose around trying to figure it out. That's stupid! State precisely what you do, and then provide links to the rest of your site

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visitor to learn more. The site structure diagram should include product pages, landing pages, and an ordering system. The focused content and reciprocal linking pages must be designed to boost your search engine ranking. In the section "About the Company" is sure to tell your organization's story. Big companies spend millions to build confidence through brand name familiarity. Small businesses

tell

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their story, often illustrated with photos, to help visitors understand and trust them. If you have a passion about what you do, tell your visitors about it in this section! Here's where a local business or

organization

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will include a map and driving directions to help people find them. 8.2.5

Developing a Site Navigation System

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After laying out the design of the website, you can see how important a good navigation system is. One of the chief complaints that visitors have is that they can't find the content they're looking for. The larger your site, the more important redundant navigation systems are more systems

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think you might need. Here are some of the basic systems and a few you might not have thought

of: z

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Left-side menu lists the various sections of your site, and perhaps some of the subsections, too. z Tabs near the top of the webpage help the visitor quickly see the most important sections of your site. This facilitates browsing. z Search the site or the product database. Larger sites need a search feature so visitors don't get lost. z 10 most common gifts, etc. z View today's specials or recent news releases. z Bottom links provide hypertext links to all the sectional pages. z Site map shows the structure and has links to every page (or sectional page). Except for the very smallest five- or six-page sites, we encourage you

to

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implement two or more of these systems. Over-kill, that's the ticket. What may be obvious to you and your designer after looking at the site for weeks may not be obvious at all to your visitor. Each separate navigation system gives her another opportunity to find what she's looking for. If you're a do-it-yourselfer, consider using a free search engine for your search function. It is essential to mention that certain websites are "button happy." They have graphic buttons down the left side of the page and across the top. They may look nice, but there's

a big cost

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in download time. There's a strong trend on high traffic sites toward text menus made with HTML characters, not GIF images. Look at a text menu you admire and study the HTML by viewing the source. Text is good; buttons are bad – especially when overdone. Got it. Finally, we would like to say a word about "frames," a kind of HTML menu that lists page names in a window on the left side that scrolls up and down independently of the content window on the right. Website designers used to love them, until they discovered that they cripple a website's marketing potential. Insist that your site developer not use frames! Instead of using frames, set up your navigation system with Server Side Includes (SSIs).

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If you have a complex site, we recommend that you employ a professional website designer to set up your navigation system – even if you do all the rest. Leverage professional

experience to help your customers find what they're looking for.

123 Web Content Creation 123 8.2.6 Giving Website an Attractive 'Look and Feel' Let us raise some fundamental questions like: Why should a website look good? Why should it look professional? Because like the sign hanging over a store in the strip mall, your website reflects on you and your business. If the sign's lettering looks crude and homemade, people won't say, "The thrifty shopkeeper is trying to save money by making his own sign." They'll say, "How tacky! If this is how the sign looks, then the products and services can't be of very high quality either!" You owe it to yourself to make your website look top-notch. To succeed, you'll need some artistic flair, or perhaps you should hire a graphic designer's talents for the basic design and site graphics. We would like you to look with me at IBM's homepage. It is a well-designed page, but it isn't "graphics heavy" and doesn't take a long time to download. Figure 8.2: IBM Home Page The features we would like you to notice: z The site is clean and understated, not gaudy or in-your-face. Few colors with lots of white space contribute to this light, airy feeling. z The page is designed with colored cells of HTML tables that take practically no download time. Most of the parts that are blue, black, dark grey, and light gray are table cells. z Graphics are few. The largest is a gif image 25K in size. Other gif images are small, with some reusable "go" and "search" buttons. z The left-side menu is text.
124 124 e-Commerce z The navigation system consists of: ™ left-side menu ™ site search in the top right corner ™ four major categories in the black bar at the top ™ solutions (browse by industry), services, and shopping in the gray blocks ™ recent news releases ™ selected popular products highlighted with graphics ™ company-oriented menu in a black bar in the bottom left corner. z Photographs contribute to the classy, professional look. Photos can be very effective on business websites. We could take you too many websites, but you can do that yourself. Become a student of how to create a simple, clean business look. It takes a lot of skill to design a site this well and with this kind of restraint. Let us tell you a secret. Some graphic designers like to build sites with lots of graphics. They have fast LAN or DSL connections and have no idea how long their sites take to download on a 56K modem. Try to keep your homepage to 60K maximum, counting the file sizes of all the graphics and the HTML. (It's a hard, but an important exercise.) Resist a designer's yen to show off his skills. Quick loading – that's important. There's no way we can educate you on complementary colors, warm and cold colors, heavy and light colors, etc. But bear in mind that everything you do has some effect on your visitor's perceptions of your company, her state of mind, and her emotional response. One of your best website investments will be in a few excellent, royalty-free stock photos. Well-composed photos add a touch of class to your webpages. They provide a visual center of interest in an otherwise plain webpage. They add spice and color. You don't want just dull pictures of business people in suits. To create a sense of energy and maximum effort, you might use a theme of photos from competitive sports, for example. Use your imagination. For high quality photos you can license and use on your website for $35 to $60 each, look at PhotoDisc (Getty Images, www.photodisc.com). You can subscribe to ClipArt.com and have access to 40,000 photos (some great, many good). We can use anything we can download in week for $12.95 for a week. Such a deal! 8.3 BUILDING BASIC WEBPAGE TEMPLATES The commercial websites are built from templates. You or your designer will create a template that constructs each part of a typical webpage, with a "hole" in the center for the unique page content. This takes many hours to build from scratch, but it's worth it. Now you can create page after page from the template. For each webpage you'll insert a page title, meta tag content, a headline, and the text content, each in its appropriate spot. Have fun! But let us take this a step further. z top.ssi - inserts the masthead graphic, a banner ad, and some of the "tabs" navigation system at the top of the page. This is a separate file, called "top.ssi" that is inserted at the top. z menu.ssi - inserts the complex left-side menu plus a database search feature. z bottom.ssi - inserts a subscription form for my newsletter, plus more navigation links, copyright and trademark information. z right.ssi - inserts cover shots of my books, plus links to purchase my e-books and affiliate links to products and services in the field of web marketing and e-commerce.

125 Web Content Creation 125 Each of these files is called a Server Side Include (SSI) file. On the webpage a single line of code calls one of these files and places it where it belongs on the page. Here's what it the code looks like: >!-#include virtual="/ssi/top.ssi"-< The beauty of this kind of modular system is that a site built with SSIs can be modified or completely altered by just changing one of the SSI files and uploading it to the server. Now all the webpages in the entire system reflect the change. When we discovered how to do this it cut lot of maintenance time dramatically. Yes, it takes a learning curve to make it work, but it's well worth the time you spend! It is possible, of course, to use a template for your pages that doesn't employ SSIs. But if you anticipate a site that could grow to more those 8 to 10 pages, you're much better off building your site with SSIs. Modern websites control the font sizes and colors using Cascading Style Sheets (CSS). When you change the font size on a single master CSS file, it changes the fonts and colors in all your webpages. Cool! Make sure your website designer builds webpages using a single CSS file, since it saves maintenance costs in the long run. The design decisions that you need to consider here are many, since they involve every detail of the look and feel of your basic template. Hopefully, you'll decide to employ both Server Side Includes (SSIs) and Cascading Style Sheets (CSS) that make your entire site are easy to modify and replace. 8.3.1 Constructing Site to be Search Engine Friendly It is interesting to mention that with a little practice, anyone can build a webpage. However a webpage that search engines love to visit and index – vital if you expect your site to get traffic – that's another story. So many, many business websites don't have a clue how to do this. Two important aspects of building a search engine friendly site: Making Each Webpage a Search Engine Siren In Greek mythology, as you know, partly human female creatures called Sirens lured mariners with their singing. Your webpages ought to entice search engine spiders or robots to index your site. Each webpage you construct needs to contain the following elements. Note the careful placement of keywords; the search words people would use to find this particular webpage. z Title: Provocative and descriptive, containing the most important keywords from that webpage, no more than 80 characters. This is what shows up hyper linked in search engine results, so make people want to click on it. z Meta tags: The description meta tag should include one or two sentences (up to about 250 characters) describing the contents of this particular webpage. Work into the sentence the most important keywords and key phrases that occur on this page. Some search engines will display your description. We still include a meta keywords tag, though major search engines currently disregard it for ranking purposes. z Headlines: H1, H2, H3 in HTML parlance. Your headline and subheadings should include your important keyword at least once. z Body text: The first paragraph of the content of your webpage article or text should contain the main keywords for that page. z Hyperlink text and filenames: Search engines believe that the words contained in hyperlinks on your webpage (such as widget) are important, and thus rank them higher. If the filenames contained in the hyperlink URLs contain important keywords (such as widget.html for the filename of your widget order page), so much the better. Don't over emphasize the same keywords on every page. Let the actual content on that Page 125 of 14 dictate what keywords should stand out. Your goal is not to trick the search engines in some kind of bait-and-switch scam, but to help the search engines recognize and index appropriately the actual content of your webpages.

126 126 e-Commerce Construct every webpage with search engines in mind and it'll help your rankings. Of course, search engine rankings are heavily influenced by incoming links to your site, but constructing your webpages with an eye to search engines is very important, too. 8.3.2 Using Search Engine Savvy Navigation Systems Navigation systems are built to help actual humans find their way around your website. But these navigation systems had better be designed carefully or the search engines will throw up their hands in disgust, with the result that actual humans will never get to your website. Search engines need a chain of hypertext links – starting at your homepage – that will take them, page by page, to every webpage in your entire site. But let me explain three common navigation design problems that can disrupt search engine indexing of your site: z Frames produce a navigation system where the menu on the left scrolls independently of the page content on the right. Unfortunately, frames can wreak havoc with search engines. (a) Unless you are careful to include >NOFRAMES< tags, search engines may not be able to find the content pages. (b) Even if search engines do find your content pages, these pages can show up in response to a search engine query all by themselves, without the navigation system and links necessary for a visitor to find the rest of your website. Don't use frames. If your current site has frames, make plans to rebuild the site without them. A menu constructed from SSIs (is just as easy to maintain – even easier, once you learn how to do it). z JavaScript and Flash are programming languages that can make very classy, animated menu systems. For example, a menu item might have a pop-out sub-menu that will wow your visitors (you hope). The problem is that if JavaScript and Flash systems replace plain hyperlinks, the search engine may not be able to find the underlying pages. Most search engines have posters on their walls saying, "I don't do Flash." Stubborn creatures, these search engines. One solution: retain your fancy menus, but include hypertext links at the bottom of the page to your sectional pages, with links on your sectional pages to all the subpages in that section. You can also submit a site map webpage to the search engines that contains a link to every page on your site. z Dynamically generated webpages, created "on the fly" from a database, are more difficult for search engines to index, since these webpages don't exist in real time. They appear when a visitor clicks on a link. Then the database whirrs and spits out a transient webpage for that visitor and that visitor alone. Database-driven content management systems are the only way to keep your sanity if your site contains thousands of webpages, but they cause search engine problems. A question mark or a long session ID string can be like a red flag to search engines. Many will stop and throw a hissy fit or perhaps index more slowly and less comprehensively. A bunch of over-sensitive search engine divas? Yes. But it can happen. Don't use content or catalog management software that produces long URLs if you can help it. You can get around this in three ways: z URL rewriting at the server configuration level, z building a set of focused content pages, or z paid inclusion submission to search engines. Contact me for referral to a search engine optimization firm that specializes in dynamically-generated sites. 8.3.3 Writing Fine-tune Focused Content Pages If you've ever been in charge of building your company's website from scratch, you've learned that one of the most time-consuming tasks is to write the copy or words that appear on the website. It's plain old hard work. It's easier to build the second or third version of your website, since the writing is already done.

127 Web Content Creation 127 One of the keys to generating search engine traffic is to get your site into the top 5 or 10 positions on the search engines for the keywords and keyphrases that matter to your business. It's often hard to get your home page to score high since it is the more general entrance to your entire website content. Your best strategy is to write a series of focused content pages, each of which features a particular topic and keyword or keyphrase. These pages aren't general, but very specific. Once you've written your first draft, test the webpage against the Page Critic feature in WebPosition Gold (www.wilsonweb.com/afd/webposition.htm), an excellent search engine optimization software tool that I use and recommend. Page Critic's detailed analysis will guide you through the process of tweaking your webpage wording, title, meta tags, headlines, alt tags, etc., so that the page has a better chance of ranking high on the search engines. For competitive words, you can't rank high on Google and other search engines without lots of incoming links, so work on linking strategies, too, such as reciprocal linking with complementary sites. Nevertheless, these focused content pages should be an integral part of your website strategy to boost rankings. 8.3.4 Incorporating Customer Communication Systems Websites are two-way, interactive communication systems. You communicate your company's marketing message to potential customers and make it easy for them to reciprocate by communicating with you. The better the communication, the more trust increases, and customers feel comfortable to do business with you. Of course, on your contact page, include full contact information – name, address, phone number, etc. I'm amazed at the number of sites that don't include any contact information, but still expect people to do business with them. Full contact information builds trust – even if your customers never need to use it. One key communication tool is the "Contact Us" response form. Such a form includes fields that ask for your visitor's name, contact information and question or comment. When the form is submitted, it sends an immediate e-mail to you as well as an e-mail assuring your customer that you'll be reading the message and responding soon. And you need to keep your word. Respond to your customers' e-mail promptly! The poor man's response method is a mailto link (such as username@domain.com) that allows the customer to use his own e-mail program to send you an e-mail message. The problem with this approach is that you often don't get vital contact information from the customer, such as his phone number. With e-mail that comes from a form, you can easily filter it via the subject line into the appropriate folder for immediate viewing. E-mail that comes through a general e-mail address, on the other hand, easily becomes confused with spam and could be overlooked. One of the most popular form-to-email programs, Matt Wright's FormMail ver. 1.92 (www.scriptarchive.com/formmail.html), was updated on April 19, 2002 to plug some serious security holes. It is an excellent tool - and free, also. However, there are other ways you can make it easy for customers to communicate with you. These include: z Instant text chat systems such as LivePerson (www.liveperson.com). z Voice over Internet (VoIP) systems that allow you to talk to your customers live in your own voice. Your customers can use text chat to ask questions, and if she has a computer microphone, she can talk to you, too. z Instant Messaging (IM) systems are in widespread use by your customers. Why not list all your usernames and numbers on your site for quick response to customer questions? One excellent way to save time for yourself and your customers is to develop a Frequently Asked Questions (FAQ) page. It'll cut down on your customers' need to contact you. Excellent customer service is the basis of any successful business - on or off the Internet. 8.3.5 Creating Test Effective Sales Pages
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Every business site and many organization sites want Most Wanted Response (MWR). Your most wanted response is probably one of the chief purposes you listed under Point #1 (above). For many business sites, the purpose is: z To sell a product, z To have the visitor go through an affiliate link to buy a product on another site, or z To generate contact information for a future lead or follow-up. For organizations, success may be measured in memberships or subscriptions. Whatever your MWR, you must work to optimize responses. Good sales pages result in a high ratio of visitors to sales – called

the "

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conversion rate." A typical site might have a conversion rate of 3% to 5%, some higher and many lower. Over the past few years, marketers have developed the art

of increasing the conversion rate. This is especially important when you are purchasing Pay Per Click (PPC) ads to drive traffic to

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your site. Your profit is closely related to (a) the cost of the click and (b) the conversion rate of the "landing page," that is, the sales page to which you direct interested shoppers. To scientifically and systematically increase your conversion rate to the maximum, you must carefully track sales percentages for each product your sell. Then make incremental changes

to

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the landing page or the order system and see if the conversion rate rises or falls. Over a period of careful

study and change, you'll maximize your sales. 8.3.6 Conducting Usability Trials and Incorporating Changes All newly constructed websites contain unseen glitches – especially those created by inexperienced developers. Here's how to conduct your first few usability trials. Ask to meet with a friend who is an Internet novice. Seat him in front of a computer, stand near him, and direct him to your site. Tell him that you'd like him to talk out loud to you about what he is thinking and the questions that occur to him as he pokes around your site. Explain to him that you won't be able to answer any questions at this time, but you want to hear them just the same. Now watch and take copious notes. Observe what confuses him. See where he gets hung up. Listen to his questions. After 10 or 15 minutes of this humbling exercise, you'll detect plenty of small changes to make. You'll also learn how effective your navigation system is. If you have built your site with SSIs, navigation system changes will require you to modify only one or two of the boilerplate SSI files. Upload the changes and the whole site will be easier to navigate. To discover 85% of the usability problems on your site, repeat the usability exercise a total of five times, each time, of course, with a different person who can look at your site through completely new eyes. 8.3.7 Planning the Maintenance of Site for the Long Haul Building a site for the first time is exciting. Maintaining it for the next two or three years can be extremely frustrating unless you've set it up with maintenance in mind. By maintenance we mean: z Changing the content of existing information, such as upcoming events, new industry directions, new personnel, etc. Life isn't static. Websites shouldn't be either. z Adding new webpages, such as archiving copies of your newsletters, adding new products and services. z Changing the content of your home page to make your site look active and up-to-date. It is strongly recommend that someone in your own organization learn how to make the everyday website changes that an active organization requires. Community colleges and adult education curricula often offer training in webpage design and HTML. Yes, you want to have a website designer available to back you up on occasions when the change needed is beyond your person's abilities. But webpage maintenance is something you definitely want to keep in-house, like word-processing and desktop publishing. Learn how! Otherwise, changes

129 Web Content Creation 129 aren't likely to happen in a timely manner and you may put off requesting changes that should take place immediately. There's always someone, however, who refuses to take the time to learn. Let me recommend. This inexpensive CGI program allows the website designer to designate sections of webpages that can be changed by typing the new text into a web browser with no need to know HTML. You can update key information on any number of webpages, all with a username and password. Suggest this to your website designer who is tearing out his hair trying to teach you website maintenance. Check Your Progress 1 1. What is WebPage?
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..... 2. What is "conversion rate" for a sales page?
.....
..... 3. How modern websites control the font sizes and colors? .....
..... 8.4 LAUNCHING A BUSINESS ON THE INTERNET There are a lot of people that are interested in launching a successful Internet marketing business. Some people even get to the point where they try but, unfortunately, many of them fail in their efforts. This isn't necessarily because the idea that they had was inferior, it is more than likely a matter of not knowing exactly how to take care of every aspect of their online business. For this reason, it is often necessary to go with a turnkey package, one that will help you to develop your entire Internet business in a smooth fashion. Not only will this help you to be successful, it will teach you the different steps that are necessary to make any online business a success. One of the first things that you're going to need to do is decide on which system you're going to go with. It is better to go for a turnkey system. This system will provide you with everything necessary to make you a success right out of the starting gate. It is truly a hands-off experience for you, if that's what you need it to be. This will allow you to watch people that come into your sales funnel and follow them the whole way through until they are customers on the other end. It gives you the experience that is necessary without having to worry about going through a series of hard knocks that are typically found in the learning process. Another thing that you're going to have to find is an ongoing stream of interested prospects to what you are offering. With a system, you will have the ability to have people who already have the marketing contacts promote your business for you. This can provide you with an almost unlimited amount of business prospects coming to you on a regular basis. What are you going to do once these prospects hit your front door? Any business lives and dies by its marketing efforts. You could have thousands of people coming to on a daily basis but if you do not have the marketing in place to turn those people in the customers all of your efforts will be in vain. The entire process of the marketing should be automated, that will pull your prospects into your system and make them paying customers. Once they realize the benefits that come from being a part of a turnkey business, you will reap the rewards of ongoing commissions.
130 130 e-Commerce So you really have two choices. You can either launch your Internet business by your own through a series of steps or you can go with a turnkey system and launch a successful business. If you want to launch the Internet business without help of a turnkey system then you have to follow the below mentioned steps. Things You Need: z Telephones z Internet Access z Computers z Web Site Developers z Business Plan Software Step 1: Pick your niche. If you're passionate about, and have expertise in, a particular field, stick with it. Step 2: Set up your Web site. You might need to hire a Web developer to help you build the site. Step 3: Write and, if necessary, buy articles that deal with your topic. Post the articles, calendar items, tips, links to other sites and resources, and other relevant information on your site. Step 4: Arrange to have your articles published or referenced on related Web sites. Offer those sites the same courtesy. Step 5: Approach potential advertisers. Make sure you know your audience or market's demographics and that the advertisers you approach fit the character of your site. Step 6: Market the site. Consider sponsoring events – for example, a conference – that allow you to promote the Web site. Agree to plug other Web sites if they will give your site a plug. Step 7: Consider selling merchandise on the site. Ensure the merchandise you decide to sell is directly related to the content of your site. 8.5 LET US SUM UP A Web site is a group pages on a subject, a business, an organization. A Web site has also a main page.

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Larger sites need a search feature so visitors don't get lost.

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Bottom links provide hypertext links to all the sectional pages.

A site should be search engine friendly site: Your WebPages ought to entice search engine spiders or robots to index your site. Some search engines will display your description. Search engines need a chain of hypertext links – starting at your homepage – that will take them, page by page, to every webpage in your entire site. You can also submit a site map webpage to the search engines that contains a link to every page on your site. 8.6 KEYWORD WebPage: It is a file that contains the text, the images and links to other pages or documents. 8.7 QUESTIONS FOR DISCUSSION 1. Write an essay on how to design Website. 2. What are the critical issues in making a site attractive?
131 Web Content Creation 131 3. What are the issues of maintenance of website? 4. How a communication system is build on the website? 5. What are the different steps for its creation? Check Your Progress: Model Answers 1. A WebPage is a file that contains the text, the images and links to other pages or documents. 2. Good

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sales pages result in a high ratio of visitors to sales - called

the "conversion rate." 3. Modern websites control the font sizes and colors using Cascading Style Sheets (CSS). 8.8 SUGGESTED READINGS Elias. M. Awad, Electronic Commerce, Prentice Hall of India Pvt. Ltd. 2002. Ravi Kalakota, Andrew B. Whinston, Electronic Commerce - A Manager's Guide, Addison-Wesley, 2000.

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Commerce from

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Ravi Kalakota, Andrew B. Whinston, Frontiers of Electronic Commerce, Addison – Wesley, 2000.
132 132 e-Commerce LESSON 9 ELECTRONIC RESEARCH SOURCES CONTENTS 9.0 Aims and Objectives 9.1 Introduction 9.2 Information Brokers 9.2.1 Information Uncertainty and Risk 9.2.2 Information Trading 9.3 Electronic Research Sources 9.3.1 Search Costs 9.3.2 Consumer Searches and Electronic Commerce 9.4 Management of Content Provision 9.5 Contextual Infrastructure 9.6 Market Drivers of I-Way 9.7 Infrastructure Network Access Equipment 9.7.1 Cable TV Set-top Boxes 9.7.2 Computer-based Telephony 9.7.3 Hubs, Wiring, Closets, Routers and Digital Switches 9.8 Regulatory Bodies 9.9 Founders of E-enterprises 9.10 Business-to-Business Electronic Commerce 9.10.1 What is Business-to-Business E-commerce? 9.10.2 Difference between B2B and B2C 9.10.3 E-procurement 9.10.4 Wal-Mart: An E-business Success Story 9.11

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Let us Sum up 9.12 Keywords 9.13 Questions for Discussion 9.14 Suggested Readings 9.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Describe information brokers z Explain electronic research sources z Describe management of content provision z Explain business-to-business electronic commerce

133 Electronic Research Sources 133 9.1 INTRODUCTION In physical markets, consumer search activities include reading advertisements, calling vendors, and visiting stores. In a virtual marketplace, all these activities converge into web searches and web browsing. Not surprisingly, search services were the first market infrastructure to be built in the electronic marketplace. The focus of this lesson is to investigate the nature of existing search mechanisms as information channels. It also evaluates the effectiveness of search services and information intermediaries in terms of the economic efficiency that the digital information market may achieve through the proliferation of these search channels. 9.2 INFORMATION BROKERS The information function of financial intermediaries refers to the sale of information to prospective traders of financial assets. Capital markets are information driven and, accordingly, the economic literature on financial markets and institutions emphasizes information asymmetry between lenders and borrowers as the primary factor necessitating an intermediary. Often lenders have no adequate means to monitor or verify the investment activities of borrowers. Thus, risk-averse lenders may be unwilling to participate in capital markets. An intermediary offers a way to share or reduce the risks inherent to individual lenders by monitoring borrowers. 9.2.1 Information Uncertainty and Risk Intermediaries are typically more efficient at monitoring borrowers because they can access more information and process the information more efficiently, and because they can reduce monitoring costs by exploiting the scale of operation. For example, to be well informed, a trader may subscribe to various newspapers, newsletters and databases. Subscription costs do not increase with the amount of funds a trader handles. Therefore, the per-transaction cost of information decreases as the scale of operation increases. Furthermore, the efficiency in processing this information may increase over time as the trader accumulates knowledge and expertise. Even more importantly, an intermediary may spread the risk inherent in uncertain projects by diversifying its portfolio. Diamond (1984) studies such a case in which lenders contract with a risk-neutral intermediary. The fundamental reason for increased efficiency through an intermediary in this case is the law of large numbers. As the number of uncertain investment projects, that is, borrowers, increases, a form of portfolio diversification occurs. In contrast, individual investors risk a total loss when a one-project portfolio folds. Similarly, in Boyd and Prescott (1986) and Williamson (1987), financial intermediaries arise to economize the costs of acquiring information through an intermediary. This situation is completely reversed in open electronic markets. In automated trading systems, traders bypass risk-sharing intermediaries. Thus, instead of relying on the law of large numbers, traders must resolve the uncertainty by acquiring more and better information. For this reason, you can anticipate seeing more active participation from specialized information sellers in electronic commerce. 9.2.2 Information Trading Information can be key to financial intermediaries in more ways than one. Some financial intermediaries restrict their operations to selling investment information in the form of newsletters. Brokers and other intermediaries are opening new business units to utilize their advantage in information access and processing. For example, Merrill Lynch & Co. plans to organize its online business as an information and financial service provider by offering online investment information as well as related services, such as stock quotes and online statements. Numerous other news organizations and information dealers have already staked out their web storefronts, reflecting the perception that the Internet is truly a marketplace for information. In choosing which method to use, a seller of information must consider the effects of externality: the more people know about the information, the more diminished its value. Admati and Pfleiderer (1986, 1990) distinguish

134 134 e-Commerce between direct and indirect methods of selling financial information under externality. Direct sale refers to the unconditional selling of information to buyers. For example, subscribers to newsletters purchase unrestricted use of the information for any investment purpose. An indirect sale of financial information refers to a case in which a stock dealer presents buyers with a choice of stocks to buy. Buyers do not observe the information, but only the stocks chosen on the basis of the information. In the case of direct sale, buyers use the information to maximize their gains from trading; the information is revealed in the market price or price movement. Admati and Pfleiderer (1986) show that a direct seller of information can increase profits or restrict the use of information by adding noise, that is, selling slightly less precise information. In the case of severe externality, an even more effective method to control information usage is through an indirect sale rather than through a direct sale with added noise or restricted subscribership because these inevitably still transmit some information to those who observe market prices (Admati and Pfleiderer, 1990). An indirect sale of information couples the sale of information with the sale of securities, which has traditionally been practiced by brokers and dealers. If the coupling of information with securities is not possible, specialized information sellers have to rely on other methods to control the use of information by their clients. In the past, financial intermediaries have produced, collected, and disseminated the largest amount of information. However, their control over information is waning as fast as the Internet is growing. Soon, individual investors will have the same access to up-to-date and complete information as only brokers used to have. An example is the online availability of the Securities Exchange Commission's Electronic Data Gathering, Analysis, and Retrieval (EDGAR). 9.3 ELECTRONIC RESEARCH SOURCES A market is considered to be economically efficient when a product is sold at the lowest possible price or at the marginal cost of production for a given level of quality. For a standard product that can be produced by many firms using a common technology, an efficient price is unique. In real markets, however, a uniform price is seldom observed because sellers and buyers have different information about the price and quality of a product. Bargain hunters must visit many stores to gather information on different prices and product specifications, and compare their records before deciding which offers the best deal. This search process clearly has costs associated with it. To obtain full information about prices and product qualities, consumers must incur unnecessarily high search expenses and duplicate the efforts of other consumers. An efficient solution strikes a balance between the benefits of an efficient marginal price and the costs required to inform all market participants about price and product quality. In general, firms know more about their products than do the consumers. This informational advantage gives firms some degree of market power, which is usually manifested in the form of a product price greater than the competitive price. If consumers were to receive advertising about price and product quality from all sellers in the market, their purchase decision would be based on who offered the lowest price or the best price for the desired quality. However, consumers do not tend to receive all the relevant market information, because some sellers may not advertise or some advertisements may not reach all the intended audience. This lack of consumer knowledge creates inefficiencies in the form of sellers charging higher prices than the marginal costs of production, or the existence of multiple prices that discriminate against some consumers. For all these reasons, an efficient market for product information is necessary for the existence of an efficient product market. 9.3.1 Search Costs The cost of a search is any amount of money, time, or effort that buyers may incur in obtaining price and quality information for products. Examples of costly information gathering are visits to stores (which involve transportation and time costs), telephone calls, buying newspapers, and so on. In physical markets, searches

135 Electronic Research Sources 135 usually happen sequentially—that is, consumers visit one store, gather information, decide whether or not to purchase, and visit the next store if the product is not bought. Suppose that Alice goes to the store #1, and finds the offer price is $10. Suppose also that it costs $1 to visit each store, and that, for simplicity, this cost is the same for all visits. Including the search cost, she faces the total price of $11 at the first store she visits. She must decide whether to accept or reject the offer. Her purchasing process may be either "take-it-or-leave-it" (accepting the posted price), or "bargaining." If she goes to a second store, she incurs another $1 for her search. If the second store offers the same product at $9.50, Alice would have been better off buying it at the first store, because the total price at the second store is $11.50 ($9.50 + $1 + $1). Suppose that $9.50 is the competitive price and every consumer knows that fact. However, despite consumers' knowledge, prices higher than the competitive price are still observed in the market because of the search cost. If all sellers follow this reasoning, there can only be one stable equilibrium price, which is at the monopoly price. Even when the search cost is reduced to an arbitrarily small amount, the logic of this result remains valid unless the search cost actually becomes zero. In summary, this scenario demonstrates that prices will be monopolistic – or arbitrarily high – even when there are many competing sellers, as long as consumers are not informed and must incur search costs. The search cost scenario changes significantly in the case of repeat purchases. When consumers buy the same products repeatedly over a long period of time, they become familiar with the prices charged by each seller in the market. Except for the case in which everyone shops at the same store, some sellers may actually lower prices to attract more customers. In a sense, buyers accumulate price information and make their purchasing decisions based on this simultaneously. For those who have pricing information, prices become efficient, approaching the competitive level if stores compete fiercely in price. Consumers who prefer to shop at the same store are not informed, and some stores continue to charge higher prices than the competitive price, depending upon uninformed consumers. Repeat purchasers are somewhat like "natives," who have information about prices charged by local merchants, while those without information are "tourists." In this version of the native-and- tourist model, a range of prices can be observed that discriminate against uninformed consumers. 9.3.2 Consumer Searches and Electronic Commerce Similar to searches in physical markets, online searches can also be carried out either sequentially or simultaneously. Surfing through different web stores is a sequential search; a price search based on a price database is an example of a simultaneous search. In either case, an online search offers a tremendous advantage over a physical search. Besides the lowered costs for time and transportation, a computer-based search allows consumers to remember and compare information gathered from many stores. Furthermore, online searches enable consumers to process a wide range of information other than price, such as location and name of vendors, terms of sales, quality and performance variables, brand names, sizes and other product characteristics, and so forth. Comparing prices alone strains the capacity to process information in physical markets, especially if shopping involves many products. Online search technologies automate this process and allow consumers to engage in more sophisticated and efficient searches. The search and information transmission mechanisms used in the electronic marketplace are too new for researchers to have determined their efficiency. In fact, there are contradicting predictions about what will happen. One view is that with computer technologies such as search engines and intelligent software agents, consumers may be able to search the whole information space at no cost. For example, suppose you want to buy a product. Using a computer program, you initiate a search mechanism that searches all the web pages on the Internet for a product that matches your needs. The search generates a table of names of sellers, prices, locations, and product specifications, as well as other relevant information such as seller reputation, past sales records, and so forth. You then choose a seller among the candidates, and initiate a purchase order. Although this scenario is close to one with no search costs, which produces an efficient market, there are many reasons why the electronic

136 136 e-Commerce marketplace may not actually be so efficient. In the first place, sellers may not provide relevant information. Secondly, search algorithms or techniques may not be sufficient to gather all the relevant information. This may be because of access difficulties (because some web sites do not allow access), or because all searches inevitably select and process information based on prescribed criteria that may have non-technical problems. Lastly, economic analyses indicate that a non-zero search cost, however small it may be, results in noncompetitive pricing. Using electronic media may reduce search costs to an arbitrarily small amount, but the cost is still non-zero. In mathematical models, a reduction in search costs is quite different from an elimination of search costs. In this regard, it may be reasonable to assume that the problems associated with information will persist in electronic commerce as they do in physical markets. Some authors argue that increasing advertising (such as information provided by sellers) tends to be a better means of producing an efficient market than is efficient consumer searching. The argument is that competition through advertising tends to lower prices, whereas consumers do not usually search for all information because of the search costs involved or the difficulty of processing information. The resulting lack of full information on the part of consumers often gives some firms an incentive to raise their prices. It is still not certain that advertising will be a better information channel than a consumer search in electronic commerce. Broadcast-based advertising has many obvious drawbacks, the most glaring of which is that mass advertising is strongly resisted and discouraged on the Internet, because Internet users must pay for connection and downloading time to receive ads. Also, by its nature, advertising is necessarily duplicative and wasteful, not to speak of its side effect of cluttering precious bandwidth. At the same time, Internet consumers seem to prefer to access product information actively. The conclusion is that searches initiated by consumers based on their identified needs will surely be more efficient (in terms of costs and effectiveness) in reaching the intended audience than duplicative broadcast advertising will be. Finally, consumers may behave differently in the electronic marketplace than in physical markets where search costs are usually positive. This positive—however small—search cost results in higher than competitive prices. This phenomenon is popularly known as the "Diamond paradox" (Diamond, 1971). Are search costs always positive? Admittedly, some shoppers realize an enjoyment benefit to shopping rather than a cost. On the Internet, "surfers" often resemble those shoppers who happily visit stores to simply look at the merchandise. Armed with powerful archiving programs, online surfers are able to gather information while enjoying themselves. When they process this information to make a purchasing decision, the net cost of search may indeed be zero—or certainly not positive—debunking the paradoxical result of monopoly price equilibrium under positive search costs (Stahl, 1996). 9.4 MANAGEMENT OF CONTENT PROVISION Business-to-Business Web EC largely revolves around automating the fulfillment and procurement business processes. It can be delivered in two ways: z As a conventional packaged sales order entry or purchase order entry module within an accounting suite that has been Web-enabled to allow users to enter and manage orders through applets that can be downloaded into, and run from, Web browsers. z As a "front-end" Web-based ordering package used to manage the EC transaction until it needs to be fed into the appropriate "back-end" accounting system modules through either a batch or real-time (using triggers and/or stored procedures) interface. Each approach has its own advantages and disadvantages. The first option may not even be viable if the suite vendor has not yet Web-enabled its applications. However, at this time, many leading business application vendors such as Baan Co., Oracle Corp., PeopleSoft Inc., and SAP AG are Web-enabling their applications via Java applets, and others such as Flexi International Software Inc. and Great Plains Software Inc. are Web-enabling via ActiveX controls. If deliverable, the first option has the advantage that the EC transaction is "seamlessly"

137 Electronic Research Sources 137 integrated with the accounting system and can take advantage of all the business rules and structural data (such as customer, vendor, and item master files) that already exist in the accounting system database. The disadvantage of the first option is that the Web EC functions may not be as well designed or visually appealing as a ground-up Web EC package, and the system may still need to be interfaced with other applications, such as credit card verification systems, to handle certain EC transactions. The second option may offer a more Web-friendly user interface and closer integration with both the Internet itself and Web-based EC-related services, such as participant or payment authentication systems. Whereas in the first approach, full integration with the accounting system's business rules and data can be assumed, in the latter option this integration will usually need to be custom built – unless you want to replicate all the accounting data and rules in some sort of "mirror" system. You might also need to build custom routines to allow for online credit checking in order entry, budget checking in purchase order entry, or inventory backordering because cash receipts, departmental spending budgets, or purchasing of inventory are controlled in the back-end accounting system. It's these exception events in the EC business process "pipeline" that generally require information retrieval from or writing to the back-end accounting system. Consequently, some duplication of effort may be inevitable if a front-end Web EC package is used in conjunction with a back-end accounting system. E-commerce company will survive not only based on its product, but by having a competent management team, good post-sales services, well-organized business structure, network infrastructure and a secured, well-designed website. Such factors include: z Sufficient work done in market research and analysis. E-commerce is not exempt from good business planning and the fundamental laws of supply and demand. Business failure is as much a reality in e- commerce as in any other form of business. z A good management team armed with good and sound information technology strategy. A company's IT strategy should be a part of the business re-design process. z Providing an easy and secured way for customers to effect transactions. Credit cards are the most popular means of sending payments on the Internet, accounting for 90% of online purchases. In the past, card numbers were transferred securely between the customer and merchant through independent payment gateways. Such independent payment gateways are still used by most small and home businesses. Most merchants today process credit card dealings on site through arrangements made with business banks or credit cards companies. z Providing reliability and security. Parallel servers, hardware redundancy, fail-safe technology, information encryption, and firewalls can enhance this requirement. z Providing a 360-degree view of the customer relationship, defined as ensuring that all employees, suppliers, and partners have a complete view, and the same view, of the customer. However, customers may not appreciate the big brother experience. z Constructing a commercially sound business model. If this key success factor had appeared in textbooks in 2000, many of the dot-coms might not have gone into bankruptcy. z Operating on or near the cutting edge of technology and staying there as technology changes but remembering that the fundamentals of commerce remain indifferent to technology. z Setting up an organization of sufficient alertness and agility to respond quickly to any changes in the economic, social and physical environment. z Providing an attractive website. The tasteful use of color, graphics, animation, photographs, fonts, and white-space percentage may aid success in this respect.

138 138 e-Commerce z Streamlining business processes, possibly through re-engineering and information technologies. Providing complete understanding of the products or services offered, which not only includes complete product information, but also sound advisors and selectors. Naturally, the e-commerce vendor must also perform such mundane tasks as being truthful about its product and its availability, shipping reliably, and handling complaints promptly and effectively. A unique property of the Internet environment is that individual customers have access to far more information about the seller than they would find in a brick-and-mortar situation. 9.5 CONTEXTUAL INFRASTRUCTURE For the E-commerce to become reality we need a network infrastructure to transport the content. This network infrastructure is also referred to as interactive or multimedia superhighway or I-way. We can define I-way as high capacity (broad band) interactive (two way) electronic pipelines to the home or office which is capable of simultaneously providing access to a large number of electronic commerce applications and providing interactive phone like connectivity between users and services and between users and other users. The traditional communication infrastructure has evolved separately for voice and data network, voice network relying on circuit switching and data networks using packet switching techniques. The commercial user requires, voice, data and video conferencing services. The development of integrated electronic commerce applications in manufacturing, health, education, banking and insurance and other industries is paving the way for a network infrastructure providing the support to various types of information. Various companies like AT&T, Sony, Time Warner, Microsoft, BSNL, Reliance, etc. have invested in the technology to construct the required network infrastructure. Many enterprises are constantly upgrading their network infrastructure or creating new products, and restructuring as a result mergers and acquisitions to better prepare for life on the I-way. For example, long-distance and local telephone operators are setting up new high-speed fibre optic links to the home. Cable television providers are either upgrading their coaxial cable or setting up fibre optic links. To access the information, computer companies are installing sophisticated PCs with much more functionality, and TV manufacturers are building televisions and set-top boxes (cable boxes with embedded microprocessors with the digital processing power of fast computers). Similarly, publishers and movie producers are generating new content for delivery. Software companies are trying to build the tools and programs to make it all work together. Courts are declaring certain regulatory statutes unconstitutional and thus creating the way for more competitive markets. Across the globe governments are proposing g new laws to eliminate restrictions on competition. The development of the I-way is considered the next industrial revolution-and then the dismissive antithesis, "the I-way is off track, it is delayed and it is not meeting anyone's expectations." Constructing the I-way is a painstakingly slow and arduous process. 9.6 MARKET DRIVERS OF I-WAY The success or failure of any creative, product, or service is a key driver of market forces. The understanding of market drivers of I-way is important because e-commerce applications are dependent on the underlying I-way. For example, if we choose cable TV as our access ramp, we may be limiting ourselves to certain applications such as video on-demand and may not be able to develop two-way interactive applications such as small business information publishing using tools like the World Wide Web (WWW). The I-way will support: z Consumers, end users, or business consuming and paying for information products/services. z Users who become information publishers by setting up on-line servers.

139 Electronic Research Sources 139 z Value-added information providers, including third-party brokers and other intermediaries, as well as originators of services who add value by packaging or building on services provided by others. z Information service providers, who are commercial, government, or private providers or publishers of information goods and services. Users and enterprise play multiple roles as consumers and producers of information. These roles are not fixed but can be combined in various ways such that enterprise can, for example, concurrently be information consumers and service providers. Various types of user roles provides an indication of the market structure and could explain why many companies are merging or realigning themselves. Traditionally, the marketplace was fragmented into communication, entertainment, and information sectors. Enterprises now seek to broaden their markets and serve as many users as possible. Thus, it is important to mention that: z The boundaries among communication, entertainment, and information are disappearing. For example, video is combination of information, entertainment, and communication (via video conferencing). z The boundaries among equipments are also disappearing fast. For example, at present, technology exists to allow television sets and PCs interact or exchange any sort of data. This emerging compatibility results in the flexibility needed to take advantage of new services. In the next generation of consumer equipments, this will become more evident as new devices for telephony, entertainment, and data all interact. Companies are competing to create, support, and exploit specific components of the information infrastructure. For example, telephone companies, cable distributors, computer makers, and content providers, etc. The telcos want to make an I-way that can support a variety of applications: on-demand publishing, real-time video conferencing, including distance learning and tele-everything – telemedicine, telemarketing, and telecommuting – where individuals work from home through the extensive use of telephone hookups. The telcos are driven by the fear that they could be out of business if they are complacent in providing new products and services. To Combat the competition, the telcos have invested heavily in fibre optics and sophisticated switching technology. Between 1985 and 1992, long-distance companies are estimated to have installed 95,000 miles of fibre optic cable nationwide. This has resulted into reduction in prices of long distance calls. The cable industry wants to broaden services from TV programming or pay-per-view services such that the consumer can pay bills, shop, reference c encyclopedias, or check stock prices-all without leaving the couch. The cable companies see a market for new consumer offerings in enhanced entertainment services such as interactive TV (e.g. video on-demand, information on-demand, and education on-demand) and in business services such as voice and data communications and access to on-line services. Many cable companies, however, tend to see the I-way as a 500-channel one-way distribution vehicle (from local cable head-end to customer premises) for audio and video. If they were solely responsible for linking users to the network backbone, their concept of I-way might favour entertainment delivery over two-way interactive communication that the telephone companies want. In brief, driving the cable companies is a need to truck entertainment into homes. They want a highway optimized for digital entertainment, and it is not clear whether this fits the needs of businesses or consumers. The various on-line services providers such as Prodigy, CompuServe, America Online etc. and various computer companies desire to make an I-way that involves a lot of two-way interaction such as electronic mail, information search and retrieval, and more forums, chat lines, and bulletin boards. The computer industry is determined to do so. The I-way is expected to generate "gold rush" for powerful desktop computers with networking and multimedia capabilities. This would boost sales of system and application software that would provide the services need to work with these computers. Thus understanding requirements and demands of various participants place on the network infrastructure are bound to be very different. To support as many roles as possible, an increasing number of alliances are developing between telecommunication, cable television, and entertainment companies. These partnerships provide the

140 140 e-Commerce synergy to create ripple in consumer demand for advanced information, entertainment services, and the equipment and devices necessary to support them. 9.7 INFRASTRUCTURE NETWORK ACCESS EQUIPMENT Customer Premises Equipment (CPE) industry is one of the important, components of the I-way. CPE, or terminal equipment, is a generic terms for privately owned communications equipment that is attached to the information network. It could be categorized into three parts: z Cable TV set-top boxes z Computer-based telephony z Hubs, wiring closets, and routers or digital switches. 9.7.1 Cable TV Set-top Boxes An essential hardware platform for I-way access will be cable converter boxes, referred as set-top boxes, converter boxes, and converters/describers etc. They will be path way for information services, commercial transactions, and SOO-digitally compressed channels. These boxes shall have greater intelligence and more features than the existing converter boxes, such as enabling users to make phone calls, surf the Internet, and even plan their viewing schedule for the week etc. Because virtually all cable boxes are owned not by cable subscribers but by the cable systems that deliver programming, the type of boxes consumers get in the next few years will ultimately be decided by the local cable company. Major suppliers of set-tops are building them with varying degrees of capabilities to serve the more across the globe and cable systems across each with different expectations. The simplest set-top boxes will feature on-screen text menus enabling features like parental lockout, favourite- channel grazing, and time-delay programming for unattended VCR recording. The complex box is with a menu system based on icons for navigating through various activities-to shop, access a bank account, play videogames, watch a pay-per-view movie, or examine an on-screen TV schedule etc. Cable operators will be able to download software through the cable system into the set-tops. Set-tops will have slots for add-on cards that can be used to change or add applications, provide security, or expand the units memory. They will also have a serial data port that can be hooked up to a printer. The main goal is to be flexible for the applications of tomorrow. The sophisticated transactions will require much of the intelligence provided by set-top device. For example, General Instrument has developed a standardized module that could be included in set-top boxes for delivery of interactive services varying from home banking and electronic yellow pages to baseball statistics and stock quotes. Developed in cooperation with Intel and Microsoft, the module, dubbed the Linux, is based on the 486 chip and will have a real-time operating system developed by Microsoft. 9.7.2 Computer-based Telephony The most popular CPE product sectors include Private Branch Exchanges (PBXs), telephones, facsimile products, modems, voice processing equipment, and video communication equipment. Various CPE product sectors like modems are mature and emerging markets featured by intense competition and declining unit prices. The sales of products like telephones and telephone answering machines, modems, voice processing and video communication equipment are booming. Personal communicators are beginning to emerge as a commercially viable CPE product group. These devices combine voice, data, and facsimile functions and enable users to store, send and receive information over either wireline or wireless networks. The software-intensive CPE products have improved business productivity by reducing communications and travel costs. CPE equipment will continue to become more compatible with computing equipment. For example, AT&T signed agreement with Novell to develop a PBX-LAN interface. A similar agreement was signed between

141 Electronic Research Sources 141 Intel and Microsoft. The open software interfaces enable businesses and personal computer users to transfer store data, video, image, and voice messages through the telephone switches more efficiently. 9.7.3 Hubs, Wiring, Closets, Routers and Digital Switches The digital switches industry has undergone changes over the years and has a major impact on the I-way. All digital bits are similar, whether they represent a movie, an opera, an electronic newspaper, or a phone call. A video program, once digitized, looks like any other digital data. In a computer network, data move from one point to their destination(s) because they are attached on the front with a small bundle of identifying digits called as a header. Video programming is also similar. Similar to any other data (CD-quality music, video games, or video conferencing), the digital data pass through switches that route them to their destination-either one or multiple recipients. As the bundles of data are called packets and the packets move through a network at very high speeds, this routing technique is known as fast packet switching. Cable companies are testing and evaluating different switching techniques, including Asynchronous Transfer Mode (ATM), a method quickly gaining acceptance as an international standard. 9.8 REGULATORY BODIES "The wonderful thing about IT industry standards is there are so many of them and they're always changing." It's one of those lines about our industry that becomes more ironic as you ponder it. Here is a list of the major standards and regulatory bodies currently impacting wide areas of IT-related industries shown in Table 9.1 Table 9.1 Name of the Regulatory Body Governing Act and functions (in brief) No. of Members and salaries Telecom Regulatory Authority of India Ministry of Communications & IT, D/o Telecommunications The Telecom Regulatory Authority of India Act, 1997. To make measures to facilitate competition and promote efficiency in the operation of telecommunication services so as to facilitate growth in such services and to lay down the standards of quality of service to be provided by the service providers. Chairperson: 1 Members Full time: 2 Part time: 2 Chairperson – Rs.30000/- (fixed) Members – Rs.26000 (fixed) Part time Member: Sitting fee of Rs.2000 (subject to maximum of Rs.26000 p.m.) + conveyance allowance Rs.500/-. Chairperson – Rs.30000/- (fixed) Members – Rs.26000 (Full time) (fixed) Part time Member: Sitting fee of Rs.2000 (subject to maximum of Rs.26000 p.m.) + conveyance allowance Rs.500/-. Contd...

142 142 e-Commerce TDSAT The Telecom Regulatory Authority of India Act, 1997. To adjudicate disputes in the telecom, broadcasting and cable sector services. Chairperson: 1 Members: 2 Chairperson – Rs.30000/ (fixed) Members – Rs.26000 (fixed) Office of Controller of Certifying Authorities M/o Communications & Information Technology, D/o Information Technology Information Technology Act, 2000 To exercise supervision over the activities of the Certifying Authorities and lay down the standards to be maintained by the Certifying Authorities; A Controller of Certifying Authorities and such number of Deputy Controllers and Assistant Controllers as the Government deems fit. Controller of Certifying Authorities – Rs.26000 (fixed) Cyber Regulations Appellate Tribunal M/o Communications & Information Technology, D/o Information Technology Information Technology Act, 2000 Summoning and enforcing the attendance of any person and examining him on oath; (b) requiring the discovery and production of documents or other electronic records; (c) receiving evidence on affidavits; (d) issuing commissions for the examination of witness or documents; (e) reviewing its decisions; (f) dismissing an application for default or deciding it ex parte; (g) any other matter which may be prescribed. Presiding Officer: 1. Presiding Officer – Rs.26000 (fixed) The Competition Commission of India M/o Company Affairs The Competition Act, 2002 To prevent practices having adverse effect on competition; to promote and sustain competition in the market; to protect the interest of consumers and to ensure freedom of trade. The Commission shall consist of a Chairperson and not less than two and not more than ten other Members. Chairman & Members Rs.26000 (fixed)

143 Electronic Research Sources 143 9.9 FOUNDERS OF E-ENTERPRISES Businesses that generate their revenue directly from their website fall into the web based business category. Such businesses are typically online retailers offering various products for sale from an online catalogue. Web based Business is a part of e-Business. Today, this is mostly done with

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Web-based technologies. Web based business methods enable companies to link their internal and external data processing systems more efficiently and flexibly, to work more closely with suppliers and partners,

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and to better satisfy the needs and expectations of their customers.

Web based business involves business processes spanning the entire value chain: electronic purchasing and supply chain management, processing orders electronically, handling customer service, and cooperating with business partners. Special technical standards for web based business facilitate the exchange of data between companies. The needs of web based businesses go far beyond merely providing product information and collecting customer feedback. An entire system for places orders and handling financial transactions must be in place. Fortunately, there are numerous e-commerce solutions available. Most web hosts typically offer e-commerce plans for businesses wishing to venture into the world of online retailing. The focus of the website should be on making sure the customer is able to find the products they are looking for and place orders with little hassle. While it is still important to provide information on the company and handle customer feedback, it must not be at the expense of ease of use. Web-based product promotions can be tied in with print and media advertising. Company news for both clients and stockholders can be readily provided. Potential investors can also be solicited online. Depending on the company's market, a variety of other customer services can be provided. For manufacturers, customers could order customized products based on interactive forms on the site. Software companies can provide product updates ready for download. Real estate agents can provide interactive tours of properties for sale. With the level of technology available on the Web, the possibilities are vast. New technologies bring exciting new features and levels of online interactivity that continue to enhance the customer experience. And a more rewarding experience for the customer results in a better impact for the company. Web based businesses may not have an existing front, whether a retail outlet or office. Therefore, their web presence becomes that much more important. In many cases, it can provide a first point of contact between the customer and the business. Web based business emphasises for on-line customer service. The advantage of online customer service is it removes the need for dedicated customer service staff, something beyond many home-based businesses. In order to be effective, however, the customer must be able to query the business in an efficient manner from the website. At the very least an email address must be provided, but online feedback forms should also be made available.

144 144 e-Commerce Figure 9.1: Web based Business 9.10 BUSINESS-TO-BUSINESS ELECTRONIC COMMERCE One of the last and greatest promises during the Internet boom of the late 1990s was the impact of Business-to- business (B2B) e-commerce on the traditional business landscape. Industry experts along with marketing “gurus” hyped B2B e-commerce so much that near panic often ensued, with business leaders demanding B2B solutions to be investigated at all costs. Thousands of online marketplaces (e-marketplaces) began to appear to satisfy the apparent need, but the Internet bubble soon burst and these e-marketplaces disappeared as fast as they had once materialized. B2B e-commerce quickly fell out of favour with the same lack of informed decision-making that had once started the whole process. As with e-business in general, B2B e-commerce has quietly begun to mature out of the spotlight of speculation and hyperbole and is poised to truly redefine business processes in the new millennium. This document will introduce you to the basics of B2B e-commerce from the perspective of Small and Medium-sized Enterprises (SMEs), separating fact from fiction, with a dose of common sense thrown in for good measure. 9.10.1 What is Business-to-Business E-commerce? Business-to-Business (B2B) is a term commonly used to describe electronic commerce transactions between businesses, as opposed to those between businesses and other groups, such as Business and individual Consumers (B2C) or Business and Government (B2G). Business-to-Business commerce includes a broad range of inter company transactions, including wholesale trade as w ell as company purchases of services, resources, technology, manufactured parts and components, and capital equipment. It also includes some types of financial transactions between companies, such as insurance, commercial credit, bonds, securities and other financial assets.

145 Electronic Research Sources 145 The popular phrase B2B e-commerce refers to the substitution of computer data processing and Inter net communications for labor services in the production of economic transactions. Many companies engaged in B2B ecommerce are intermediaries between other companies that buy and sell goods and services. Expectations about productivity gains from B2B e-commerce can be usefully divided into four areas: possible efficiencies from automation of transactions, potential economic advantages of new market intermediaries, consolidation of demand and supply through organized exchanges, and changes in the extent of vertical integration of companies. B2B is also commonly used as an adjective to describe any activity, be it B2B marketing, sales, or e-commerce, that occurs between businesses and other businesses rather than between businesses and consumers. Similar to B2B, B2C is often meant to refer to B2C Marketing. An example of a B2B transaction is a chicken feed company selling its product to a chicken farm, which is another company. B2B can also describe marketing activities between businesses, not just the final transactions that result from marketing, though the term can be used to identify sales transactions between businesses (also referred to as "institutional sales"). For example, a company selling photocopiers would more likely be a B2B sales organization than a B2C sales organization. "Business-to-business" can also refer to all transactions made in an industry value chain before the finished product is sold to the end consumer. 9.10.2 Difference between B2B and B2C There are two distinct aspects of B2B e-commerce that separate it from the more familiar Business-to-consumer (B2C) "e-tailing" model: z Flexibility in pricing: Transactions between businesses often require variability in the pricing of products between purchasers. This concept of haggling is rare in the B2C marketplace. z Integration of business systems: To realize increased productivity and savings, businesses involved in B2B will integrate their internal systems together, enabling less human intervention. 9.10.3 E-procurement Internet-based electronic procurement of goods and services between companies is called e-procurement. In the same way that B2C e-commerce is often referred to now as e-tailing, labeling B2B e-commerce as e-procurement better shows how B2B affects a company's traditional supply chain. E-marketplace Electronic marketplaces, also known as B2B exchanges, serve as electronic hubs bringing together suppliers and purchasers in common virtual environments. E-marketplaces are either "many-to-many," bringing together many buyers and sellers in a particular vertical market, or "one-to-many" where one major supplier or consumer will attract many of its trading partners to its e-marketplace. Over the past couple of years, it has been these private, one-to-many e-marketplaces that have proven to be the most successful. "E-" or "electronic" marketplace in a business-to-business context is primarily a large online platform (B2B portal) or website that facilitates interaction and/or transactions between buyers and suppliers at organizational or institutional rather than individual levels. Since the builders of such marketplaces primarily aim at facilitating buyer-seller interaction (in most cases without being a buyer or seller themselves), these are also referred to as "third-party" B2B marketplaces.
146 146 e-Commerce These marketplaces can do one or more of the following: z Help buyers find new suppliers and vice versa z Help reduce the time and cost of interaction for B2B transactions z Help increase trade between distant geographies z Help manage payments and track orders for B2B transactions z Help the environment by using appropriate technology that is environmentally friendly. 9.10.4 Wal-Mart: An E-business Success Story Possibly the single greatest success story of e-business and B2B implementation is that of the rise to dominance by Wal-Mart in the North American retail market. Love them or hate them, you have to hand it to Wal-Mart for their impressive growth in such a short time span. And arguably the single most important factor in this rise was their harnessing of the power of e-business, e-procurement, and the adjustment of internal processes to maximize this advantage. More than any other company, Wal-Mart has revolutionized supply chain management by using a "pull" model where customer demands drive the suppliers. Inventory control is finely honed and purchasing trends are available to suppliers, whom now must be able to quickly respond to the needs of millions of customers. The business decision to decentralize the procurement process means that front-line staff in every store can immediately order the appropriate stock electronically, which will in turn require rapid turnout of product from the suppliers. This rapid replenishment system, coupled with accurate purchasing forecasting, helps Wal-Mart reduce overall costs. While not always good for suppliers in general, Wal-Mart's power as a giant in business has helped in establishing new standards for B2B e-commerce. Wal-Mart's mindset of cutting costs at all costs resulted in them deploying EDI over the Internet to eliminate the costly VAN altogether. EDI over the Internet (EDI-INT) uses a new standard called AS2, a communication protocol that attempts to make EDI communications over the Internet both secure and reliable. By mandating their suppliers to use AS2, Wal-Mart leads the way in creating a demand for a new generation of EDI, and in turn drives the whole world of e-business forward. Figure 9.2: Business-to-Business E-commerce

147 Electronic Research Sources 147 Check Your Progress Fill in the blanks: 1. A ..... should be a part of the business re-design process. 2. Web based Business is a part of ..... 3. Internet-based electronic procurement of goods and services between companies is called ..... 9.11 LET US SUM UP Web based Business is a part of e-Business. Web based business involves business processes spanning the entire value chain: electronic purchasing and supply chain management, processing orders electronically, handling customer service, and cooperating with business partners. Special technical standards for web based business facilitate the exchange of data between companies. The needs of web based businesses go far beyond merely providing product information and collecting customer feedback. Most web hosts typically offer e-commerce plans for businesses wishing to venture into the world of online retailing. Software companies can provide product updates ready for download. Web based business emphasizes for online customer service. The advantage of online customer service is it removes the need for dedicated customer service staff, something beyond many home-based businesses. 9.12 KEYWORDS ATM: A packet-based network system that uses high-speed transmission lines (150 megabits and over) and routers to maximize network efficiency and throughput. e-Business: The process of conducting any type of business over the Internet. It includes all forms of e-commerce and m-commerce, as well as internal processes and Web services. Business Information: Data that have been transformed into a meaningful, organized form relevant to those who require them to manage business processes 9.13 QUESTIONS FOR DISCUSSION 1. What do you mean by information trading? 2. Describe relation between consumer search and electronic commerce. 3. What are the market drivers of I-way? 4. Explain computer based telephony. Check Your Progress: Model Answers 1. company's IT strategy 2. e-Business 3. e-procurement
148 148 e-Commerce 9.14

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SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

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Internet Services Providers 149 LESSON 10 INTERNET SERVICES PROVIDERS CONTENTS 10.0 Aims and Objectives 10.1 Introduction 10.2 Internet Service Providers (ISPs) 10.3 Types of Internet Service Providers 10.4 Types of Web Hosting Services 10.5 e-Commerce 10.6 Selecting an ISP 10.6.1 Consideration for Selection of ISPs 10.6.2 Rating ISPs 10.6.3 ISP Requirements 10.7 Selecting and Registering Your Domain Name 10.7.1 Domain Name 10.7.2 Significance of a Domain Name 10.7.3 Selecting a Domain Name 10.8 Domain Name Registration 10.9

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Let us Sum up 10.10 Keywords 10.11 Questions for Discussion 10.12 Suggested Readings 10.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Explain
ISPs z Describe various types of ISPs z Describe how to select an ISP z Explain domain name registration process 10.1 INTRODUCTION After completing the design of web site, the next critical step is to find a way to put it on the Internet. To support the exponential growth in commercial Internet traffic, an entirely new industry referred as Internet Service Providers (ISPs) has emerged. There are more than 10,000 ISPs World Wide Web (www .isp.com/res/r2002- 00.html).

150 150 e-Commerce 10.2 INTERNET SERVICE PROVIDERS (ISPs) The Internet Service Provider (ISP) is a specialized company that connects customers with PCs and browsers to the Internet. The ISPs have a dedicated (a) hardware i.e., web server, (b) communication channel and (c) dedicated staff. The ISPs are reliable; provide services that are difficult to match with a corporate-in-house equivalent. The average cost of hosting services (ISPs) runs between Rs. 60,000 and Rs. 250,000 per year. The service manages storage, track web traffic and maintains the web server on a day-to-day basis around the clock. The infrastructure includes the following: z The stand by electric power as backup to keep the site available in the event of a black out. z Redbound fault-tolerant server that ensures your Web site will continue in the event a hard drive or a server breaks down. z Redundant communications lines to keep your site active in the event of a phone line or a router goes down. z One or more fire walls to protect your Web site from hackers or unauthorized access. 10.3 TYPES OF INTERNET SERVICE PROVIDERS There are four types of Service Providers: z The Internet Service Providers (ISPs): An ISP is simply a specialized business that offers internet access. ISP like AOL offers Internet service to millions of customers. They allow PC users to access the Internet via modems using a voice telephone network directly or via cables. An ISP provides an interface between the public phone system and Internet digital phone lines, which carry packets instead of conversation. z The Business Service Providers (SPs): An Internet service developer that rents only its own proprietary applications is the Web, Generally, the software is specific in function. z The Application Service Providers (ASPs): This is a company that offers packaged software for lease online. It offers packaged software for high-end functions (applications) like databases and Enterprise Resource Planning (ERP). ASPs allow small to medium sized businesses to choose from a menu of applications without having to invest in either the stuffing or infrastructure to support them. z The Whole Sale Service Providers: This is a service provider that packages a selection of BSP application for distribution on-line. 10.4 TYPES OF WEB HOSTING SERVICES The web hosting services are of four types: z Dial up, access, z Developer's hosting, z Web hosting only, z Industrial strength hosting. The web hosting service could be defined as providing, managing and maintaining hardware, software, content integrity, security and reliable high-speed internet connection. There are Five Steps to becoming an ISP: z Contract with a regional network that can provide adequate bandwidth.

151 Internet Services Providers 151 z Procure a leased communications line to one of that company's routers. The router passes packets to and from the regional network's high-speed line(s). which connects to several of the national back bones and perhaps even to a National Service Provider. z Procure the necessary hardware and software. z Set up dial-in lines to connect your customers (users). z Maintaining enough staff to manage the ISP traffic. These are discussed here under: z Packets: A packet is small sized information usually 100 to 1000 bytes sent through a network. z Routers: A network hardware that operates at the 051 Internet layer, linking in network to other vehicles. z Integrated Services Digital Network (ISDN): Is an all digital transmission network, where there is no need for a modem to connect a computer's digital signals into analog transmitted signal and vice versa. 10.5 E-COMMERCE The 56 K digital modem are integrated into access servers which combine a modem and a terminal server into a single integrated box. Various access servers like Sun Microsystems boxes handle upto 48 dial up connections. Thus if the ISP has 4800 customers and if 20 percent of the customers dial at the same time, the ISP will need to access servers (48 × 20 = 9.60). The ISP also has a router connected to the larger ISP. This second router is the gateway to the Internet. For this connection and other services like an email, mail box, customers pay a set monthly or yearly fees. When you dial into an ISP, you actually dial into a router owned by the ISP. The backbone of the Internet is a cluster of competing companies called Network Service Providers that works together to provide total interconnections. 10.6 SELECTING AN ISP The web sites are becoming the foundation for critical interaction with customers, partners and suppliers, site performance, reliability, and speed of network service are prerequisites for the validity and integrity of site and the business itself. ISPs are increasing in number, size and services. Some ISPs are local, others are national and international depending upon their connection to the Internet backbone and the technology they use. 10.6.1 Consideration for Selection of ISPs For the selection of ISPs there are certain things which need consideration and these are: z Size of the pipeline or bandwidth: High-speed T1 and T3 lines connect the ISP to the Internet backbone. The T1 line carries upto 1.5 Mbps (Megabytes per second) and T3 line carries upto 45 Mbps. Smaller ISPs often have ISDN connections or fractional T1 connections. These connections (network plumbing) are what expedite or hampers the connection between your web server and the Internet. The network bandwidth growth is related to ISP growth. Bandwidth refers with the size of the pipe that feeds information across the network. z Connection availability and performance: In a study of 6000 business users by Interactive week, in 1999 it was found that connection availability and network performance are most important criteria in evaluating an ISP. z Virtual hosting: This is a company with its own domain name, hosted by an ISP to conduct business via the Internet. A business registers its own domain name for a nominal charge of Rs. 5000. It is a good investment, the business decides to switch ISPs at some time in the future. Make sure when registering your

152 152 e-Commerce domain name that your name is listed as the administrative contact with Inter MC (the domain name registration Agency). z E-mail aliases: An ISP allows a certain number of e-mail addresses per account. Larger businesses may want to have multiple e-mail boxes at the web hosting ISPs, which gives flexibility and independence. z Stability and staying power: The term stability refers to the longevity of the ISPs customer base, i.e., how often customers switch from one ISP to another. This is referred to in the industry as the customer chum rate. The staying power refers to the ISP's ability to continue to provide reliable service during down turns or during times when its business is not doing well. z Local access: It is the phone number the ISP is providing you going to be free of long distance calls. A local access number will not do much good if you are going to need the connection while raveling a lot. In any case, you need to know how many local access numbers (also called the point of presence or POPs) an ISP has and how they are available for your use. z Customer service and technical support: Support is the key word in customer service. Look for an ISP that will be there to help you set up. Many offer free software that will automatically configure your computer to work their services. Does your ISP provide 24 × 7 support. z Reliability: It is proper to inquire about ISPs cell-failure or cell-success rates. According to users 9 pm is the busiest time on the Internet on any day. On the contrary, early morning is the best time. Winter months usually attract heavier traffic. The other characteristics of ISP reliability include network capacity and relationship with other ISPs. z Price: Some ISPs offer free service: Others charge heavily, as it is service and not a commodity. The prices vary with ISPs and with the type of service offered. Must ISPs offer unlimited access for Rs. 1000/- per month. 10.6.2 Rating ISPs Various agencies regularly rate ISPs and publish results. For example, Visual Networks makes more then 100,000 online calls a month to major ISPs to assess how often connections to their web page are made quickly. For each category, ISPs are graded from A (excellent) to D (poor). The results are posted regularly on visual network web site www.visualnetworks.com. The questions asked for kind of services an ISP provides are: z Asking the user (3 Months) about how good he/she finds the service. z The number of users the ISP has in your area and the number of modems in use at the ISP. Choose that has a ratio of about 20 users per modems. z Find out what kind of pipe each ISP uses to access the Internet (56 K, T1, 10 Mbps, etc.) and, with the information collected so far, pick the ISP with the largest pipe. z Find out how many employees the ISP has and what range of service it offers. The wider the base, the more likely it is that your service levels will remain high. Recent Trends In the recent years there is greater emphasis on no-fee and cut-rate Internet services that challenge existing ISPs. Net zero Inc., has around 20 lakh registered users and is growing fast. However the business of free ISPs is uncertain. Various ISPs run into trouble in 2000 and 2001, thus the quality, reliability, speed and integrity of web site should be weighed against those of ISP under consideration. The ISPs are making attempts to lower customer churn rates by (i) building a brand identity, (ii) providing broad band service and (iii) focusing more on business users.

153 Internet Services Providers 153 10.6.3 ISP Requirements After deciding on an ISP, you can expect a basic package of software and services. For on-line marketing you need an ISP that can do the following: z Register your domain name: Make sure that registration is legally in your name rather than the ISP. z Capture and forward e-mail: Receiving and sending mail are important activities for on-line merchant. z Host your web site: The ISP selected should have the capability of hosting your web site for a reasonable fee. z Give technical and managerial support: This can be in terms of providing technical talent to help troubleshoot your web site or to assist in upgrading, enhancing, or improving your presence on the Internet. z Give on-the-road support: ISPs can provide support to you to access e-mail or other information through a local access number, regardless of location or time of day. 10.7 SELECTING AND REGISTERING YOUR DOMAIN NAME The effort in term of selecting a domain name is that it should be simple so that people will recognize and type easily and quickly, further it is easily interpreted in different languages and cultures. 10.7.1 Domain Name A domain name is a unique Internet, address designed to represent a web site. The Domain Name Server (DNS) was developed to translate between the numeric IP (Internet Protocol) address used by the computer and less technical name identifier that users can understand. For instance, the numeric IP address 193.231.72.31 might be the address of an organization called Kroger, Inc. All Web access traffic and Web IP addresses operate at the Internet's TCP/IP layer. This layer is like a postal service that offers a set of rules called protocols for delivering messages between and among networks. This is how it works: assume you have a computer attached to the Internet via an ISP and you're assigned a unique physical address, called an IP (Internet Protocol) address. To send a message to another computer on the Internet, four steps are involved. 1. The sending PC has a unique IP address that takes the form xxx.xxx.xxx, where each set of xxx's is between O and 255. 2. TCP breaks the message into specific bits called packets for easy transmission and handling. Each packet has the sender's IP address so it won't get lost in transit. 3. The IP packets are sent to their destination via a router that reads the destination address and sends it along the fastest available route. Like a traffic officer at an intersection after a cricket match, the router feeds traffic via several routes to minimize congestion and keep things moving. The sending computer does not have control over the router the message takes. It is up to the router to look over the total volume and available routes and make an intelligent decision on the most optimum path. 4. On the receiving end, TCP checks to make sure all packets are assembled correctly to present the message intact 10.7.2 Significance of a Domain Name The most important thing to consider in buying a house is "location, location, location". Your domain name is your Web site's "house", the place where it handles its e-mail and other e-commerce transactions. It will appear in your newspaper ads, on business cards, and on your company stationery .All employees will learn it, hopefully with pride. Every time you advertise, you're effectively communicating your presence or location to the public at

154 154 e-Commerce large. Your Web URL should be easy to remember and should represent what your company is all about. If it is not found or remembered quickly, visitors will surf elsewhere and find your competition. It is as simple as that. As noted earlier, ensure that the domain name is officially in your name. You don't want visitors to go through your ISP to get to your Web site. There is a difference between www. Isp.comlyourpoorcompany and www.diamondjeweler.com. The first choice shows you have an inexpensive presence and that your fees are low. It is as bad for the company's image as handwriting your e-mail address on existing stationery or business cards rather than printing a new batch. Select a good domain name or one that common visitor will find easy to guess. Sometimes the best names are taken, which means you will need to think a bit harder to find an alternate name that will be a good fit. Consider registering the following kinds of domain names: z Unique product domain name: If a company has a product under development or a new product about to be released on the market, it is helpful to register a domain name that is the best fit for that product. Doing this should be part and parcel of strategic planning. z One or two close names: Think of one or two close alternative domain names for your company or names that visitors might think of. If available, register them as alternatives. The problem with so many alternative names is that look-alike Web addresses could funnel your Web traffic to the wrong place. The Internet is awash in Web sites that trick people into visiting by using addresses that vary by one or more characters, a hyphen, and the like. z Ideal company domain name: Think of the ideal representation of your company for a company domain name and then don't wait: Register it at once. Remember, though, your domain name is not a chance to rename your company or to be funny or interesting. The focus is on a name that is easy to guess. Working of a Domain Name The URL which is the address of the IGNOU University is http:://www .ignou.edulschls.html. The URL has three parts: 1. http:// Internet protocol (http or hypertext markup language) and separator {://). 2. www.ignou.edu The domain name www means World Wide Web; IGNOU is second-level domain and .edu is a top-level domain. 3. /schls.html: A subdirectory of file (/schls.html) which is the list of schools at the IGNOU that will be retrieved. As you can see, the first part is the Internet protocol name. The World Wide Web uses HyperText Transfer Protocol, or HTTP. A colon and a double slash follow the acronym as separators. The Internet protocol name always begins with http://. The second part is the domain name. It includes the second-level domain (IGNOU) and the top-level domain (.edu). The third part is the subdirectory and file name that simply identify the specific file that the user needs (in our example, a list of schools). As you can guess, reading a domain name is not that easy. It is actually read backwards. In our example, the address reads: I want the names of schools at the IGNOU. Here are the top-level domains: .com Commercial organizations and businesses in general .edu Educational institutions (4-year colleges and universities) .gov Government agencies (nonmilitary) .mil Government military agencies
155 Internet Services Providers 155 .net Companies that support the Internet .org Organizations such as nonprofits, etc. .uk, .ca, Country codes formalized by an ISO (International Organization for .sy, etc. Standardization) committee. For a complete list, visit the GeoCities Web site at www.geocities.com. 10.7.3 Selecting a Domain Name In Internet, it is the .cam at the end of the MyBusiness.com address that is the most desirable for Internet business. The .net domain is considered far less desirable. Unfortunately, you may find that the name you want to choose has been taken by someone else. Domain-name speculators register domain names that come close to trademarked terms in the hope of reselling them at huge markup. Suggested Procedure for Selection of Domain Name The following procedure is suggested when choosing a domain name: z Jot down on a piece of paper all the possible domain names you can think of that fit your organization's image, products, or services. End each name with .com if it is a business, .edu if it is an educational institution, .org if it is a nonprofit organization, etc. z Ask friends, peers, employees, and others who use the Web to suggest domain names for your company. In as much as most people will guess at a name, you will be surprised at some of the choices. z Narrow the list to a few favorites. This should be based on the relevance of the names to your business and how easy it will be for Web visitors to guess the name. z Go to the InterNic Domain Services Web site, www.internic.net, and enter the domain name(s) you want to check for availability. z Enter all the domain names on your list. You might be lucky to find one out of every 10 names entered is available. z For the available domain names, enter each name as a URL in your Web browser to see if the name is in active use. If not, then proceed with domain name registration. In selecting a domain name, you need to consider the legal implications, especially concerning the issue of trademarks. z Determine if the proposed domain name infringes on trademarks. Trademark infringement is a problem not only with existing trademarks, but with names similar enough to cause confusion for consumers. z Make sure the proposed domain name does not adversely affect any famous trademark. The federal Trademark Dilution Act prohibits weakening or tarnishing famous trademarks. z Once cleared of potential claims of infringement or dilution, the proposed domain name should be registered as a federal trademark with the U.S. Patent and Trademark Office. z Register the proposed domain name with InterNic or Network Solutions (NSI). This quasi-government agency assigns domain names in North America on a first-come, first-served basis. z Look for expanded top-level domain names and registries. The International AdHoc Committee (IAHC) was created by the Internet Society in 1997 to study revisions in the domain name system. Its proposed final plan will create eight new generic top-level domains: ™ .arts for entities emphasizing art, culture, and entertainment. ™ .firm for businesses and firms. ™ .info for providers of information services.

156 156 e-Commerce ™ .nom for individuals. ™ .per and .nom for personal sites. ™ .rec for entities emphasizing recreation/entertainment sources. ™ .store for businesses offering goods. ™ .web for businesses emphasizing Web activities. 10.8 DOMAIN NAME REGISTRATION After deciding on a domain name, the next step is to register it. The process of registering a domain name is as easy as filling out a Web-based form. There are two ways to register: on your own or through an ISP. On the surface, registering on your own seems simple. Go to the Network Solutions Web site, www. Networksolutions.com, and follow the instructions online. You will pay a fee of $70 to register your domain, but your ISP cannot use the name until you contact them and inform them you have registered. The ISP, in turn, will transfer the domain name to its DNS server for a transfer fee. The problems will this approach is the headache for a first-time registrant. You have to make sure when you register that you have the registrant and the administrative and billing contact at Network Solutions. This is why the alternative of having an ISP do the job is preferable. The ISP goes through a similar procedure, although it will charge around Rs. 2500 for processing in addition to the Rs. 3500 fee for registration. However, the ISP must demonstrate responsibility for your online presence. Here re some pitfalls to keep in mind: z Overcharging: ISPs in general have their own algorithm of fees, including setup fees, transfer fees, monthly fees, special services fees, etc. Shop around for a reliable ISP with experience and a reputation for quality technical support at reasonable charge. z Domain name status: The "don't ask, don't tell" concept applies in situations where, if you don't ask to make sure the domain name is registered in your name rather than in the name of the ISP, it is likely the ISP won't volunteer details. Make sure you own the exclusive right to your domain name. z Backup: When there are connection problems, does your ISP have another Internet connection for a backup? You'd be surprised at how many ISPs operate on a shoestring. Backup also has to do with how likely the ISP is to stay in business. Changing ISPs is neither pleasant nor convenient. z Contractual language: Before you commit, read the agreement your ISP expects you to sign before your Web site is formally and legally on the Internet. Check Your Progress Fill in the blanks: 1. The backbone of the Internet is a cluster of competing companies called ..... 2. A ..... is a unique Internet, address designed to represent a web site. 3. The World Wide Web uses ..... 10.9 LET US SUM UP
157 Internet Services Providers 157 Internet Service Providers (ISPs) are attractive to many companies for various reasons: specialized staff to manage Web sites, high-speed connectivity to main Internet hubs, real physical security from power outages and the availability of latest technology. ISPs can belong to one of three categories: the large wholesale access provider, the smaller Internet backbone provider, and the local lSP. Larger wholesale providers have been the target of consolidation and acquisition, while smaller providers have been growing and growing. Hosting a web site involves four major items: hardware, communications network, and qualified staff. Minimum operating costs can run between Rs. 3,000,000 to Rs. 6,000,000. There are four types of service providers: ISPs, ASPs, BSPs, and WSPs. The backbone of the Internet is the group of Network Service Providers that work together to provide total interconnection. ISPs connect to NSPs and pay a fee to do so. Shopping for a Web hosting ISP involves several factors: size of the pipeline or bandwidth, connection availability and performance, virtual hosting, number of e-mail addresses allowed per account, ISP stability and staying power, free local access. Customer service and technical support, ISP reliability and cost of service. 10.10 KEYWORDS ISP: A private company that provides connections to the Internet. Individuals pay a fee to the ISP. The ISP pays a fee to a higher-level provider (e.g., NSP) to pass all communications onto the Internet. Network Service Provider: A high-level Internet service provider offering connections to ISPs. The NSP leases high-speed, high-capacity lines to handle the communication traffic from hundreds of ISPs. TCP/IP: The Transmission Control Protocol is a transport layer protocol that moves data between applications. The Internet Protocol is a network-layer protocol that moves data between host computers. 10.11 QUESTIONS FOR DISCUSSION 1. Define Internet Service Provider (ISP). 2. Write two types of Internet service providers. 3. Write two important considerations for selection of ISPs. 4. List two ISP requirements. 5. Define domain name. 6. What reasons drive medium-size to small organizations to Internet service providers? 7. In what way has the World Wide Web brought back the old concept of time-sharing? Explain. 8. How do ISPs work? Give an example. Check Your Progress: Model Answers 1. Network Service Providers 2. domain name 3. HyperText Transfer Protocol
158 158

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e-Commerce 10.12 SUGGESTED READINGS Kienam, Managing Your E-Commerce Business, Prentice Hall of India, New Delhi. Kosiur, Understanding E-commerce, Prentice Hall of India, New Delhi. Kalakota, Whinston, Frontiers of Electronic Commerce, Addison Wesley. Schneider P. Grey, Perry T. James, E-Commerce, Thomson Learning, Bombay. Shurety, E-business with Net Commerce (with CD), Addison Wesley. Napier, Creating a winning E-business, Vikas Publishing House, New Delhi. Didar Singh, E-Commerce for Manager, Vikas Publishing House, New Delhi. Whitely David, Electronic Commerce, TMH, New Delhi. Efraim Turban, Jay Lee, David King & h. Michael Chang, Electronic Commerce; A Managerial Perspective, Pearson Education, New Delhi. 159

Security Issues in e-Commerce 159 LESSON 11 SECURITY ISSUES IN E-COMMERCE CONTENTS 11.0 Aims and Objectives 11.1 Introduction 11.2 Network Transaction Security Issues 11.3 Security Services 11.4 Designing for Security 11.4.1 Computer Encryption 11.4.2 Firewall 11.4.3 Application Gateway 11.4.4 Antivirus Software 11.4.5 Regular Backups 11.5 Virus 11.5.1 Main Types of PC Viruses 11.5.2 World Famous Virus 11.6 Security Protection and Recovery 11.7 Techniques and Solutions for e-Commerce Security 11.8

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Let us Sum up 11.9 Keywords 11.10 Questions for Discussion 11.11 Suggested Readings 11.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Explain
security concept z Describe the security issues in e-commerce z Describe various types of viruses 11.1 INTRODUCTION E-commerce largely depends upon Internet for all its communication and transaction needs that take place between the firms/stores, consumers, banks, business partners etc. However Internet is a network of networks, and as a consequence is an open medium that is accessed by a large number of people and is used for variety of purposes. The message and transactions that are exchanged between the consumer, seller, bans, and other business partners go through a number of servers on the internet and thus can easily be intercepted, read, and modified, by the person who have access to internet and who care to intercept them. The Internet being an open
160 160 e-Commerce system provides easy access to the information that is available on thousands of servers on the Internet, to millions of its users. Thus Internet becomes the entry point to access large number of private networks and consequently the sensitive information stored on the servers of these private networks. Further, the attacks from viruses can cripple the business application systems, and during the past one year, the world witnessed a number of virulent Virus attacks through Internet, causing considerable damage to the systems. Due to these reasons, the network security has become a major concern to the network administrators, users and network owners or firms. As a result of the increased dependence of industry on the networks, the technology of network security has grown and a number of powerful techniques have been developed over the past two decades. Consequently the network security has also grown as a powerful business in its own right. 11.2 NETWORK TRANSACTION SECURITY ISSUES The e-Commerce applications need support on three fronts, given as under: 1. Internet services notably the communication services, web services, and database services. 2. Application support such as setting up Market/malls and stores, and associated inventory and financial management 3. Security technologies for identification of persons, valid transactions, secure communications, and secure web pages, catalogues/databases and other information stores. Figure 11.1: E-commerce Requirements It can be seen that the security support covers almost all the communications that take place on the insecure Internet and all the information systems that support the E-Commerce. A review of the activities under E-commerce will be useful to put the security aspects in perspectives. Analyzing a simple and direct E-commerce activity of a consumer purchasing goods from Internet store, we have the following transactions: z A web store S offers a product P z A consumer looking for the product P is directed by a Market/Mall to store S and after delivery at the product information decides to purchase the product. z The store and the consumer decide the quantity of purchase, the cost of the product delivery period, delivery mode and the payment mode. Application support Security Technologies Internet & Web services E-Commerce Application

161 Security Issues in e-Commerce 161 z The consumer pays the amount through credit card or E-cash. z The stores verifies credit card the financial position of the consumer with issuer of the credit card or with the bank that issued E-cash. The bank confirms the credit or cash and freezes the amount. z The store confirms the receipt of payment to the consumer. z The product is delivered to the consumer. After the consumer receives the product, the bank is informed. z The issuer of the credit card/E-cash bank transfers the funds to the bank account of the store and informs the consumer. In this example all the minor and related transactions are ignored for the sake of analysis. With this in view, let us see the security concerns of different people/organizations in this transaction. 1. Is the store a genuine one? 2. After receiving the payment would the stores deliver the goods? 3. Is the store, which claims to be S, really the store S? Or is it a fake one for the real store? 4. Is the information supplied to the consumer, really going to the consumer? Or is some one else tapping it? Can some one modify the messages sent by either of the parties to the other? 5. Can some one else access the credit card number or e-cash, when it is being sent by consumer to store? 6. If the E-cash or payment authorization through credit card is lost, can it be corrected? 7. Can the same E-cash be used more than once? 8. If E-cash stored on the system is lost, can it be recovered? 9. Can the store S use the credit card number of the consumer at a future date, which was given to it? 10. Can a conclusive proof be provided for proving that the messages/orders were actually sent by the consumer and the store has actually delivered the goods/products? The first three points pertain to proving or authenticating both the parties. This is needed to create confidence in both the parties that they are indeed talking to the correct party. Password is a common technique of authentication. The security systems should be able to take care of authentication and minimize the possibility of some one else impersonating using the stolen passwords or other identity credentials. The fourth and fifth points address the need for secure communication and appropriate procedures to safeguard the interests of both the firm and the consumer. During the transmission of messages, the data should be protected in such a way that it is not deciphered or tampered. The deciphering refers to confidentiality and the tampering refers to data integrity. The sixth to eighth points specifically refer to the operational aspects and security in E-Payments. The ninth points refers to procedures that are to be adopted to ensure certain data like credit card numbers are not given to the store/supplier, to prevent misutilization of information. The tenth point covers the possibility f one of the parties either denying the transaction entered by them or may claim to have made the transaction without really making the transaction. The following conventional transactional transaction illustrates the point. Consumer C orders 100 computers from stores at a price of Rs. 40,000 each. The order was placed according to a previously agreed price negotiation, Within 2 days of receiving the order, the prices change, creating an opportunity for one of the parties to deny the transaction so as to avoid excessive losses or hope to make substantial gains. If the cost of each unit has gone up, the stores may deny sending the transaction. In a different situation, the negotiations ate completed for the same commodity described above. The order has not yet been placed. The consumer may claim to have placed an order, if the prices have gone up or the stores may claim receiving the order, if the prices have gone down.
162 162 e-Commerce In all these situations, it is necessary to protect either of the parties against the fraud from others. The security service that protects either of the parties is called non-repudiation (disowning). In the above example under certain situations, either party may dispute the quantity of the order. The security service that protects the original transaction is called data integrity. These frauds may occur in the conventional and electronic systems inspite of the best security measures. All of us have heard of forgery of cheques and documents. We can only minimize these incidents, but cannot eliminate them altogether. In the case of E-commerce, given sufficient time, the security systems can be breached. A good security system must address these issues. Indeed the security concerns, besides other factors could hinder the growth of serious use of networks and E-Commerce. According to the third Annual Ernst and Young/Information week's. Information security survey, about 87% of these current Internet users, 66% of the non-Internet users and 83% of these who plan to use Internet within a years time, expressed the view that they would increase the use of Internet for business, if security is enhanced. A recent PricewaterhouseCooper's E-Business report cites that, security is a major concern of Indian businessmen for successful implementation of E-Business. A possible model for secure Internet transactions in the context of E-Commerce given in Figure 11.2 Figure 11.2: Model for Secure Internet Transactions Bank Server Application Security Services Security Service Web Server Insecure Internet S E C U R E I T Y S E R V I C E B R O W S E R A P P L I C A T I O N Customer Secure Internet Application Store & Mall Market

163 Security Issues in e-Commerce 163 11.3 SECURITY SERVICES Security in the Cyberspace Cyberspace provides a complex digital network that is ever-expanding, linking various aspects of life. While cyberspace serves as a fertile soil for growth in efficiency, productivity, business and communications, it is prone to the infestation of digital threats. The same infrastructure we exchange information on is a verdant platform for the execution of malicious intent, whereby ICT is exploited and its elements abused for the interest of insidious parties. As such, it is imperative that countries protect their digital environment from being defaced or infiltrated by sinister forces. More and more consumer electronics platforms will be connected to the Internet. This increasing connectivity will enable new distribution mechanisms, but it will also increase the risks for both the devices and the content owners and distributors. Cyberspace security that we refer to is a big field, including physical and virtual security of personal computers, servers and other Internet working devices. The Cyberspace security should not only cater for the technical view of cyberspace security, but also the social aspect too which has caused lot of damage by social engineering. Today typical computing platforms lack the most important aspect – trust. Past security solutions are not normally integrated into the Operating System (OS) kernel of a computer. They come in the form of standard unsafe OS kernels, which are then given enhanced protection by several skins of protection such as virus scanners, firewalls and others. It has been shown that these external protection mechanisms are barely protective enough against today's threats. It is now known that a real tight protection can be achieved with focus on seamless integration of the security module and kernel into the core functionality, as well as through a separated and protected hardware security kernel. 11.4 DESIGNING FOR SECURITY

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Information security is provided on computers and over the Internet by a variety of methods. A simple but straightforward security method is to only keep sensitive information on removable storage media like floppy disks. But the most popular forms of security all rely on encryption, the process of encoding information in such a way that only the person (or computer) with the key can decode it. 11.4.1

Computer Encryption Encryption is the transformation of data into a form that is as close to impossible as possible to read without the appropriate knowledge. Its purpose is
to

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ensure privacy by keeping information hidden from anyone for whom it is not

intended, even those who
have access to the encrypted data.

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Decryption is the reverse of encryption; it is the transformation of encrypted data back into an intelligible form. Encryption and decryption generally require the use of some secret information, referred to as a key. For some encryption mechanisms, the same key is used for both encryption and decryption; for other mechanisms, the keys used for encryption

and decryption is

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different. Today's cryptography is more than encryption and decryption. Authentication is as fundamentally a part of our lives as privacy. We use authentication throughout our everyday lives – when we sign our name to some document for instance – and, as we

move to

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a world where our decisions and agreements are communicated electronically, we need to have electronic techniques for providing authentication. Cryptography provides mechanisms for such procedures. A digital signature binds a document to the possessor of a particular key, while a digital timestamp binds a document to its creation at a particular time. These cryptographic mechanisms can be used to control access to a shared disk drive, a high security installation, or a pay-per-view TV channel. 164 164

e-Commerce The field

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of cryptography encompasses other uses as well. With just a few basic cryptographic tools, it is possible to build elaborate schemes and protocols that allow us

to pay using electronic money, to

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prove we know certain information without revealing the information itself and to share a secret quantity in such a way that a subset of the shares can reconstruct the secret. While modern cryptography is growing increasingly diverse, cryptography is fundamentally based on problems that are difficult to solve. A problem

may be difficult because its solution requires some

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secret knowledge, such as decrypting an encrypted message or signing some digital document. The problem may also be hard because it is

intrinsically difficult to complete, such as finding

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a message that produces a given hash value. Computer encryption is based on the science of cryptography, which has been used throughout history. Before the digital age, the biggest users of

cryptography were governments, particularly for

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military purposes. The existence of coded messages has been verified as far back as the Roman Empire. But most forms of cryptography in use these days rely on computers, simply because a human-based code is too easy for a computer to crack. Most computer encryption systems belong in one of two categories. Broadly speaking, there are

two types of encryption methods: z Secret-key cryptography z Public-key cryptography 11.4.2

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Firewall If you have been using the Internet for any length of time, and especially if you work at a larger company and browse the Web while you are at work, you have probably heard the term firewall used. For example, you often hear people in companies say things like, “I can’t use that site because they won’t let it through the firewall.” If you have a fast Internet connection into your home (either a DSL connection or a cable modem), you may have found yourself hearing about firewalls for your home network as well. It turns out that a small home network has many of the same security issues that a large corporate network does. You can use a firewall

to protect your home network and family from offensive Web

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sites and potential hackers. Basically, a firewall is a barrier to keep destructive forces away from your property. In fact, that’s why

it’s

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called a firewall. Its job is similar to a physical firewall that keeps a fire from spreading from one area to the next. As you read through this article, you will learn more about firewalls, how they work and what kinds of threats they can protect you from. A firewall is simply a program or hardware device that filters the information coming through the Internet connection into your private network or computer system. If an incoming packet of information is flagged by the filters, it is not allowed through. Let’s say that you work at a company with 500 employees. The company will therefore have hundreds of computers that all have network cards connecting them together. In addition, the company will have one or more connections to the Internet through something like T1 or T3 lines. Without a firewall in place, all of those hundreds of computers are directly accessible to anyone on the Internet. A person who knows what he or she is doing can probe those computers, try to make FTP connections to them, try to make telnet connections to them and so on. If one employee makes a mistake and leaves a security hole, hackers can get to the machine and exploit the hole. With a firewall in place, the landscape is much different. A company will place a firewall at every connection to the Internet (for example, at every T1 line coming into the company). The firewall can implement security rules. For example, one of the security rules inside the company might be: Out of the 500 computers inside this company, only one of them is permitted to receive public FTP traffic. Allow FTP connections only to that one computer and prevent them on all others. A company can set up rules like this for FTP servers,

Web

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servers, Telnet servers and so on. In addition, the company can control how

employees
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connect to Web sites, whether files are allowed to leave the company over the network and so on. A firewall gives a company tremendous control over how people use the network. Firewalls use one or more of three methods to control traffic flowing in and out of the network:

z Packet

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filtering: Packets (small chunks of data) are analyzed against a set of filters. Packets that make it through the filters are sent to the requesting system and all others are discarded.

z Proxy service:

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Information from the Internet is retrieved by the firewall and then sent to the requesting system and vice versa. z Stateful inspection: A newer method that doesn't examine the contents of each packet but instead compares certain key parts of the packet to a database of trusted information. Information traveling from inside the firewall to the outside is monitored for specific defining characteristics, then incoming information is compared to these characteristics. If the comparison yields a reasonable match, the information is allowed through.

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Otherwise it is discarded "What It Protects You From". There are many creative ways

that unscrupulous people use to access or abuse unprotected computers: z Remote login: When

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someone is able to connect to your computer and control it in some form. This can range from being able to view or access your files to actually running programs on your computer. z Application backdoors: Some programs have special features that allow for remote access. Others contain bugs that provide a backdoor, or hidden access that provides some level of control of the program. z SMTP session hijacking: SMTP is the most common method of sending e-mail over the Internet. By gaining access to a list of e-mail addresses, a person can send unsolicited junk e-mail (spam) to thousands of users. This is done quite often by redirecting the e-mail through the SMTP server of an unsuspecting host, making the actual sender of the spam difficult to

trace. z Operating system bugs: Like

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applications, some operating systems have backdoors. Others provide remote access with insufficient security controls or have bugs that an experienced hacker

can take advantage of. z

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Denial of service: You have probably heard this phrase used in news reports on

the attacks on major Web sites. This type of attack is nearly impossible to counter. What

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happens is that the hacker sends a request to the server to connect to it. When the server responds with an acknowledgement and tries to establish a session, it cannot find the system that made the request. By inundating a server with these unanswerable session requests, a hacker causes the server to slow to a crawl or eventually crash. z E-mail bombs: An e-mail bomb is usually a personal attack. Someone sends you the same e-mail hundreds or thousands of times until your e-mail system cannot accept any more messages. z Macros: To simplify complicated procedures, many

applications allow you to create a script of commands that the application can run. This script is known

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as a macro. Hackers have taken advantage of this to create their own macros that, depending on the application, can destroy your data or crash your computer.

z

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Viruses: Probably the most well-known threat is computer viruses. A virus is a small program that can copy itself to other computers. This way it

can spread quickly from one system to

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the next. Viruses range from harmless messages to erasing all

of your data. z

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Spam: Typically harmless but always annoying, spam is the electronic equivalent of junk mail. Spam can be dangerous though. Quite often it contains links to Web sites. Be careful of clicking on these because you may accidentally accept a cookie that provides a backdoor

to your computer. z

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Redirect bombs: Hackers can use ICMP to change (redirect) the path information takes by sending it to a different router. This is one of the ways that a denial of service attack is set up. 166 166

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Source routing: In most cases, the path a packet travels over the Internet (or any other network) is determined by the routers along that path. But the source providing the packet can arbitrarily specify the route that the packet should travel. Hackers sometimes take advantage of this to make information appear to come from a trusted source or even from inside the network! Most firewall products disable source routing by default. Some of the items in the list above are hard, if not impossible, to filter using a firewall. While some firewalls offer virus protection, it is worth the investment to install anti-virus software on each computer. And, even though it is annoying, some spam is going to get through your firewall as long as you accept e-mail. The level of security you establish will determine how many of these threats can be stopped by your firewall. The highest level of security would be to simply block everything. Obviously that defeats the purpose of having an Internet connection. But a common rule of thumb is to block everything,

and

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then begin to select what types of traffic you will allow. You can also restrict traffic that travels through the firewall so that only certain types of information, such as e-mail, can get through. This is a good rule for businesses that have an experienced network administrator that understands what the needs are and knows exactly what traffic to allow through. For most of us, it is probably better to work with the defaults provided by the firewall developer unless there is a specific reason to change it. One of the best things about a firewall from a security standpoint is that it stops anyone on the outside from logging onto a computer in your private network. While this is a big deal for businesses, most home networks will probably not be threatened in this manner. Still, putting a firewall in place provides some peace of mind. 11.4.3 Application Gateway An application gateway is an application program that runs on a firewall system between two networks. It is also known as application proxy or application-level proxy. When a client program establishes a connection to a destination service, it connects to an application gateway, or proxy.

The

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client then negotiates with the proxy server in order to communicate with the destination service. In effect, the proxy establishes the connection with the destination behind the firewall and acts on behalf of the client, hiding and protecting individual computers on the network behind the firewall. This creates two connections: one between the client and the proxy server and one between the proxy server and the destination. Once connected, the proxy makes all packet-forwarding decisions. Since all communication is conducted through the proxy server, computers behind the firewall are protected. While this is considered a highly secure method of firewall protection, application gateways require great memory and processor resources compared to other firewall technologies, such as stateful inspection. 11.4.4 Antivirus Software Antivirus software

is

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computer programs that attempt to identify, neutralize or eliminate malicious software. Antivirus is so named because the earliest examples were designed exclusively to combat computer viruses; however most modern antivirus software is now designed to combat a wide range of threats, including worms, phishing attacks, rootkits, trojan horses and other malware. Antivirus software typically uses two different techniques to accomplish this: z Examining (scanning)

files

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to look for known viruses matching definitions in a virus dictionary. z Identifying suspicious behavior from any computer program which might indicate infection. This technique is called heuristic analysis. Such analysis may include data captures, port monitoring and other methods. Most commercial antivirus software uses both

of

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these approaches, with an emphasis on the virus dictionary approach. 167

Security Issues in e-Commerce 167 11.4.5

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Regular Backups Each computer user has their responsibility to make regular backups to protect their computer data. The task of backing up the data found on your computer is often the most overlooked and "hardly ever done until its too late" action within the computer end-user community.

With

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the software tools now available, it no longer is the arduous task that is once was a few years ago.

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Once your system is in use, your next consideration should be to back up the file systems, directories, and files. Files and directories represent a significant investment of time and effort. At the same time, all computer files are potentially easy to change or erase, either intentionally or by accident. If you take a careful and methodical approach to backing up your file systems, you should always be able to restore recent versions of files or file systems with little difficulty. When a hard disk crashes, the information contained on that disk is destroyed. The only way

to

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recover the destroyed data is to retrieve the information from your backup copy. There are several different methods of backing up. The most frequently used method is a regular backup, which is a copy of a file system, directory, or file that is kept for file transfer or in case the original data is unintentionally changed or destroyed. Another form of backing up is the archive backup; this method is used for a copy of one or more files, or an entire database that is saved for future reference, historical purposes, or for recovery if the original data is damaged or lost. Usually an archive is used when that specific data is removed from the

system. 11.5 VIRUS A computer virus is a self-replicating program that explicitly copies itself and that can infect other programs by modifying them or their environment such that a call to an infected program implies a call to a possibly evolved copy of the virus. Note that 'program' takes a fairly liberal interpretation here, involving much more than the 'obvious' application programs (executables) in a typical computer system. Almost any code that is executed or interpreted may be 'virusable' so long as, when running in its normal execution context, that code has write access to some other executable object (note this need not be the same kind of executable object!). Some obvious targets for viruses include the boot code in the system boot sectors and MBRs of PC disks and hard drives. These are clearly programs, but are often overlooked because they do not reside in files and thus are not readily accessible to the user, or even 'visible'. Other less than obvious programs include scripting facilities built into applications, either in the form of sophisticated macro languages such as Visual Basic for Applications (VBA), or the simpler procedural languages for automating many applications such as the scripting feature of popular Windows IRC clients like mIRC and Pirch. Another important feature of viruses is that, unlike their biological namesakes, they need not be parasitic. Various companion infection methods exist and mechanisms that involve altering the behavior of the host program's environment, rather than altering the program itself, can be sufficient to classify a program as viral (so long as it is also self-replicating). When discussing viruses, it is common to hear talk about obvious symptoms and damaging payloads. Some viruses display symptoms, and some cause damage to files in a system they have infected, but neither symptoms nor damage are essential in the definition of a virus. A non-damaging virus is still a virus, not a prank. There are no 'good' viruses. Viruses are seldom intentionally installed. Users (and, more importantly in corporate settings, system administrators) must be able to control their computers. This requires that they have the power to install and remove software, and that no software is installed, modified, or removed without their knowledge or permission. As viruses are usually surreptitiously self-installed and modify other software in the system without user or administrator awareness, they break these requirements of system administration. Further, their removal can be difficult and costly and viruses will occupy drive space and space on backup media and use CPU cycles and RAM that has not been budgeted for.

168 168 e-Commerce Many viruses cause intentional damage. But many more cause damage that may not have been intended by the virus' writer. For instance, when a virus finds itself in a very different environment from that for which it was written, a non-destructive virus can suddenly become very destructive. A good case in point are many common (or formerly common) boot viruses: while a particular boot virus might not contain any code to damage computers running Windows NT, booting an NT machine with such a virus is likely to result in system repairs the user or system administrator may not have been prepared for. Even if a virus causes no direct damage to a computer, the user's or administrator's inexperience with viruses can mean that damage occurs during the 'clean up' process. Many organizations have shredded floppies, deleted files, and done low-level formats of hard disks in their efforts to remove viruses. Even when removal is done perfectly, with no damage to the infected system or files, it is not normally done when the machine is first infected, and the virus in that machine has had a few weeks to spread. The social costs of infection include a loss of reputation and good will which in a business setting can be significant. 11.5.1 Main Types of PC Viruses Generally, there are two main classes of viruses. The first class consists of the file infectors, which attach themselves to ordinary program files. These usually infect arbitrary.COM and/or .EXE programs, though some can infect any program for which execution is requested, such as .SYS, .OVL, .PRG, & .MNU files. File infectors can be either direct action or resident. A direct-action virus selects one or more other programs to infect each time the program that contains it is executed. A resident virus hides itself somewhere in memory the first time an infected program is executed, and thereafter infects other programs when they are executed (as in the case of the Jerusalem 185 virus) or when certain other conditions are fulfilled. The Vienna virus is an example of a direct-action virus. Most other viruses are resident. The second category is system or boot-record infectors: those viruses that infect executable code found in certain system areas on a disk, which are not ordinary files. On DOS systems, there are ordinary boot-sector viruses, which infect only the DOS boot sector, and MBR viruses which infect the Master Boot Record on fixed disks and the DOS boot sector on diskettes. Examples include Brain, Stoned, Empire, Azusa, and Michelangelo. Such viruses are always resident viruses. Finally, a few viruses are able to infect both (the Tequila virus is one example). These are often called "multi-partite" viruses, though there has been criticism of this name; another name is "boot-and-file" virus. File system or cluster viruses (e.g. Dir-II) are those that modify directory table entries so that the virus is loaded and executed before the desired program is. Note that the program itself is not physically altered; only the directory entry is. Some consider these infectors to be a third category of viruses, while others consider them to be a sub-category of the file infectors. Stealth Virus A stealth virus is one that hides the modifications it has made in the file or boot record, usually by monitoring the system functions used by programs to read files or physical blocks from storage media, and forging the results of such system functions so that programs which try to read these areas see the original uninfected form of the file instead of the actual infected form. Thus the viral modifications go undetected by anti-viral programs. However, in order to do this, the virus must be resident in memory when the anti-viral program is executed. The very first DOS virus, Brain, a boot-sector infector, monitors physical disk I/O and redirects any attempt to read a Brain-infected boot sector to the disk area where the original boot sector is stored. The next viruses to use this technique were the file infectors Number of the Beast and Frodo. Polymorphic Virus A polymorphic virus is one that produces varied (yet fully operational) copies of itself, in the hope that virus scanners will not be able to detect all instances of the virus. The most sophisticated form of polymorphism

169 Security Issues in e-Commerce 169 discovered so far is the MtE "Mutation Engine" written by the Bulgarian virus writer who calls himself the "Dark Avenger". Fast and Slow Infectors A typical file infector (such as the Jerusalem) copies itself to memory when a program infected by it is executed, and then infects other programs when they are executed. A fast infector is a virus which, when it is active in memory, infects not only programs which are executed, but also those which are merely opened. The result is that if such a virus is in memory, running a scanner or integrity checker can result in all (or at least many) programs becoming infected all at once. The term "slow infector" is sometimes used for a virus that, if it is active in memory, infects only files as they are modified (or created). The purpose is to fool people who use integrity checkers into thinking that the modification reported by the integrity checker is due solely to legitimate reasons. An example is the Darth Vader virus. Sparse Infector The term "sparse infector" is sometimes given to a virus that infects only occasionally, e.g. every 10th executed file, or only files whose lengths fall within a narrow range, etc. By infecting less often, such viruses try to minimize the probability of being discovered by the user. Companion Virus A companion virus is one that, instead of modifying an existing file, creates a new program, which (unknown to the user) gets executed by the command-line interpreter instead of the intended program. (On exit, the new program executes the original program so things will appear normal.) This is done by creating an infected .COM file with the same name as an existing .EXE file. (Note that this type of malicious code is not always considered to be a virus, since it does not modify existing files.) Armored Virus An armored virus is one that uses special tricks to make the tracing, disassembling and understanding of its code more difficult. A good example is the Whale virus. Macro Virus Many applications allow you to create macros. A macro is a series of commands to perform an application- specific task. Those commands can be stored as a series of keystrokes, or in a special macro language. A macro virus is a virus that propagates through only one type of program, usually either Microsoft Word or Microsoft Excel. It can do this because these types of programs contain auto open macros, which automatically run when you open a document or a spreadsheet. Along with infecting auto open macros, the macro virus infects the global macro template, which is executed anytime you run the program. Thus, once your global macro template is infected, any file you open after that becomes infected and the virus spreads. Virus Hoax A virus hoax generally appears as an email message that describes a particular virus that does not exist. These emails almost always carry the same basic story: that if you download an email with a particular subject line, your hard drive will be erased (an impossibility because the text of an email cannot harbor a virus). Such messages are designed to panic computer users. The writer or writers email the warning and include a plea for the reader to forward it to others. The message then acts much like a chain letter, propagating throughout the Internet as individuals receive it and then innocently forward it. An example of a virus hoax is the "Good Times" virus – which was written in 1994 and since then has circled the globe many times over. The best thing to do on receipt of such an email is to ignore and delete it.

170 170 e-Commerce 11.5.2 World Famous Virus Chernobyl The Chernobyl, or PE CIH, virus activates itself every year on the 26th of April – on the anniversary of the Chernobyl, Ukraine nuclear power plant tragedy. It was allegedly written by a Taiwanese citizen in 1998. The virus wipes the first megabyte of data from the hard disk of a personal computer thus making the rest of the files of no use. In addition to this it also deletes the data on the computer's Basic Input-Output System (BIOS) chip so that the computer cannot function till a new chip is fitted or the data on the old one is restored. Fortunately only those BIOSes, which can be changed or updated, face a threat from this virus. This virus affects only executable files. Since these are distributed less often than documents, the spread of Chernobyl is more confined than that of most macro viruses. VBS_LOVELETTER The VBS_LOVELETTER virus (better known as the Love Bug or the ILOVEYOU virus) was reportedly written by a Filipino undergraduate. In May 2000, this deadly virus beat the Melissa virus hollow – it became the world's most prevalent virus. It struck one in every five personal computers in the world. When the virus was brought under check the true magnitude of the losses was incomprehensible. Losses incurred during this virus attack were pegged at US $ 10 billion. The original VBS_LOVELETTER utilized the addresses in Microsoft Outlook and emailed itself to those addresses. The e-mail, which was sent out, had "ILOVEYOU" in its subject line. The attachment file was named "LOVE-LETTER-FORYOU. TXT.vbs". The subject line and those who had some knowledge of viruses, did not notice the tiny .vbs extension and believed the file to be a text file conquered people wary of opening e-mail attachments. The message in the e-mail was "kindly check the attached LOVELETTER coming from me". Since the initial outbreak over thirty variants of the virus have been developed many of them following the original by just a few weeks. In addition, the Love Bug also uses the Internet Relay Chat (IRC) for its propagation. It e-mails itself to users in the same channel as the infected user. Unlike the Melissa virus this virus does have a destructive effect. Whereas the Melissa, once installed, merely inserts some text into the affected documents at a particular instant during the day, VBS_LOVELETTER first selects certain files and then inserts its own code in lieu of the original data contained in the file. This way it creates ever-increasing versions of itself. Probably the world's most famous worm was the Internet worm let loose on the Internet by Robert Morris sometime in 1988. The Internet was, then, still in its developing years and this worm, which affected thousands of computers, almost brought its development to a complete halt. It took a team of experts almost three days to get rid of the worm and in the meantime many of the computers had to be disconnected from the network. Pakistani Brain The Brain, the first virus known to have spread all over the world, was a boot sector virus. This implies that it would take the system commands, those that help in starting the computer, from their designated space (sector) on the hard disk and put them in the next unused space (sector). Then, it would mark the space where the system commands now reside as bad sectors. This way, it would become impossible to boot (start) the computer. Moreover, it would continue to take up all the unused space in the computer's disk and mark it as corrupted sectors. All the strains of the Brain virus carried the name of the program, the author and often their address in the boot sector of the virus-infected disk. The other known versions of this virus include Ashar or Ashar-Shoe viruses, which are very common in Malaysia. Stoned-Marijuana

171 Security Issues in e-Commerce 171 Originally reported to have been written in New Zealand, this was another boot sector virus with a difference. It would infect the boot sector of floppy disks. The File Allocation Table (FAT) on the hard disk drive – the system used by DOS to identify and locate files on a disk – would also be affected. The virus would most often regularly display a message, which said, "Your PC is stoned. Legalize Marijuana." Moreover, it would damage the File Allocation Table on hard disk drives with more than one partition. The FAT on floppy disks, which had been formatted as high density, would also be harmed so that access to files on both the hard disk and the floppy disk would become nearly impossible to achieve. Jerusalem The Jerusalem virus a.k.a. "Israeli" and "Friday the 13th" has several versions including the Jerusalem-B virus. It starts by infecting the .COM and .EXE files in a computer. After existing or being resident in a computer for half an hour, it slows down the system processes by a factor of ten. On a pre-set date, Friday the 13th, the Jerusalem virus deletes all the infected files from the user's computer. Apart from the damage that it does, the other strain of the Jerusalem virus, Jerusalem-B, also shows a "black window" in the center of the screen at regular intervals. Cascade The Cascade virus originally appeared between September and December during the years 1980 and 1988. Its basic target was machines with colour monitors. This virus is also called "Falling Letters" or "1701". It initially appeared as a Trojan horse in the form of a program designed to turn off the Num-Lock light on the user's keyboard. In fact, what it actually did was to make the characters on the screen drop in a heap to the bottom of the screen. What is special about this virus is that it utilizes an encryption algorithm to evade detection. Now, variants of this virus occur as a memory resident .COM virus. Michelangelo The Michelangelo virus also referred to by some virus watchers as Stoned. Michelangelo, first spread in the early 1990's. Since then, a number of strains have been introduced, and it is now also known by a variety of other names. This virus was also responsible for the founder of Trend Micro entering the anti-virus business. This virus was entitled after the very famous Italian Renaissance artist Michelangelo Buonarroti. It gets activated every year on the artist's birthday - 6th March. The person responsible for giving the name was the researcher not the writer of the virus. The Michelangelo is a boot record virus and on the date that it gets triggered it destroys files by overwriting certain critical areas of the hard disk or floppy disk. These areas are overwritten with garbage, making the disk or floppy completely useless. If this virus infects a bootable floppy (a floppy that can be used to boot a computer), the floppy no longer remains a bootable floppy. An infection with this virus is caused by using infected disks for a system boot-up. After being installed in the memory of the computer, Michelangelo then goes on to infect all non-write protected disks that are used in the computer. Virus Creation Tool A program designed to generate viruses. Even early virus creation tools were able to generate hundreds or thousands of different, functioning viruses, which were initially undetectable by current scanners. Virus Source Source code is written by a programmer in a high-level language and readable by people but not computers. Source code must be converted to object code or machine language before a computer can read or execute the

172 172 e-Commerce program. Virus Source can be compiled to create working viruses, or modified and compiled by programmers to make new working viruses. Check Your Progress State whether the following statements are true or false: 1. A computer virus is a self-replicating program. 2. There are some good viruses. 3. A virus hoax generally appears as an email message. 4. The basic target of cascade virus was machines with multiprocessors. 11.6 SECURITY PROTECTION AND RECOVERY Today, businesses face ever-growing data protection and recovery challenges: z Natural disasters and human threats z Explosive data growth, which can increase costs exponentially z New regulations requiring uniform processes and accountability z A litigious environment demanding quick retrieval for discovery purposes z Security breaches from viruses, worms, hackers Any number of events can impact your business and IT operations – from simple end-user mistakes to a failed device to the loss of an entire data center due to a disaster. Data Protection and Recovery has become more critical than ever. Recent news reports have highlighted the problems universities, financial institutions and others have faced with the loss of important customer and employee data. Regulatory requirements have increased the emphasis on having a solid data protection and recovery plan in place. Recovery management goes beyond the backup-and-restore paradigm to offer an efficient way to protect data and help ensure its continual availability. Using replication and snapshot technology to create a recovery tier within the storage environment, a recovery management implementation can provide enterprise IT organizations with uninterrupted access to data. When implementing data protection strategies, many organizations face a similar problem: too much data, too many applications, and not enough time to back everything up and restore it all. A different approach to solving this problem is an approach that has the potential to protect any amount of data as often as necessary and to recover that data virtually instantaneously when needed. For e-mail applications and databases, such an approach could prevent data corruption and virus attacks from causing vital operations to go down for hours or even days. For a business, this approach could mean having continuous access to the data and information needed for analysis, decision making, and actions, leading to enhanced competitiveness. An alternative to traditional backup and restore processes, the modern technique uses creating and managing online replicas of production data. When a replica is online, it is immediately available and does not have to undergo a lengthy restore process before it can be used. This is a dramatic change from data backup – even backup-to-disk – in which the backup copy is not immediately usable but must first go through a restore process. Depending on how much data is involved, a typical restore process for a Microsoft® Exchange or Oracle® database can take several days—during which time the end users cannot use e-mail or process orders, grinding
173 Security Issues in e-Commerce 173 business operations to a halt. Creating online replicas using snapshot and replication technologies has been possible for some time. But whereas in the past, these technologies were restricted to large, expensive storage devices, they are now becoming widely available. Dell currently offers entry-level and midtier storage devices that incorporate snapshot and replication technologies. Data recovery is a process by which individual data elements such as files or folders are encrypted for more than one person or entity. By encrypting for more than one person or escrow entity, an escrow entity may be a designated administrator within an organization to perform a data recovery role. Figure 11.3: Data Protection and Recovery Data may be retrieved in clear-text form by a third party. Data recovery does not necessarily imply that private key recovery has occurred, however, key recovery may be one method to achieve data recovery. Data recovery can be achieved without private key recovery in the Windows XP operating system that is based on symmetrically encrypted data blocks.
174 174 e-Commerce Both Secure Multi-purpose Internet Mail Extensions (S/MIME) and Encrypting File System (EFS) use symmetrically encrypted data blocks, with the symmetric key being protected by one or more public keys of a public/private key pair. In this scenario, the symmetric key may be protected (encrypted) with more than one user, and therefore more than one public key. Data recovery can occur through a second user decrypting the data. In the case of EFS, files can be opened and data recovered through the use of a data recovery agent (DRA) as shown in the Figure 11.3. Table 11.1: Some Security Threats & Solutions Threat Security Function Technology Data intercepted, read or modified illicitly Encryption Encoder data to prevent tempering Symmetric and Asymmetric encryption False identity with an intention of fraud Authentication Identity verification of both sender & receiver Digital signature Unauthorized user on one network gains access to another Firewall Filters and prevents certain traffic from entering the network or server Firewalls: Virtual private nets 11.7 TECHNIQUES AND SOLUTIONS FOR E-COMMERCE SECURITY As security of business transaction is the widely cited issue with online transaction, number of security techniques and solutions adhering to well and predefined security standards are available in market, all these techniques and solutions of various vendors are not complementing to each other. Integration of these techniques in the business process will result in safe business transaction maintaining the integrity and confidentiality of data. Some of the most common techniques in E-Commerce security discussed in next lesson. 11.8 LET US SUM UP

Most computer encryption systems belong in one of two categories – Secret-key cryptography and Public-key cryptography.

94% **MATCHING BLOCK 378/390** W

A firewall is simply a program or hardware device that filters the information coming through the Internet connection into your private network or computer system.

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The company will therefore have hundreds of computers that all have network cards connecting them together.

The firewall can implement security rules. Operating system bugs – Like applications, some operating systems have backdoors.

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A virus is a small program that can copy itself to other computers.

Viruses range from harmless messages to erasing all of your data.

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An application gateway is an application program that runs on a firewall system between two networks. It is also known as application proxy or application-level proxy.

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Since all communication is conducted through the proxy server, computers behind the firewall are protected.

Antivirus software is computer programs that attempt to identify, neutralize or eliminate malicious software.

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Each computer user has their responsibility to make regular backups to protect their computer data.

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Once your system is in use, your next consideration should be to back up the file systems, directories, and files.

A non-damaging virus is still a virus, not a prank. Data recovery does not necessarily imply that private key recovery has occurred, however, key recovery may be one method to achieve data recovery. Data recovery can be achieved without private key recovery in the Windows XP operating system that is based on symmetrically encrypted data blocks. 11.9 KEYWORDS Computer Security: It is a technological and managerial procedures applied to computer systems to ensure the availability, integrity and confidentiality of information managed by the computer system. Confidentiality: It means that information cannot be access by unauthorized parties.
175 Security Issues in e-Commerce 175 Authentication: It means that users are who they claim to be. Availability: It means that resources are accessible by authorized parties. Integrity means that information is protected against unauthorized changes that are not detectable to authorized users. Encryption: It is a process of coding information which could either be a file or mail message in into cipher text a form unreadable without a decoding key in order to prevent anyone except the intended recipient from reading that data. Firewall: It is a dedicated appliance, or software running on another computer, which inspects network traffic passing through it, and denies or permits passage based on a set of rules. Application Gateway: It

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is an application program that runs on a firewall system between two networks.

Virus: A computer virus is a self-replicating program that explicitly copies itself and that can infect other programs by modifying them or their environment. Antivirus Software: It is a computer program that attempts to identify, neutralize or eliminate malicious software. 11.10 QUESTIONS FOR DISCUSSION 1. What is firewall? How can it be implemented? Describe different types of firewall. 2. What is the difference between threat and risk in computer science? 3. Write about the various protection and recovery measures of computer. 4. What is computer security? Why it is required? Describe the role of password in computer security. 5. What is virus? How is it harmful to a computer system? Check Your Progress: Model Answers 1. True 2. False 3. True 4. False 11.11

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SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

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100% **MATCHING BLOCK 387/390** W

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 176 176

e-Commerce
177 Strategies for e-Commerce 177 LESSON 12 STRATEGIES FOR E-COMMERCE CONTENTS 12.0 Aims and Objectives 12.1 Introduction 12.2 Virtual Book Store 12.3 Five Forces Model for Industry Analysis 12.4 Business Organization and Virtual Firms 12.5 E-commerce Strategies for Development 12.6 Virtual Corporation 12.6.1 Benefits of Virtual Corporation 12.6.2 Success of Virtual Corporation 12.6.3 Characteristics Need of Successful Virtual Corporation 12.6.4 Phone Services for Virtual Corporation 12.7 Virtual Assistants 12.8 Virtual Employees 12.9 Futures of e-Commerce 12.10 Case Studies 12.10.1 Case 1: SCO vs. IBM 12.10.2 Case 2: SCO vs. Novell 12.10.3 Case 3: Metallica vs. Napster 12.11

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Let us Sum up 12.12 Keywords 12.13 Questions for Discussion 12.14 Suggested Readings 12.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

z Describe virtual books store concept z Explain e-commerce strategies for development z Explain various benefits of virtual corporation z Describe features of e-commerce

178 178 e-Commerce 12.1 INTRODUCTION There is little doubt about the acceleration in social change that Information and Communications Technologies (ICT) can produce, or the profound changes they can create in the structure of an economy. Whether such changes will increase or reduce the capacity of developing countries to close the multiple gaps that separate them from the industrialized world will largely (although not exclusively) depend on the environment in which the changes take place and the attitudes of the actors implementing them. The challenge is, therefore, to harness the Internet and other forms of ICT to ensure that their potential is indeed used to create economic opportunities, thus helping to fight poverty and providing a material basis for implementing solutions to other social ills. In practical terms, it is in their applications in the productive sphere that ICT are most likely to bring about improvements in the living standard of people in developing countries. This means that policies must be implemented to ensure that the new possibilities for creating, transforming, using and exchanging information and value are employed to improve the productivity of enterprises. 12.2 VIRTUAL BOOK STORE The best example of virtual book store available in this world is Amazon.com, now we discuss the business model of Amazon.com. Amazon.com is the pioneering bookstore on the Internet that first opened in July 1995 by Jeff Bezos. The firm offers online shopping services and partnership opportunities such as online search for books, music and video items. The products that they sell include an array of audio, video and book titles. Amazon.com has one of the widest selections and employs international shipping to virtually every corner of the globe in just a few days. Amazon's focus is having the biggest selection of free-electronic greeting cards, online auction and millions of books, CDs, videos, DVDs, toys and electronics. They have expanded to different areas of the world, such as Amazon.co.uk and Amazon.de, to service consumers outside of the United States. They aim to be a Cost leader in which their firm has lower costs than the competitors. They have employed different Amazon branches in different parts of the world to lower costs. This allows Amazon to sip their products at a lower price from each point of shipment to the consumer. In recent years, Amazon.com has expanded from being just an online bookstore to an all around online shopping experience. They have coined the tag line "Earth's Biggest Selection". Amazon has diversified into different websites. These are the Internet Movie Database (www.imdb.com), LiveBid.com, amazon/livebid.com, drugstore.com (an online retail and information about health and wellness), gear.com (online sporting goods company), homegrocer.com (online grocery shopping and delivery), pets.com (largest pet supply online shopping site), ashford.com (online luxury premium shopping) and eZiba.com (online retailer of handcrafted products).
179 Strategies for e-Commerce 179 Figure 12.1 12.3 FIVE FORCES MODEL FOR INDUSTRY ANALYSIS New Entrants The online bookstore industry that Amazon.com has pioneered in was, at first, very hard to penetrate. There were different barriers such as distributing capabilities and the variety of the selection offered that are supposed to be hurdled. Amazon successfully solved the tricky parameters as being the first one to get into the whole idea of online retail. With being the first, they had the luxury to set what were the norms for the industry. Factors that may lower these barrier tactics would be a wider selection and the ability to go to an actual bookstore to exchange or return books or other products. This network of "actual" retail space makes it easier for the consumer to return or exchange the products they were not satisfied with. These handicaps of Amazon were the basis for the emergence of book retail giants Barnes and Noble and Borders in the online shopping industry. Industry Competitors The major competitors of Amazon are Barnes and Noble and Borders. Barnes and Noble is a retail giant offering books and CDs both in their outlets all over the country. It opened their online industry in 1997 and has become the fourth largest e-commerce sites today.

180 180 e-Commerce Focused largely on the sale of books, music, software, magazines, prints, posters, and related products, the company has capitalized on the recognized brand value of the Barnes and Noble name to become the second largest, and one of the fastest growing, online distributors of books. Their “advantage” to Amazon is the brand name and the availability of actual retail outlets in which consumers could go in to exchange or return products easily. They also have an established book selection based in their retail operations. Borders are another multi-media retail store found in major cities around the country. Started out as a small bookshop in the college town of Ann Arbor, Michigan, it has since expanded into one of the finest bookstores. In 1992, Borders was bought by the Kmart group which further flourished the company into a Multi Media Giant with a wide selection of Audio, Video and Books found throughout the United States. The Online Bookstore industry have become a fierce business which involves discounts, varied selections and fast delivery in which all three companies are challenging each other. Buyers The consumers of this industry can be found in every corner of the population. These are mostly people who have some form of higher education and have access to the Internet and computers. The segment of online shoppers has increased dramatically in recent years due to the convenience of shopping in the comforts of the home and the accessibility of the Internet. These developments have made it easier for consumers to log on and buy on the Internet. Consumers also tend to compare prices among the retail leaders such that buyers are able to buy products with very big discounts compared to ones bought in “actual” retail outlets. The bargaining power of the consumer is based on the competitive strategies of each active firm in the industry. Thus, consumers can challenge one firm for charging more than the other one such that the firm beat the price of the competing firm. Suppliers Amazon’s suppliers range from the publishing and media houses to electronics manufacturers. Amazon buys all their books, videos and audio CDs from multi media houses and publishing giants such as Time Warner, Doubleday etc. Amazon also ha s alliances with other bookstores to cover orders that they cannot serve. Substitutes The substitutes for Amazon and other online bookstore ate the “Actual” book retailers and music stores such as Barnes and Nobles. Virgin Megastore, Tower Records, Sam Goody and other small mom-and-pop outlets. With the rise of online retail, there will be little impact from these substitutes. One impact would be some consumers who would like to hold or listen to their purchases prior to buying and those who are into the whole “shopping experience”. Barnes and Nobles have jumped into online retail and have succeeded into diversifying into the new e-commerce industry. 12.4 BUSINESS ORGANIZATION AND VIRTUAL FIRMS When the World Wide Web first gained in popularity, many firms created web pages and initiated direct contact with consumers. Increasingly, however, web page development is contracted out to professionals, and many Internet-based marketing activities are handled by intermediaries. Even sales in electronic malls may be delegated to intermediary merchants, with the firms having no direct contact with the buyers. Since physical distance is not a barrier to business transactions, the electronic marketplace may resemble the face-to-face business of the old tradition, making such intermediaries unnecessary. On the other hand, market intermediaries have traditionally played other functions designed to enhance efficiency. The new electronic marketplace will necessitate new innovative models of firm organization, production, delivery, and overall market institutions, including a close examination of the role of intermediaries. Other time-tested, basic business assumptions can no longer be presumed to hold true in this new world. In the electronic age, firms no longer are based in a single location because all functions need not be operated in one

181 Strategies for e-Commerce 181 locale. Going beyond even decentralization, a firm on the Internet becomes a distributed company, or a virtual firm, where any operation can be anywhere. A company like First Virtual (http://www.fv.com), for example, exists only on a network (Borenstein et al., 1996). The critical difference between this and a multi-office corporation is that a virtual firm's day-to-day operation is also conducted on a network. The mundane aspects of managing a company—administrative tasks, scheduling meetings, supervision of remotely located employees, and so on—appear to be the greatest challenge of a virtual company because coordinating such matters most often depends on traditional means of communication. A promising application of electronic commerce for a virtual firm is to use the web technology for within business and business-to-business interactions. Business logistics including supplier management, inventory, warehousing, and invoicing can be integrated in a corporation-wide intranet, or intraweb, which is defined as "a secure corporate network with rich functional features of Local Area Networks interconnected by the Internet or its technologies and applications" (Chellappa et al., 1997). Suppliers and customers are given appropriate levels of access to intranets so that employees, suppliers, and customers can be integrated in the firm's production and sales functions in a network rather than a physical locale. Another still unanswered question is whether interfirm relationships of virtual firms will be different in electronic commerce. Economists have argued that a firm is an organization by which producers can internalize transaction costs, which are costs incurred in transacting business such as writing, monitoring, and enforcing contracts. For example, if the cost of contracting bookkeeping and accounting with an outside CPA (Certified Public Accounting) firm is high, a firm may reduce costs by establishing an accounting department of its own to handle the tasks. In an extreme case, a firm may find it efficient to handle all activities from production, marketing, and payment to delivery. When transaction costs are low, on the other hand, many functions done within a firm may be contracted out in a market. To the extent that electronic commerce reduces transaction costs, firms will contract out or delegate many of their functions to other agents in the market. Increasing use of contracting implies a more fluid interfirm relationship and a more decentralized, nonhierarchical organization. However, Steinfeld et al. (1995) have examined the buyer-seller relationships between firms on a network, and concluded, based on case studies, that the use of an electronic network between firms tends to lock out other firms. They present this as evidence that networked businesses tend to promote hierarchical organizations (such as corporations) instead of markets. In other words, doing commerce on a network increases interdependence between existing partners, and has not encouraged firms to seek new suppliers or buyers in an open trading market. Such a trend is clearly observed when new firms have to invest in hardware and software to participate in bidding and contracting. The open Internet, however, lowers such investment requirements, and will facilitate a more market-like organization among networked companies. 12.5 E-COMMERCE STRATEGIES FOR DEVELOPMENT The question of how “e-strategies” should be designed and implemented, and their role in broader national development strategies, has received growing attention in the international forums where the issue of the global “digital divide” is being addressed to name two forums involving all the major multilateral agencies together with key players from the NGO community and the private sector, this issue appeared on the agenda of both the G-8’s DOT Force and the United Nations ICT Task Force. Thus, the Genoa Plan of Action adopted by the G-8 in previous year includes as its action point 1 “to help establish and support developing country and emerging economy national e-strategies”. Ensuring that the benefits of ICT are available to all is also one of the key goals that the international community has set itself in the Millennium Declaration. As part of the actions undertaken by the United Nations to achieve these goals, its ICT Task Force has identified the provision of assistance to developing countries in designing national and regional ICT strategies as one of its medium-term goals and has set up a working group to this effect. The convergence of these and other initiatives of the international community seems to indicate that there is agreement about the priority attention that ICT policies (and electronic commerce as part of them) should receive

182 182 e-Commerce in poverty-reduction strategies. Success stories about how particular communities, enterprises or governments in developing countries have used e-commerce to create new economic opportunities abound. Yet, when it comes to priority setting at the national level, action to facilitate participation by developing-country entrepreneurs in the benefits of e-commerce is often perceived as unduly competing for attention and resources with programmes to address basic development problems such as health or education. E-commerce offers no instant cure for the ills of any economy; excessive expectations about what it can do for development should not be encouraged such views is not lack of awareness (which is still often the case) but skepticism about the relevance of e-commerce or ICT in the context of the challenges facing developing countries, a fundamental point is being missed. The importance of ICT for development lies not so much in the size of the ICT sector itself as in the fact that the widespread use of these technologies enables people and organizations across the whole spectrum of social activities to work much more effectively. Calls for a greater emphasis on e-commerce or other applications of ICT in national development strategies are therefore calls not for detracting resources from other areas but for equipping countries with more powerful tools for achieving their medium- and long-range development objectives. E-commerce offers no instant cure for the ills of any economy; excessive expectations about what it can do for development should not be encouraged such views is not lack of awareness (which is still often the case) but skepticism about the relevance of e-commerce or ICT in the context of the challenges facing developing countries, a fundamental point is being missed. The importance of ICT for development lies not so much in the size of the ICT sector itself as in the fact that the widespread use of these technologies enables people and organizations across the whole spectrum of social activities to work much more effectively. Calls for a greater emphasis on e-commerce or other applications of ICT in national development strategies are therefore calls not for detracting resources from other areas but for equipping countries with more powerful tools for achieving their medium- and long-range development objectives. Within this context, it is likely that e-commerce (or, in a broader sense, e-business) will be among the most powerful transmission mechanisms through which ICT-induced change will spread across developing countries. The application of ICT to, for instance, health or education can certainly contribute to the achievement of basic development objectives and can, in the long term, lead to productivity increases. However, the acceleration of economic growth that ICT can bring about (especially through the adoption of e-business practices) will probably result in a more immediate and self-sustainable contribution to the reduction of poverty. Given the comparatively low levels of productivity in developing countries, the adoption of ICT and e-commerce in these countries can yield particularly large relative improvements in productivity. In most cases (especially in activities that are not information intensive) these gains are not derived directly from the technology itself but through incremental improvements resulting from organizational changes in the production process that are made possible (or indispensable) by the technology. An encouraging factor is that ICT seem to be spreading in the developing countries faster than was the case in previous technological revolutions. Leapfrogging opportunities and the opportunity to avoid the technological and business strategy mistakes of earlier entrants also work in favour of developing countries. Developing countries can also profit from the opportunities provided by e-commerce for exploiting competitive advantages that were not usable in the “old economy”. E-commerce gives Small and Medium-sized Enterprises (SMEs) the ability to access international markets that used to be difficult to enter due to high transaction costs and other market access barriers. Labour intensive services can now be delivered online, providing new opportunities for developing countries with relatively cheap labour. The emergence of successful industries such as software development or tele-servicing in several developing countries is an example of this. E-commerce not only reduces the cost for businesses of complying with trade related regulations but also reduces the cost of corruption, a burden that often most severely affects the SMEs and other weaker players in the economy.

183 Strategies for e-Commerce 183 For all these potential benefits to materialize, national action plans are needed to create an enabling environment for e-commerce and address in a coherent manner areas such as infrastructure, human resources, the legal framework, taxation and local content. 12.6 VIRTUAL CORPORATION Virtual Corporation Similar to Virtual Business, a Virtual Corporation can operate without a physical identity (on-line business, e.g. Amazon.com). Brick and mortar companies can also dovetail concepts of the Virtual Corporation into the business. For example, many brick and mortar companies also have websites that enable e-commerce. Many brick and mortar companies leverage their telecommunications infrastructure with the goal of reducing costs (telecommute or WFH (work from home)). Many brick and mortar companies are leveraging Web 2.0 (mass collaboration) to gain a competitive advantage in the marketplace. This may include outsourcing many of the business functions like marketing, operations management and new product development. This also includes collaborating with suppliers and competitors in certain situations. The virtual corporation can be a temporary network of independent companies—suppliers, customers, competitors, linked by information technology to share skills, costs, and access to one another's markets. It will have neither hierarchy nor vertical integration. Also known as a cooperative agreement between two or more businesses entities to combine their resources in order to achieve a shared goal. By bringing in additional partners, unlimited skills and resources can be pooled. Partnerships are usually temporary and are dissolved once a common goal is achieved. They do not have corporate offices and usual have no bricks or mortar tied to them. As information and communications technologies overcome the constraints of time and distance, it becomes possible to create virtual organisations. Virtual is usually taken to be something that does not exist in reality. So a typical definition of a virtual corporation (taking the dimension of time) is: "A temporary network of independent companies linked by IT to share skills, costs, and access to one another's markets" However, another definition relates to an organisation not having a clear physical locus. Here a typical definition is: "An organization distributed geographically and whose work is coordinated through electronic communications." Both definitions show how information and communications technologies can be used to exploit the dimensions of time and space. A virtual corporation is a specific example of a networked organisation. Many smaller companies are now realising the benefits of being part of a virtual corporation, which can give them the benefits of the resources of a large organisation while retaining the agility and independence of a small one. One of the most interesting organization structures in information age is the virtual corporation (virtual organization). A virtual corporation is an organization composed of several business partners, which through electronic cooperation share costs and resources for the purpose of producing a product or service and increase revenues. Permanent virtual organizations are designed to create or assemble productive resources rapidly, frequently, or to create or assemble a broad range of productive resources. The creation, operation, and management of virtual organizations are heavily dependent on information systems. The major goals that virtual organizations pursue are: z Excellence: Each partner brings its core competence. z Utilization: Resources of partners are utilized more profitably. z Opportunism: Market opportunity can be met better together than by each individual company. In most cases partners cooperate within the supply chain of an organization. However, virtual organizations are not necessarily organized along the supply chain. For example, a business partnership may include several

184 184 e-Commerce partners, each creating a portion of product or service in an area in which they have special advantage; such as expertise or low costs. Therefore virtual organizations can be viewed as a network of creative people, resources and ideas connected by inter-organizational information systems and/or by on-line services. Information systems make virtual organizations more successful, because the communication and collaboration among dispersed business partners is key to making it happen. Business partners can use different information systems on different technological platforms. 12.6.1 Benefits of Virtual Corporation The benefits of virtual corporations are: z Gives access to a wide range of specialized resources z Can present a unified face to large corporate buyers z Individual members retain their independence and continue to develop their niche skills z They can reshape and change members according to the project or task in hand z There is no need to worry ponderously about "divorce settlements" as in formal joint ventures. 12.6.2 Success of Virtual Corporation Working in virtual corporations comes naturally to small company entrepreneurs and managers who are effective networkers. They are difficult for those with the conventional corporate mind to fathom out. Some of the ingredients for developing a succeeding virtual corporation are: z Each partner must have some distinctive added value to bring to the corporation. z Members must develop high degree of mutual trust and understanding. Thus, very often the same people will work together again and again. z Projects should be the focus of the corporation. Usually they will be for clients, but some projects e.g. marketing, can be done by a few members on behalf of the corporation as a whole. z 'Rules of engagement' need to be defined fairly broadly up-front, in terms of inputs to the corporation and rewards expected, though the momentum is lost if these are too formalised too soon. z Members of the corporation should recognize the need for coordination roles, and either commit time to develop and nurture these or pay one of the members to undertake them on behalf of the corporation. z A clear interface needs to be developed with 'non virtual' customers – they like tidy relationships and clear contracts. Thus either one member of the virtual corporation must act on behalf of the others (using them as subcontractors) or create a joint company to act as their contracts and administration service. 12.6.3 Characteristics Need of Successful Virtual Corporation Passion: Does this one come as a surprise? Passion may not seem like a difficult trait to come by, but it’s one of the most important for anyone working from home. You are going to be spending a lot of time thinking about your business, developing your business, working on your business, and convincing potential customers to give you business. That makes your passion for what you’re doing an essential element of your skill set for two important reasons. One is that you will live and breathe your product or service. The other is that when you believe in what you’re doing (or selling), that passion will shine through in your work, and your customers will feel confident in dealing with you. Motivation: Are you driven to work for yourself? The reasons behind the decision to work from home in a virtual setting are as varied as the people who do it. For many, it is the freedom of creativity and the challenge of

185 Strategies for e-Commerce 185 making all the decisions themselves that drives them away from an office setting. Some are simply tired of lining other people's pockets with the fruits of their labor. Thousands of parents make the move to virtual corporations in order to spend more time with their families. Still another great reason to work from home is the expense you will save on gas, travel time, professional attire, and takeout lunches. Whatever your reasons for choosing to start or transition to a virtual corporation, make sure the motivation behind them is powerful enough to keep you working when the going gets tough. Helpful hint: Determine your motivations for running a virtual corporation right from the start: "I want to be here for my family," or "I'm sick of dazzling clients left and right just to make my boss look good," or "If gas prices rise one more time, I'll have to start riding a bike to work." Then commemorate those motivations in physical form: make a poster, use the marquee setting on your computer's screensaver, or write it with a marker on a coffee mug. Keep your driving force on display at your home office desk and glance at it every once in a while—like after you've just argued with a client over why he should pay the invoice you sent him thirty days ago, or while you're up at two in the morning trying to put the finishing touches on a proposal. It will remind you why you're doing this, and what your rewards are. Determination: If you're the type of person who gives up easily, running a virtual corporation will be challenging at best. The good news is, determination is something you can develop. You may find that otherwise well-meaning friends and family members have difficulty understanding that even though you're home, you're working; and no, you can't run to the grocery store or dog-sit for them, nor can you enjoy a leisurely chat over coffee in the middle of the afternoon. Determination to make your virtual corporation successful will help you learn to say "no" to requests that would seem reasonable, if only you weren't working. Start out by informing everyone you know (especially those who are potential interruptions) that you are starting a business from home, and briefly explain what your job will entail. Self-discipline: As someone who will report only to yourself, you must keep in mind that the work will not get done unless you do it. You'll also have to deal with the temptation of distraction, especially in a virtual setting where the internet provides all kinds of lovely sidetracks that are just a click away. Most people don't naturally possess the amount of self-discipline necessary to run a virtual home-based business—but this skill is also something that can be developed. It's a case of practice makes perfect: the more often you remind yourself that you're sitting in front of the computer to work, the more natural the process will become. Personal responsibility: For everything that goes right—or wrong—in your virtual corporation, you will be the one solely responsible for it. Those who work from home must keep in mind that when problems come up, they are responsible for solving them in the most professional manner possible. On the flip side, however, you get to take every scrap of credit for jobs well done. The pride and satisfaction you can take in running a virtual corporation is unmatched. 12.6.4 Phone Services for Virtual Corporation Every good corporation has a telephone number listed for customers to call with questions or problems. If people can't contact you by phone, or at least leave a message, they will hesitate to do business with you. There are several inexpensive telephone support solutions for virtual corporations; you should choose the one that works best for your business and office location or situation. z Dedicated Business Line: This is the best solution if you anticipate a low call volume and plan to answer the phone yourself. A dedicated business line can be locked away in the office, so there is no chance of having calls answered inappropriately. z Voicemail: Voicemail is generally provided by your telephone service company. There is no equipment to set up; you simply dial a code or a telephone number to check your messages. Voicemail is a good option for those who travel frequently, as you can check your messages from any phone. Also, most cell phones include voicemail options, and you can turn them off during peak home activity time and check your messages later.

186 186 e-Commerce z Answering Service: Answering services are a bit on the expensive side, but if you expect a high volume of business-related calls at all hours of the day, you may want to consider investing in one. A professional answering service helps to give your virtual corporation that big-time image you're aiming for. z Toll-Free Numbers: Big businesses provide a toll-free number for their customers to call. If it's within your budget, you should do the same. Toll-free service is available from any major phone company, usually for a monthly fee, or through an internet company, usually for a per-minute fee. The plan you choose will depend on your anticipated call volume. z Answering Machine: Answering machines are the least desirable telephone systems for a virtual corporation. If you use an answering machine for your business, try to invest in a digital model rather than one that uses tapes, as taped messages fade in quality and often sound unprofessional. A note on your voicemail message: you should never allow your personal home message to answer business calls. If you only have one phone line and do not use an answering service, make sure your message is professional and announces the name of your business. If customers attempt to call your business and receive a message that says, "You've reached the home of Mr. and Mrs. Jones. We're not in right now..." they will either assume they have the wrong number (and might not call back) or lose trust in your company (and might not call back). Always thank the customer for calling in your message, and apologize for missing their call. 12.7 VIRTUAL ASSISTANTS At some point in the formation and development of your virtual corporation, you will need help. Since you're running an online company, the best way to hire employees or contractors is to find them online. Telecommuting refers to people who work for another company out of their own home and communicate with their employers via e-mail and telephone. Generally, freelancers and contractors work in this manner all the time. Some companies hire permanent telecommuting employees. By enlisting telecommuters rather than having employees "come" to work, you save on the expenses of providing additional equipment and furnishings as well as the potential problems that may result from people coming to your home to work. Virtual assistants are a fast-growing sector of the online business industry. Many people are choosing to work from home, and making their services available to other companies rather than starting their own businesses. Good virtual assistants are pre-packaged with their own equipment, software, phone lines everything you have in your home office, and sometimes more. There are thousands of virtual assistants available to help your business, either as permanent employees or freelance contractors. There are a huge number of web sites dedicated to telecommuting and working from home concerns, including job boards, classified ad sites and professional listings of established telecommuters. These boards generally work two ways: you can search them for talent, or post a job advertisement and have the talent come to you. 12.8 VIRTUAL EMPLOYEES If you need part-time or full-time help on a permanent basis, you might want to consider hiring a virtual employee or two. There are several ways to regulate and manage virtual employees. You can assign them to "work" at specified times, for instance, if you needed someone to answer phones during peak business hours. There are many virtual administrative assistants trained to perform routine office tasks from a remote location. Just as a typical business secretary would do from the front desk of a brick-and-mortar office, a virtual administrative assistant can answer phones and e-mails, fulfill orders, manage lists and databases, and take care of other time-consuming tasks; leaving you free to run your virtual corporation. You can also hire a virtual employee on a piecework basis. If your business involves generating projects on an individual basis for clients, such as consultation work, you could hire a part-time virtual employee to work on your overflow and pay them on a per-project basis, rather than an hourly rate.

187 Strategies for e-Commerce 187 One benefit of hiring a virtual employee is the ability to develop their skills in relation to your company. Because employees involve a longer time frame and level of commitment than contractors, you can develop a relationship with your employees and eventually, they will be able to manage themselves with little supervision. Be sure to invest enough time and energy in your employees to keep them happy working for you, and your job will be far easier in the long run. When considering virtual employees, you must be aware there are different sets of tax and terms of employment rules than for freelancers and contractors. 12.9 FUTURES OF E-COMMERCE There are varying opinions regarding the future of e-commerce. Despite the fact that online sales are growing exponentially, some analysts believe that e-commerce is heading for a fall. Laurie Windham justifies her belief that as time goes on, sales will decrease instead of increasing. Windham believes that net consumers are very different than mall shoppers and catalog shoppers. Furthermore, she says that dot-coms are responsible for ruining their own chances to sell because they have spoiled customers to the point that consumers expect cheap prices and freebies and if they don't get them, they just move on to another site. E-commerce, Windham says, is a fickle world with little, if any, customer loyalty (Fortune, 2000). Windham found some interesting differences between online shoppers and traditional shoppers. For instance, 34 percent of online shoppers describe themselves as comparison shoppers but only 8 percent of traditional shoppers describe themselves as comparison shoppers. Another comparison is that only 1 percent of Web shoppers say they hate stores but 10 percent of traditional shoppers say they hate stores (Fortune, 2000). Web shoppers are by and large comparison, price-sensitive consumers. Future 3 Windham, who spent two years studying the consumers who purchase online, said that as nonusers begin to use the Web for purchasing, they will be less adventuresome than people already making purchases online. They will also be slightly older than the norm and they will be more fearful and cautious about privacy and security. In other words, as nonusers begin using the Web to shop, they will be a more conservative group than current users. It is probable they will also be less fickle and more loyal to brands/stores (Fortune, 2000). Windham pointed out that there were numerous problems with people receiving exactly what they ordered online during last holiday season. Based on that, she suggested sales may be lower this year (Fortune, 2000). Surveys conducted after the last holiday season suggested online shoppers would continue shopping online. One survey, for instance, indicated that more than 90 percent of consumers reported that shopping online met or exceeded their expectations. Eighty percent said they would increase their online shopping in 2000 (Rutledge, 2000). Studies found that consumer confidence in using the Internet for shopping reached very high levels, which were due to a number of factors. Positive comments from family and friends were one of the factors that swayed more people to utilize this option. Better selections from online stores also made the experience more satisfying. Finally, Future 4 secure credit card transactions played a major role in increasing sales (Rutledge, 2000). Consumers were enticed to try shopping on the Internet by the massive marketing campaign last year for both dot-com stores and retail stores online. More than 70 percent of Net shoppers said they bought from e-commerce sites that offered free shipping. Another 54 percent said they were enticed by the discounts offered for their first online purchase. Forty percent used online coupons and 25 percent responded to the offer of free gifts for their online purchase (Rutledge, 2000). The Direct Marketing Association projected that sales generated from catalogs and the Internet would double in the next four years, reaching $3.33 billion (Entrepreneur, 2000). A study by Jupiter Communications agreed saying that sales would increase this holiday season. This study reported that holiday shoppers would spend almost $12 billion in online purchases between November 1 and December 31 this year, which represents a 66 percent increase over the same time period last year. The increase between the 1998 and 1999 holiday seasons was 126 percent. There is a slowdown in the degree of growth but it is still a substantial increase (Kontzner, 2000) The Gartner Group predicted a much larger growth this year. They projected sales of $19.5 billion. This group also believed that dot-com stores and retail stores online Future 5 would not spend as much money on advertising this year. Instead, they will spend resources on retaining customers (Kontzner, 2000). As a number of dot-coms collapsed during this past year, many retailers felt a wave of relief but it was short-lived. The Web's bite into retail store sales is about to become noticeable and hurtful. Business Week (2000) reported that there is a rule of thumb that says a 10 to 15 percent loss in sales vaporizes a store's profits. In 2000, online

188 188 e-Commerce sales of books alone will top 11 percent of all books sold. That is up from 8.5 percent in 1999. CDs and videos will more than double their sales from 1999 and that will bring them to 10 percent of the entire market. Computer hardware and software already totals more than 18 percent of the market (Business Week, 2000). In order to combat this trend, some retailers are trying to lure consumers to their own online sites. They are also trying to use their Web sites to bring people into their stores. Since 94 percent of online buying is nothing but a shift from stores to a more convenient way of shopping, some of these strategies could work. Still, physical site retailers have begun to feel the effect of Net shopping. And, the fact is that sales on the Web are at least doubling every year (Business Week, 2000). The overhead is far less for dot-coms. They sell from a central warehouse and do not have to support thousands of stores Future 6 around the country. This fact is so clear that AMB Property Corp., a real estate investment trust in San Francisco, sold $560 million worth of local shopping centers and invested the proceeds in warehouses close to urban centers. The expectation is that the demand will be greater for warehouse property than for mall property (Business Week, 2000). Zona Research Corporation's forecast is that Internet sales will soar in the next two years. The survey of Internet product buyers showed that the number of companies that use Internet-based selling will likely quadruple in the next two years, going from 44 percent from its current 10 percent. The reason for the dramatic increase is related to universal standards that will unite millions of businesses with billions of consumers (Menefee, 1998). Zona looks that the electronic economy in terms of a series of three technology waves. The first wave was able to save companies money by publishing on the Internet and the second wave opened up online sales profit centers. It was the second wave that made e-commerce a component in commerce as a whole (Menefee, 1998). The third wave will re-intermediate buyers and sellers through the creation of places on the Internet where buyers and sellers meet to exchange goods and services and complete transactions completely on the Internet and to complete them securely. The third wave has a significant influence on how business Future 7 is normally conducted. At some point, the third wave will be similar to a fax machine, or at least, the importance of a fax machine was a number of years ago. If you don't have one, you won't be able to conduct business (Menefee, 1998). Digital TV: E-Commerce Future For the average consumer, the phrase "Digital TV" conjures up images of crystal clear pictures and ear-popping sound. In actuality, however, the new technology promises more than just enhancements to the audio-visual experience – it will allow a greater and more diverse population around the world to participate in the Internet Age. Digital TV will do far more than show television in a digital format. The term actually describes a series of interrelated technologies that will allow television to become interactive, so that viewers can play along with game shows, get information from the Internet as they watch a show, or buy a vast array of products and services online. The implications are enormous. E-commerce companies will finally be able to reach consumers who are unable or unwilling to buy a personal computer. E-commerce will also turn the TV into an instant procurement machine. Interactive television will not require the purchase of new systems. Existing TVs will simply require set-top boxes that will receive the digital signals from broadcasters or from the Internet and translate them to analog signals. (The new "digital" televisions that are now available play High Definition Television (HDTV) shows that must be broadcast by all major TV stations in compliance with FCC requirements.) In the following special report, the E-Commerce Times explores the digital TV phenomenon and takes a close look at what e-businesses and consumers alike can expect as this dynamic market force matures and explodes into the mainstream.

189 Strategies for e-Commerce 189 12.10 CASE STUDIES Internet technology literally changes on a daily basis. With so many new changes happening every day at record speeds, so comes with these changes Internet disputes among companies and individuals about Internet technologies. Three cases are described below. 12.10.1 Case 1: SCO vs. IBM On March 6, 2003, the SCO Group (formerly known as Caldera Systems) filed a $1 billion lawsuit in the US against IBM for allegedly “devaluing” its version of the UNIX operating system. The amount of alleged damages was later increased to $3 billion, and then $5 billion. SCO claimed that IBM had, without authorization, contributed SCO's intellectual property to the codebase of the open source, Unix-like Linux operating system. In May 2003 SCO Group sent letters to members of the Fortune 1000 and Global 500 companies warning them of the possibility of liability if they use Linux. The claims and counter-claims made by both sides then escalated, with both IBM and Linux distributor Red Hat starting legal action against SCO, SCO threatening Linux users who do not take out SCO UNIX licenses, and SCO suing Novell (see also SCO-Linux controversies), AutoZone and DaimlerChrysler. On September 30, 2003, Judge Kimball (the presiding federal district judge) granted the SCO Group's request for a delay until February 4, 2004, “to file any amended pleadings or add parties to this action”. The schedule was amended again on July 1, 2005. In December 2006 the trial date was vacated pending the resolution of SCO's litigation with Novell, all parties agreeing that SCO v. Novell would resolve issues relating to SCO v. IBM. In an “Order Granting in Part IBM's Motion to Limit SCO's Claims” dated June 28, 2006, Judge Brooke Wells (the federal magistrate judge presiding over discovery aspects of the case) barred SCO from asserting 187 of the 298 allegedly misused items that IBM had moved to exclude from the lawsuit for lack of specificity, stating “many of SCO’s arguments and much of Mr. Rochkind’s declaration miss the mark”, and comparing SCO's tactics with those of an officer who accuses a citizen of theft, but will not disclose what the citizen is accused of stealing. “Certainly if an individual was stopped and accused of shoplifting after walking out of Neiman Marcus, they would expect to be eventually told what they allegedly stole. It would be absurd for an officer to tell the accused that ‘you know what you stole I'm not telling.’ Or, to simply hand the accused individual a catalog of Neiman Marcus' entire inventory and say ‘it's in there somewhere, you figure it out. On August 10, 2007 Judge Kimball, who also presides over the SCO v. Novell case, ruled that Novell, not the SCO Group, is the rightful owner of the copyrights covering the Unix operating system. The court also ruled that "SCO is obligated to recognize Novell's waiver of SCO's claims against IBM and Sequent". After the ruling Novell announced they have no interest in suing people over Unix and stated "We don't believe there is Unix in Linux". SCO's Claims SCO's lawsuit has been consistent only in its claim of breach of contract (since the abandonment in early 2004 of its claim of misappropriation of trade secrets). SCO's initial claims were: z Misappropriation of trade secrets z Unfair competition z Interference with contract z Breach of IBM Software Agreement.

190 190 e-Commerce On July 22, 2003, SCO amended its complaint. It added two new claims: z Breach of IBM Sublicensing Agreement z Breach of Sequent Software Agreement. On February 27, 2004 SCO amended the complaint again. It dropped the trade secrets claim, but added the following claims: z Breach of Sequent Sublicensing Agreement z Copyright infringement z Interference with contract z Interference with business relationships. SCO's claims in press releases and interviews have changed repeatedly as the affair has progressed. SCO has also both claimed and denied that the alleged copyright violations involved the Linux kernel. Computerworld reported Chris Sontag of SCO as saying: It's very extensive. It is many different sections of code ranging from five to ten to fifteen lines of code in multiple places that are of issue, up to large blocks of code that have been inappropriately copied into Linux in violation of our source-code licensing contract. That's in the kernel itself, so it is significant. It is not a line or two here or there. It was quite a surprise for us. SCO refuses to allow access to the samples of code containing the alleged copyright violations except under a Non-disclosure Agreement (NDA). SCO's NDA would not only require that the signer keep confidential which lines of code SCO contested, but would also require that they hold confidential any information SCO told them, even if they already knew that information before being informed of it by SCO; all Linux kernel developers have considered this to be far too restrictive, so none of them have signed it. However, at SCO's annual reseller's convention in August of 2003 they revealed two short sections of code they alleged were copyright violations, and images of Darl McBride's presentation of this code were soon after published on German computer magazine publisher Heinz Heise's website. On May 30, 2003, SCO Group's CEO Darl McBride was quoted as saying that the Linux kernel contained "hundreds of lines" of code from SCO's version of UNIX, and that SCO would reveal the code to other companies under NDA in July. To put this into context, David Wheeler's SLOCCount estimates the size of the Linux 2.4.2 kernel as 2,440,919 source lines of code out of over 30 million physical source lines of code for a typical GNU/Linux distribution. Therefore, as per SCO's own estimate, the allegedly infringing code would make up about 0.001% of the total code of a typical GNU/Linux installation. SCO has since upwardly revised this figure to over a million lines of code, however. SCO's major claims have now been reported as relating to the following components of the Linux kernel: z Symmetric Multiprocessing (SMP), z Non-uniform Memory Access (NUMA) multiprocessing, z The Read-Copy-Update (RCU) locking strategy, ™ This technique is widely believed to have been developed at Sequent Computer Systems, who were then bought by IBM, who holds several patents (including patent 5,442,758) on this technique. z SGI's Extended File System (XFS), z IBM's JFS journaling file system These claims flow from the accusation of breach of contract. The contract between IBM and AT & T (to which SCO claims to be successor in interest) allows IBM to use the SVR4 code, but the SVR4 code, plus any derivative

191 Strategies for e-Commerce 191 works made from that code, must be held confidential by IBM. According to IBM's interpretation of the contract, and the interpretation published by ATandT in their "$ echo" newsletter in 1985, "derivative works" means any works containing SVR4 code. But according to SCO's interpretation, "derivative works" also includes any code built on top of SVR4, even if that does not contain, or even never contained, any SVR4 code. Thus, according to SCO, any AIX operating system code that IBM developed must be kept confidential, even if it contains nothing from SVR4. On August 10, 2007 a federal district court judge in Utah ruled that Novell, not the SCO Group, is the rightful owner of the copyrights covering the Unix operating system. 12.10.2 Case 2: SCO vs. Novell On September 19, 1995, the Santa Cruz Operation bought certain rights regarding Unix and UnixWare from Novell. These rights included the right to develop and market new versions of UnixWare. The Santa Cruz Operation also bought the rights to act as a licensing agent for an ancillary version of Unix. In 2000 Caldera acquired the Server Software and Services divisions of Santa Cruz Operation, as well as UnixWare and OpenServer technologies. Two years later Caldera changed its name to The SCO Group. The conflict between SCO and Novell originated in 2003, after SCO filed suit against IBM and claimed that it owned Unix. Novell publicly responded to these allegations on May 28, 2003 by claiming that it never sold the copyrights of Unix to SCO's predecessor, Santa Cruz Operation. On June 6, 2003, SCO held a press conference in which it revealed a second amendment to the asset purchase agreement between Novell and Santa Cruz Operation. SCO claimed this amendment supports its claim that SCO did receive the copyrights to Unix. In response, Novell issued a press release in which it stated: To Novell's knowledge, this amendment is not present in Novell's files. The amendment appears to support SCO's claim that ownership of certain copyrights for UNIX did transfer to SCO in 1996. The amendment does not address ownership of patents, however, which clearly remain with Novell. While SCO publicly claimed victory, behind the scenes a series of heated letters were sent back and forth. These letters reveal that Novell continued to believe that it was still the legal owner of the Unix copyrights. On October 14, 2003, Novell registered several key Unix copyrights. After their registration became public knowledge Novell issued a press release on December 22, 2003, stating: Novell believes it owns the copyrights in UNIX, and has applied for and received copyright registrations pertaining to UNIX consistent with that position. Novell detailed the basis for its ownership position in correspondence with SCO. On January 13, 2004, Novell launched its Linux indemnification program and publicly released the letters that were sent between SCO and Novell in the previous months. SCO responded the same day with a press release that reiterated its earlier claim and announced that it was preparing to file a lawsuit against Novell. On January 20, 2004, SCO filed a Slander of Title lawsuit against Novell. This lawsuit, filed in Utah State court, requested a preliminary and permanent injunction. The injunction would require Novell to assign to SCO all copyrights that Novell registered and that Novell would retract all claims they previously made. Novell successfully "removed" the lawsuit, transferring it to the Federal court system. Four days later, on February 10, 2004 Novell filed a motion to dismiss the case. Novell requested dismissal for failure to state a claim upon which relief can be granted. In support of its motion Novell argued that: z SCO did not show a valid transfer of copyright ownership, because the Asset Purchase Agreement is merely a promise to assign and that the Agreement is – by law – not sufficient to transfer the copyrights to SCO. z SCO did not specify specific special damages.

192 192 e-Commerce In response, SCO filed several memoranda in opposition to Novell's motion to dismiss. Additionally, SCO filed a motion to remand (move) the case back to State court. Novell countered that resolution of the case would require interpretation of Federal law, which would require it to be tried in Federal Court. On May 9, 2004, Judge Dale A. Kimball heard arguments of both parties and took both motions under advisement. On June 10, 2004 Judge Kimball denied SCO's motion to remand and partially granted Novell's motion to dismiss, on a pleading technicality. The case was dismissed without prejudice, which would allow SCO to amend their complaint to include properly pleaded special damages. On July 9, 2004, SCO filed an amended complaint. On July 29, 2005, Novell filed a countersuit against SCO claiming Slander of Title, Breach of Contract, Failure to Remit Royalties and Failure to Conduct Audit Obligations. Novell sought damages in excess of SCO's net worth, and, as SCO was quickly burning through its assets and cash on hand, Novell asked the court to sequester this money from SCO so that it would not be spent before the resolution of the case. Novell also asked the court to attach SCO's assets pending adjudication of their claims. If Novell wins this motion it would force SCO to file for bankruptcy. They accuse SCO of accepting Unix SVR4 licensing money from Microsoft and Sun Microsystems without remitting back to Novell the full 100% of the monies (after which Novell would pay SCO its 5% administration fee). They also mention at the beginning of the counterclaim that SCO asked Novell to go in together with them on the Linux IP Infringement Licensing Plan. When Novell refused, SCO asked Novell to turn the copyrights over to SCO, a request Novell also refused. On January 3, 2006, SCO filed a proposed amended complaint containing the original slander of title claim, as well as several new claims, including unfair competition, copyright infringement and breaching a purported no- compete agreement. On April 10, 2006, SuSE (part of Novell) filed a Request for Arbitration with the Secretariat of the ICC International Court of Arbitration in Paris, France. Years earlier SCO (then named Caldera) had signed contracts with SuSE (now owned by Novell) involving UnitedLinux. In this contract the UnitedLinux members agreed that each member would have broad licenses to exploit and distribute Linux products that include UnitedLinux technology, and they agreed to arbitration of disagreements. This request by SuSE was in response to SCO's amended complaint against Novell alleging copyright infringement. The arbitration process has relatively strict timelines, unlike the U.S. courts' procedures. Novell filed a "Motion to Stay Claims Raising Issues Subject to Arbitration" in the U.S. courts, saying that four of five SCO claims (including copyright infringement) have been brought to arbitration, and thus can be stayed in the U.S. court until the Arbitration Tribunal renders its decision. Novell also filed an "Answer to SCO's 2d Amended Complaint and Counterclaims", claiming a large number of affirmative defenses, one of which accuses SCO of conducting fraud on the U.S. copyright office. On September 22, 2006, Novell sought leave to file amended counterclaims. Through discovery, Novell had obtained copies of Unix licensing agreements between SCO and Microsoft and Sun, and alleged that upon review of the agreements, it was determined that they breached the APA. The added claims were conversion and breach of fiduciary duty. Judge Dale Kimball granted Novell's motion, as it was stipulated to by SCO. On September 29, 2006, Novell filed a Motion for Summary Judgment, or if that was rejected, then for a Preliminary Injunction. Novell has alleged that SCO, through their agreements with Sun and Microsoft, licensed them Novell's property without paying Novell the owed royalties. Novell has asked for SCO to be forced to turn the royalties over to Novell, or, in the alternative, be forced to put the money into a Collective Trust. On August 10, 2007, Judge Dale Kimball, hearing the SCO v. Novell case, ruled that "...the court concludes that Novell is the owner of the UNIX and UnixWare Copyrights". Novell were awarded summary judgments on a number of claims, and a number of SCO claims were denied. SCO was instructed to account for and pass to Novell an appropriate portion of income relating to SCOSource licences to Sun Microsystems and Microsoft. A number of matters are not disposed of by Judge Kimball's ruling, and the outcome of these are still pending.

193 Strategies for e-Commerce 193 On September 17, 2007, a trial in SCO v. Novell was expected to begin in order to determine how much money SCO owed Novell. However, on September 14, 2007 SCO Group filed a voluntary petition for reorganization under lesson 11 of the United States Bankruptcy Code. As a result of the petition for bankruptcy, all pending litigation was automatically stayed as per U.S.C. § 362. On November 27, 2007 Judge Gross (bankruptcy judge) lifted the stay so as to allow determination of any money owed, but retained jurisdiction over any constructive trust which might be appropriate. 12.10.3 Case 3: Metallica vs. Napster Heavy metal band Metallica discovered that a demo of their song 'I Disappear' had been circulating across the Napster network, even before it was released. This eventually led to the song being played on several radio stations across America and brought to Metallica's attention that their entire back catalogue of studio material was also available. The band responded in 2000 by filing a lawsuit against the service offered by Napster. A month later, rapper Dr. Dre shared a litigator and legal firm with Metallica, and filed a similar lawsuit after Napster wouldn't remove his works from their service, even after he issued a written request. Separately, both Metallica and Dr. Dre later delivered thousands of usernames to Napster who they believed were pirating their songs. One year later, Napster settled both suits, but this came after being shut down by the Ninth Circuit Court in a separate lawsuit from several major record labels. Also in 2000, Madonna, who had previously met with Napster executives to discuss a possible partnership, became irate when her single "Music" leaked out on to the web and Napster prior to its commercial release, causing widespread media coverage. Verified Napster use peaked with 26.4 million users worldwide in February 2001. In 2000, AandM records and several other recording companies sued Napster (AandM Records, Inc. v. Napster, Inc.) for contributory and vicarious copyright infringement under the US Digital Millennium Copyright Act (DMC Act). The music industry made the following claims against Napster: 1. That its users were directly infringing the plaintiff's copyright; 2. That Napster was liable for contributory infringement of the plaintiff's copyright; and 3. That Napster was liable for vicarious infringement of the plaintiff's copyright. The court found Napster guilty on all three claims. Napster lost the case in the District Court and appealed to the U.S. Court of Appeals for the Ninth Circuit. Although the Ninth Circuit found that Napster was capable of commercially significant non-infringing uses, it affirmed the District Court's decision. On remand, the District Court ordered Napster to monitor the activities of its network and to block access to infringing material when notified of that material's location. Napster was unable to do this, and so shut down its service in July 2001. Napster finally declared itself bankrupt in 2002 and sold its assets. It had already been offline since the previous year owing to the effect of the court rulings. Check Your Progress 1 Fill in the blanks: 1. Amazon.com is the pioneering bookstore on the Internet that first opened in July 1995 by ..... 2. A promising application of electronic commerce for a virtual firm is to use the web technology for within-business and ..... interactions. 3. A ..... can operate without a physical identity. 4. ..... refers to people who work for another company out of their own home and communicate with their employers via e-mail and telephone.
194 194 e-Commerce 12.11 LET US SUM UP Initiatives aimed at developing national e-commerce strategies have been launched in most developed and many developing countries. But what exactly are the key policy areas that have been included in the strategies, and how do they differ across countries? In order to provide an overview of what countries have done so far or are planning to do in the near future, an initial survey of national e-commerce strategies has been carried out. As a result, 51 countries were identified as having e-commerce strategies or as being in the process of formulating such strategies. The objective of the survey was to include as many developing countries as possible. 12.12 KEYWORDS Virtual Corporation: An organization distributed geographically and whose work is coordinated through electronic communications. ICT: Information and communications technologies. Voice Mail: A messaging system similar to telephone answering machines but with additional features like message store and forward. You can use your computer to send messages to coworkers. There are tools that will read e-mail and fax messages over the phone, so managers can stay in touch while they are away from the computer. 12.13 QUESTIONS FOR DISCUSSION 1. What do you mean by virtual book store? 2. Describe e-commerce strategies for development. 3. Explain various success factors of virtual corporation. 4. Describe future of e-commerce. Check Your Progress: Model Answers 1. Jeff Bezos 2. business-to-business 3. Virtual Corporation 4. Telecommuting 12.14

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SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

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Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003.

Hit and source - focused comparison, Side by Side

Submitted text As student entered the text in the submitted document.

Matching text As the text appears in the source.

1/390	SUBMITTED TEXT	21 WORDS	75%	MATCHING TEXT	21 WORDS

LESSON 1 INTRODUCTION TO E-COMMERCE CONTENTS 1.0 Aims and Objectives 1.1 Introduction 1.2 Electronic Commerce 1.3 Definition of e-Commerce 1.4

LESSON 1 INTRODUCTION TO E.COMMERCE CONTENTS 1.0 Aims and Objectives t.t Introduction 1.2 E-commerce 1.3 Scope of e-commerce 1.4

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of e-Commerce Application 1.6.1 Business to Business (B2B) 1.6.2 Business to Consumer (B2C) 1.6.3 Consumer to Consumer (C2C) 1.6.4 Consumer to Business (C2B) 1.6.5 Non-business

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3/390	SUBMITTED TEXT	126 WORDS	76%	MATCHING TEXT	126 WORDS

of e-commerce. 1.2 ELECTRONIC COMMERCE E-commerce is a selling and transfer process requiring several institutes. It is systematic and organized network for the exchange of goods between produces and consumers. The Net aims to establish the interconnections between producers and consumers directly and in this, the Internet embraces all those related activities which are indispensable for maintaining a continuous, free and uninterrupted distribution and transfer of goods. The Website or portals may be categorized into commercial and noncommercial. Any web site or portal that offers products and/or services for sale is a commercial web site. There are thousands of commercial web sites on the Internet. Some of them have been successful, and some weren't so lucky. What elements make up a good commercial

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Of course, web pages should look attractive to a customer. However, even the most attractive web pages will not make a person come back to a web site where it takes too long to find the right product or where order forms don't work. In this lecture we will discuss what functionality is needed for a successful commercial

Of course, web pages should look attractive to a customer. However, even the most attractive web pages will not make a person come back to a website where it takes too long to find the right product or where order forms don'r work. In this lecure, we will discuss what functionality is needed for a successful commercial

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DEFINITION OF E-COMMERCE E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT's). E-commerce takes place between companies, between companies and their customers, or between companies and public administration. E-commerce includes electronic trading of both goods and electronic material. "e-commerce denotes the use of electronic transmission media (telecommunication) to engage in the exchange of products and services requiring transportation either physically or digitally, from location to location", M. Greenstein and T.M. Feinman "e-commerce describes the process of buying and selling (or exchanging) of products, services and information via computer networks including the internet". E. Turban and others. E-commerce is the means to complete online transaction and integrate

DEFINITION OF E-COMMERCE E-commerce is a general concept covering any form of business rransacrion or information exchange executed using Information and Communication Technologies (ICTs). e-commerce takes plale between companies, between companies and their customers, or between companies "rrd plb[. administration. E-commerce includes electronic trading of both goods and electronic material. Commerce 9 "E'conTrnerce denotes the use of electronic trdnsTrTission meda (telecom.rnunication) to engage in the exchange of products and seroices requiring transportation either plrysl)t4 o, d.rgito,lb, frok-iororion to M. Greenstein and T.M. Feinman "e'cornmerce dacribelth.e pyc.lss of buying and selling (or excbanging) of products, services and information via computer netuorks including the internet". - E. Turban and others e'conlff7erce is the means-to complete online transaction and integrate

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supply chain into the transaction management process such as receiving orders, making payments and tracking down the deliveries or order. "e-commerce

supply chain into the transaction management process such as receiving orders, Laking payments and tracking down the deliveries or order. 2. Two advantages are: .:. E-commerce

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can be defined as the technology-mediated exchanges between parties (individuals, organisations, or both) as well as the electronic based intra or inter organisational activities that facilitate such

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8/390	SUBMITTED TEXT	43 WORDS	82%	MATCHING TEXT	43 WORDS

E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, point of sale transactions in retailing, electronic banking, electronic insurance, fund raising, political Campaigning, on-line education and training,

e-commerce is used everywhere in everyday life._It ranges from credit / debitcard authorization,travel reservation over a phone/network, wire fund tranifers across- the globe, point of Sale @oS) transactions in retailing, electronic banking, electronic insurance, fund raising, political .r-p"ig"i"g1 on-line education and training,

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9/390	SUBMITTED TEXT	14 WORDS	85%	MATCHING TEXT	14 WORDS

people use the term e-commerce and e-business interchangeably, which is factually wrong.

people use the term e-commerce and e-business interchangeably, *hi.h is factually wrong.

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

10/390	SUBMITTED TEXT	54 WORDS	70%	MATCHING TEXT	54 WORDS

Commerce 1.8.1 Advantages of e-Commerce to Business Firms 1.8.2 Benefits of e-Commerce to Society 1.8.3 Benefits of e-Commerce to Customers 1.8.4 Limitations or Disadvantages of e-Commerce 1.9 Let us Sum up 1.10 Keywords 1.11 Questions for Discussion 1.12 Suggested Readings 1.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

commerce 2.7.1 Advantages of e-commerce to Business Firms 2.7.2 Benefits of e-commerce to Society 2.7.3 Benefits of e-commerce to Customers 2.8 Let us Sum up 2.9 Keywords 2.10 Questions for Discussion z.tl SuggestedReadings 2.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

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11/390	SUBMITTED TEXT	13 WORDS	100%	MATCHING TEXT	13 WORDS

COMMERCE There have been several key steps in the history of e-commerce.

COMMERCE There have been several key steps in the history of e-commerce.

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12/390	SUBMITTED TEXT	15 WORDS	78%	MATCHING TEXT	15 WORDS

the ASC X12 standard became stable and reliable in transferring large amounts of transactions.

the ASC Xl2 standard became stable and reliable in transferring large amounrs of transactions.

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13/390	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

the Mosaic web-browser was made available; it was the first ‘point and click’ browser. The

The Mosaic web-browser was made available; it was the first 'point and click' browser. The

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14/390	SUBMITTED TEXT	26 WORDS	100%	MATCHING TEXT	26 WORDS

The development of DSL was another key moment in the development to of e-commerce. DSL allowed quicker access and a persistent connection to the Internet.

The develoPment of DSL was another key moment in the development to of e-commerce. DSL allowed quicker access and a persistent connection to the Internet. 1994 -

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15/390	SUBMITTED TEXT	30 WORDS	100%	MATCHING TEXT	30 WORDS

AOL had sales of 1.2 billion over the 10 week holiday season from online sales. The development of Red Hat Linux was also another major step in electronic commerce

AOL had sales of 1.2 billion over the 10 week holiday season from online sales. The development of Red Hat Linux was also another major step in electronic commerce

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16/390	SUBMITTED TEXT	13 WORDS	87%	MATCHING TEXT	13 WORDS

between AOL and Time Warner was another major push for electronic commerce.

between AOL and Time \Warner was anorher major push for electronic commerce.

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17/390	SUBMITTED TEXT	13 WORDS	100%	MATCHING TEXT	13 WORDS

hackers attacked some major players of e-commerce, including Yahoo, eBay and Amazon.

hackers attacked some major players of e-commerce, including Yahoo, ebay and Amazon. 46

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

18/390	SUBMITTED TEXT	18 WORDS	66%	MATCHING TEXT	18 WORDS

hierarchical framework of E-Commerce, consisting of three meta- levels: z Infrastructure z Services z Products and structures

hierarchical framework of E-commerce, consisting of three meta-levels: infrastructure, services, and products and structures,

W https://www.jstor.org/stable/27750797

19/390	SUBMITTED TEXT	37 WORDS	100%	MATCHING TEXT	37 WORDS

B2B indicates to the full spectrum of e-commerce operation that can occur between two organisations. Among other activities B2B e-commerce include purchasing and procurement, supplier management, inventory management, channel management, sales activities, payment activities, payment management

B2B indicates to the full spectrum of E-commerce operation that can occur between two organisations. Among other activities B2B E-commerce include purchasing and procurement, supplier management, inventory management, channel management. sales activities, Payment activities, payment management

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20/390	SUBMITTED TEXT	9 WORDS	100%	MATCHING TEXT	9 WORDS

example Chandex (www. chandex.com), Fast parts (www.fastparts.com). 1.6.2

example Chandex (www. chandex.com), Fast parts (www'fastparts"com).

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

21/390	SUBMITTED TEXT	15 WORDS	63%	MATCHING TEXT	15 WORDS

Business-to-Consumer (B2C) e-commerce, which online businesses is selling to individuals. However, even though B2C

Business-to- Consumer (B2C) e-commerce, in which online businesses attempt to reach 6 individual consumers. Even though B2C

W http://assets.vmou.ac.in/MCA23.pdf

22/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

E-commerce is now available everywhere every time. As soon as you click onto

e-commerce is now available everywhere every time. As soon as you click onto

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

23/390	SUBMITTED TEXT	21 WORDS	77%	MATCHING TEXT	21 WORDS

Net, some very attractive banner advertisement invites you to its web sites and tries to tell you products or services.

Net, some very' attractive banner advertisement invites you to its websites and tries to tell you producrs or services. 2.9

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

24/390	SUBMITTED TEXT	124 WORDS	86%	MATCHING TEXT	124 WORDS

Areas that are groceries by leaps and bounds are financial services, entertainment, travel, retailing grouses etc. It was estimated by to Forester Research, spending on new web sites will jump to Rs. 1330 billion in 2002 up from Rs. 300 billion in 1987, thus there is roughly 45 times growth in spending in five year period. 1.8.1 Advantages of E-commerce to Business Firms The major advantages of E-commerce are: z Economy: E-commerce is highly economical. Unlike the brick-and- mortar environment, in e-commerce there is no rental of physical store space, insurance, or infrastructure investment. All you need is an idea, a unique product, and a well-designed Web storefront to reach your cyber-customers, plus a partner to do fulfillment.

Areas that are groceries by leaps and bounds are financial services, entertainment, travel, retailing grouses etc. It was estimated by to Forester Research, spending on new web sites will jump to t 1335 billions in 2002 up from T 300 billions in 1.987, thus there is ioughly 45 times growt(in spending in five year period. 2.7,1 Advantages of e-commerce to Business Firms The major advantages of e-commerce are: ' Econongt: E-commerce is highly economical. Unlike the brick-and-mortar environmenr, in e-commerce there is no rental of physical store space, insurance, or infrastructure investment. All you need is an idea, a unique product, and a well-designed '$[eb storefronr to reach your cyber-customers, plus a parrner to do fulfillment. '

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25/390	SUBMITTED TEXT	39 WORDS	55%	MATCHING TEXT	39 WORDS

of e-commerce in the following categories: 1. Business to Business (B2B) 2. Business to Consumer (B2C) 3. Consumer to Consumer (C2C) 4. Consumer to Business (C2B) 5. Non-business E-commerce 6. Intra-business E-commerce 1.6.1 Business to Business (B2B)

SA E commerce B.com VI semester.docx (D146772307)

26/390	SUBMITTED TEXT	84 WORDS	83%	MATCHING TEXT	84 WORDS

Lower Cost: Doing e-business on the Internet is extremely cost effective; it reduces logistical problems and puts a small business on a par with giants like Amazon.com, Sears, General Motors, or Bank of America. In a commercial bank, for example, a basic over-the-counter transaction costs Rs. 52.95 to process; over the Internet, the same transaction costs about 1 rupee. Every financial transaction eventually turns into an electronic process. The sooner it makes the conversion, the more cost-effective the transaction becomes. z Better Customer

Lower cost: Dqing e-business on the Internet is extremely cost effective; it reduces logistical problems and puts a small business on a par with giants like Amazon.com, Sears, Generrl I\iotors, or Bank of America. In a commercial bank, for example, a basic over-the-counter transaction costs > 52.95 to process; over the Internet, the same traniaction cosrs abour 1 rupee. Every financial transaction eventually turns into an electronic process. The sooner it makes the .o.rr"rsion, the more cost-effective the transaction becomes. ' Better Customer

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27/390	SUBMITTED TEXT	75 WORDS	66%	MATCHING TEXT	75 WORDS

based customer service makes customers happier. Instead of calling your company on the phone, holding for 10 minutes, then getting to a clerk who taps into you account, the Web merchant gives customers direct access to their personal accounts over the Web. It saves time and money. It is a win-win proposition. For companies that do business with other companies, adding customer service to the Web is a competitive advantage. The overnight package delivery

based customer service makes customers happier. Instead of calfing your company on the phone, holding for 10 minutes, then getting to a clerk who taps i"to-yo., ,..orrni, the \reb ,rr"r.h"rri gives customers direct access to their personal accounts orrer the \fleb. It saves time and money. It is a win-win proposition. For companies that do business with other companies, adding custoler service to the \7eb.is a competitive advantage. The overnight package delivery ,"*

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28/390	SUBMITTED TEXT	41 WORDS	72%	MATCHING TEXT	41 WORDS

where tracking numbers allow customers to check the whereabouts of a package online, is one good example. z Greater Profit Margin: E-commerce means greater profit margins. For example, the cost of processing a conventional airline ticket is Rs. 400. According

where tracking numbers allow customers to check the whereaborir oi " pr".k"g" orrlir., is one good example. |, Greater Profit Margin: E-commerce means greater profit margins. For example, the cost of processing a conventional airline ticket is > 4OO. According ,

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29/390	SUBMITTED TEXT	16 WORDS	80%	MATCHING TEXT	16 WORDS

processing the same ticket (called e-ticket) over the Web costs Rs. 50 only. Along with

processing the same ticket (called e-ticket) over the 'ilileb costs t 50 only. Along with

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30/390	SUBMITTED TEXT	42 WORDS	66%	MATCHING TEXT	42 WORDS

can gain more control and flexibility and are able to save time when manual transactions are done electronically. z Knowledge Markets: E-commerce helps create knowledge markets. Small groups inside big firms can be funded with seed money to develop new ideas.

can gain more control and flexibility and are able to ,"rr. ti-. *h"en -anrlri rrrnrr.tions are done electronically. ' Knowledge Markets: E-commerce heips.create knowledge markers. Small groups inside big firms can be funded with seed money to derrelop new ideas.

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31/390	SUBMITTED TEXT	37 WORDS	75%	MATCHING TEXT	37 WORDS

A Silicon Valley team is doing consumer research on electric cars and advising car designers. z Swapping Goods and Services: Swapping is trading something you have for something you want more. Offering goods or services through

A Silicon^Valley team is ioirrg consumer research on electric cars and advising car designers. ' suapping Goods and.seruices: Swapping is trading somerhing you have for something you wanr ' more. Offering goods or services through

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

32/390	SUBMITTED TEXT	26 WORDS	77%	MATCHING TEXT	26 WORDS

Swap, www.BarterTrust.com, and www.Ubarter.com. Here is how it works: Sam, a networking consultant, offers his technical services through a barter company. People pay currency into

Swap, www.BarterTrust.com, and www.Ubarter.com. Heie is io* it works: Sa-rn, a networking consultant, offers his technical services through a barrer company. People pay currency into

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33/390	SUBMITTED TEXT	32 WORDS	100%	MATCHING TEXT	32 WORDS

account in exchange for his services. Instead of accepting the cash, he turns around and buys things (a PC, carpeting). The barter house keeps a modest commission to expedite the exchange.

account in exchange for his services. Instead of accepting the cash, he turns around and buys things (a PC, carpeting). The barter house keeps a modest commission to expedite the exchange. 28

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34/390	SUBMITTED TEXT	82 WORDS	96%	MATCHING TEXT	82 WORDS

and Control: Electronic market places improve information sharing between merchants and customers and promote quick, just-in-time deliveries. Conveniences for the consumer is a major driver for changes in various industries: Customers and merchants save money; are online 24 hours a day, 7 days a week; experience no traffic jams, no crowds and do not have to carry heavy shopping bags. Control is another major driving factor. For example, instead of banks controlling the relationships with the customer, customers today can have

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W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

35/390	SUBMITTED TEXT	25 WORDS	93%	MATCHING TEXT	25 WORDS

of their banking needs via Internet Web sites. Banks like Bank of America and ICICI now give customers access to their accounts via the

of their banking needs via Internet'Web sites. Banks like Bank of America and ICICI now give customers access to their accolrnts via the \7

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36/390	SUBMITTED TEXT	54 WORDS	88%	MATCHING TEXT	54 WORDS

Comparison Shopping: E-commerce helps consumers to comparison shop. Automated online shopping assistants called hopbots scour Net stores and find deals on everything from applesauce to printer ribbons. For example, mySimon (www.mysimon.com) learns the navigation preferences of its runner (a tool that fills out the request form asking the bot to search Web pages

Comparison Shopping: E-commerce helps consumers to comparison shop. Automated online shopping assistants called hopbots scour Net stores and find deals on everything from applesauce to printer ribbons. For example, mySimon (www.mysimon.com) learns the navigation pr"f"r.rr."r of its runner (a tocl that filis out the request form asking the bot to search Web pages

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37/390	SUBMITTED TEXT	157 WORDS	88%	MATCHING TEXT	157 WORDS

solutions). It lets you enter basic keywords such as "ladies dress" to search its database of Web stores for the best buys. z Teamwork: E-commerce helps people work together. E-mail is one example of how people collaborate to exchange information and work on solutions. It has transformed the way organizations interact with suppliers, vendors, business partners, and customers. More interaction means better overall results. A recent study of 40 corporate Internets by the MET A Group found that the typical Intranet (within-company network) had an average Return on Investment (ROI) of 38 per cent. Networks that provided collaborative capabilities had a 40 per cent ROI and those that gave people direct access to needed information had a 68 per cent ROI. The implication is that the more interactive and the more. "Collaborative-rich" the Web site, the higher the payoff for the business (www. IBM.com). 14 e-Commerce z Productivity Gains:

solutions). It lets you enter basic key'words such as "ladies dress" to search its database of Web stores for the best buys. o Teamwork.. E-commerce helps people work together. e-mail is one example of how people collaborate to exchange information and work on solutions. It has transformed the way organizatigns interact with suppliers, vendors, business par[ners, and customers. More interaction -."rn better overall results. A recent study of 40 corporate Internets bv the MET A Group found that the typical Intranet (within-company network) had an average Return on Investment (ROI) of 38 per cent. Networks that provided collaborative capabilities had a 40 per cent ROI and those that gave people direct access to needed information had a 58 per cent ROI. The implication is that the -or. irrt..rctive and the more. "Collaborative-rich" the '$7eb site, the higher the payoff for the business (www. IBM.com). o E-commerce means productivity gains. '

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38/390	SUBMITTED TEXT	143 WORDS	95%	MATCHING TEXT	143 WORDS

Digital products are highly customizable. They are easy to reorganize, revise, or edit. With information about consumer tastes and preferences, products can be differentiated (customized) and matched to individual needs. z Ensure Secrecy: EC devices invariably have in built security measures. For example password, encoding encryptography, cipher etc. are some of the mechanisms/measures which provide security and prevent unauthorized access and use of data, information and transactions. z Other Benefits: The other benefits include improved image, improved customer services, new found business partners, simplified processes, compressed cycle and delivery time, increased productivity, eliminating paper, expediting access to information, reduced transportation costs, and increased flexibility. 1.8.2 Benefits of E-commerce to Society It helps society in the following ways: z Enables individuals to work at home and to do less traveling for shopping, resulting in less traffic on the roads and lowers air pollution.

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39/390	SUBMITTED TEXT	27 WORDS	75%	MATCHING TEXT	27 WORDS

Allows some merchandise to be sold at lower prices and helps in increasing standard of living. z Enables people in Third World countries and rural areas

Allows some merchandise to be sold at lower prices and heips in increasing srandard of living. Enables people in Third ' S7countries and rural areas

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40/390	SUBMITTED TEXT	189 WORDS	88%	MATCHING TEXT	189 WORDS

Facilitates delivery of public service such as health care, education and distribution of government social service at reduced cost and/or improved quality. 1.8.3 Benefits of E-commerce to Customers The customers can enjoy the following benefits of e-commerce: z Customer Convenience: A website is open 24 hours a day. It can take orders, keep an eye on deliveries, and receive payments, at any time of convenience to the customer. z Product/Service made to Customer's Order: E-commerce enables the customers to get the products/services made as per particular needs. Manufacturers may even invite customers to design the product/service exactly as they want it and thus earn their goodwill. z Wider Choice: Customers can access websites of as many competing suppliers as desired to, decide on which product/service would best meet their need. They do not need to drive to different shops for this purpose. In any case, a website can offer any number of products/services and in any detail without any space or inventory limits as in case of a shop or market place. z Quick Delivery: In case of digitized products, electronic commerce allows quick delivery. z Cheaper

Facilitates delivery of public service such as health care, education and distribution of government social service at reduced cost and/or improved quality. 2,7.3 Benefits of e-commerce to Customers The customers can enjoy the following benefits of e-commerce: . Customer Conuenience,' A website is open 24 hours a day. It can take orders, keep an eye on deliveries, and receive payments, at any time of convenience to the custorner. a Product/Seruice mafu to Customer'|s Ordcr: E-commerce enables the customers to get the products/services made as per particular needs. Manufacturers may even invite customers to design the product/service exactly as they wanr it and thus earn rheir goodwill. . Widcr Choice: Customers can access websites of as many competing suppliers as desired to, decide on which product/service would best meet their need. They do not need to drive to different shops for this purpose. In any case, a website can offer any number of products,/services and in any detail without any space or inventory limits as in case of a shop or market place. o puick Deliaery: In case of digitized products, electronic commerce allows quick delivery. o Cheaper

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41/390	SUBMITTED TEXT	60 WORDS	95%	MATCHING TEXT	60 WORDS

Electronic commerce allows customers to visit websites of several business firms and make comparison of their offering. Thus, he can get cheaper products/services of required quality by visiting various websites. z Virtual Auction: The customers can participate in virtual actions through Internet. For example, several airlines put air tickets to specify destination on auction and the customers are free

Electronic commerce allows customers to visit websites of several business firms and make comparison of their offering. Thus, he can get cheaper products/services of required quality by visiting various websites. . Virtual Auction: The customers can participate in virtual actions through Internet. For example, several airlines put air tickets to specify destination on auction and the cusromers are free ,

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

42/390	SUBMITTED TEXT	22 WORDS	100%	MATCHING TEXT	22 WORDS

Competition: Electronic commerce creates competition between product and service providers. The customers are benefited in the form of lower prices. 1.8.4

Competition' Electronic commerce creates competition between product and service providers. The customers are benefited in the form of lower prices.

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43/390	SUBMITTED TEXT	21 WORDS	84%	MATCHING TEXT	21 WORDS

Many legal issues are as get unresolved and government resolutions and standards are not refined enough for many circumstances. ™

SA 178E1210-Ecommerce Application & Securities.pdf (D165202930)

44/390	SUBMITTED TEXT	25 WORDS	100%	MATCHING TEXT	25 WORDS

commerce as a discipline is still evolving and changing rapidly. Many people are looking for a stable area before they enter into it. ™

SA 178E1210-Ecommerce Application & Securities.pdf (D165202930)

45/390	SUBMITTED TEXT	25 WORDS	93%	MATCHING TEXT	25 WORDS

commerce could result in a breakdown of human relationship. ™ Accessibility to the Internet is still expensive and/or inconvenient for many potential customers. ™

SA 178E1210-Ecommerce Application & Securities.pdf (D165202930)

46/390	SUBMITTED TEXT	25 WORDS	100%	MATCHING TEXT	25 WORDS

LET US SUM UP E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT'

LET US SUM UP E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT$.

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47/390	SUBMITTED TEXT	105 WORDS	85%	MATCHING TEXT	105 WORDS

popularized by the advent of commercial services of the Internet. E-commerce is a selling and transfer process requiring several institutes. It is systematic and organized network for the exchange of goods between produces and consumers. Any web site or portal that offers products and/or services for sale is a commercial web site. E-commerce is highly economical. Doing e-business on the Internet is extremely cost effective. E-commerce emphasizes better and quicker customer service. There are some problems and drawbacks of e-commerce like security, shortage of e-literate people, data protection and the integrity of the system etc. E-commerce takes place between companies, between companies and their

popularized by the advenr of commercial services of th9 Internet. E-commerce is a selling and transfer process requrrmg several institutes. It is systematic and organized network for the exchange of goods t.r*..r, p-drrce, and consumers. Any website or portal that offers products and/ or services for sale is a commeicial website. E-commerce is highly economical. Doing e-business on the Internet is extremely cost effective. E-commerce emphasizes better and quicker customer service. There are some problems and drawbacks of E-commerce like security, shoftage of e-literate people, data protection and the integrity of the system etc. E-commerce takes place between companies, between-companies and their .

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48/390	SUBMITTED TEXT	18 WORDS	83%	MATCHING TEXT	18 WORDS

customers, or between companies and public administration. E-commerce includes electronic trading of both goods and electronic material.

customers, or between companies "rrd plb[. administration. E-commerce includes electronic trading of both goods and electronic material.

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49/390	SUBMITTED TEXT	31 WORDS	79%	MATCHING TEXT	31 WORDS

There are not enough support services. For example, copy right clearance centres for EC transactions do not exist, and high quality evaluations or qualified EC tax experts are rare. 1.9

SA 178E1210-Ecommerce Application & Securities.pdf (D165202930)

50/390	SUBMITTED TEXT	22 WORDS	100%	MATCHING TEXT	22 WORDS

It is a general concept covering any form of business transaction or information exchange executed using information and communication technologies.

It is a general concept covering any form of business transaction or information exchange executed using information and communication technologies.

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51/390	SUBMITTED TEXT	16 WORDS	94%	MATCHING TEXT	16 WORDS

B2B): B2B indicates to the full spectrum of e-commerce operation that can occur between two

B2B E-commeree: B2B indicates to the full spectrum of e-commerce operation that can occur between two

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52/390	SUBMITTED TEXT	14 WORDS	88%	MATCHING TEXT	14 WORDS

QUESTIONS FOR DISCUSSION 1. What is e-commerce? Give a definition of your own

QUESTIONS FOR DISCUSSION \flhat is e-commerce? Give a definition of your own.

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53/390	SUBMITTED TEXT	21 WORDS	100%	MATCHING TEXT	21 WORDS

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54/390	SUBMITTED TEXT	44 WORDS	80%	MATCHING TEXT	44 WORDS

E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, Point of Sale (POS) transactions in retailing, electronic banking, electronic insurance, fund raising, political Campaigning, on-line education and training,

e-commerce is used everywhere in everyday life._It ranges from credit / debitcard authorization,travel reservation over a phone/network, wire fund tranifers across- the globe, point of Sale @oS) transactions in retailing, electronic banking, electronic insurance, fund raising, political .r-p"ig"i"g1 on-line education and training,

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55/390	SUBMITTED TEXT	10 WORDS	100%	MATCHING TEXT	10 WORDS

hierarchical framework of E-Commerce, consisting of three meta-levels: (

hierarchical framework of E-commerce, consisting of three meta-levels:

W https://www.jstor.org/stable/27750797

56/390	SUBMITTED TEXT	52 WORDS	87%	MATCHING TEXT	52 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce P.T.Joseph , E:cotttfixerce- A Managerinl Perspectioe G.Winfield Treese & Lawrence C.Stewart, Designing Systems for lnternet Commerce Kamelesh K Bajaj Debjani Nag, E commerce The Cutting Edge of Business Dr.Ravi Kalakota, Marcia Robinson, E Business Road Map for Success

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57/390	SUBMITTED TEXT	30 WORDS	100%	MATCHING TEXT	30 WORDS

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 19

vision to Fulfilment, 3rd Edition, pHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing,3rd Edition, Pearson Education, 2003.

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

58/390	SUBMITTED TEXT	22 WORDS	86%	MATCHING TEXT	22 WORDS

types of e-commerce are: Business to Business (B2B), Business to Consumer (B2C), Consumer to Consumer (C2C), Consumer to Business (C2B). 1.10

SA E-Commerce Book.pdf (D152478455)

59/390	SUBMITTED TEXT	25 WORDS	100%	MATCHING TEXT	25 WORDS

Let us Sum up 2.16 Keywords 2.17 Questions for Discussion 2.18 Suggested Readings 20 20

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0

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60/390	SUBMITTED TEXT	17 WORDS	90%	MATCHING TEXT	17 WORDS

AIMS AND OBJECTIVES After studying this lesson, you will be able to: z Explain the concept

AIMS AND OBJECTIVES After studying this lesson. you will be able to: o Explain the concept

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61/390	SUBMITTED TEXT	10 WORDS	100%	MATCHING TEXT	10 WORDS

Companies are re-orienting themselves in the present competitive era

Companies are re-orienting themselves in the present competitive era.

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62/390	SUBMITTED TEXT	17 WORDS	100%	MATCHING TEXT	17 WORDS

place with formation of trade blocks across the globe, and world moving towards a global village.

place with formation of trade blocks across the globe, and world moving towards a global village.

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

63/390	SUBMITTED TEXT	21 WORDS	86%	MATCHING TEXT	21 WORDS

to millions of computers connected to a gigantic network and communicating via TCP/IP protocols. A protocol is a pre-defined way

to millions-of computers connected to a gigantic network and communicating via TCP/P protocols' A protocol is a pie-defined way

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64/390	SUBMITTED TEXT	43 WORDS	75%	MATCHING TEXT	43 WORDS

to communicate with another computer, for instance when requesting a service, s.a. an FTP service, or when forwarding some information to another machine. Each computer at any given time has a unique address on the Internet. This is its IP address. Internet

to communicate with another computer' for instance when requesting a service, an FTP sewice, or when forwarding some information to another machine. Each computer at anv given time has a unique acldress on the Internet. This is its IP address. 8.2 INTERNET

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

65/390	SUBMITTED TEXT	19 WORDS	75%	MATCHING TEXT	19 WORDS

the world. It is collection of interconnected networks. Hence it is called inter network" or in short "Internet".

the vorld. It is collection of inrerconnected nerworks. Hence it is called "inter network" or in short "Internet".

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

66/390	SUBMITTED TEXT	14 WORDS	80%	MATCHING TEXT	14 WORDS

internet throughout the world. Many companies including VSNL, Essar, Bharti Telecom, and MTNL

internet subscribers throughout the world through an Interner connecrion. Many companies including vsNL, Essar, Bharti Telecom, and MTNL

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

67/390	SUBMITTED TEXT	16 WORDS	90%	MATCHING TEXT	16 WORDS

Any individual or organisation can open an account with any Internet Service Provider (ISP) who

Any individual or organization can open an account with any Internet Service Provider (ISP) who

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68/390	SUBMITTED TEXT	25 WORDS	88%	MATCHING TEXT	25 WORDS

Account Number for monthly or yearly fees. Then the user may have access to the Internet and the e-mail through it. The user needs

Account Number for monthly or yearly fees. Then the user may have access to the Internet Ind th" e-mail through it. The user needs

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

69/390	SUBMITTED TEXT	21 WORDS	100%	MATCHING TEXT	21 WORDS

is not internet. At times, people confuse the two terms that are related but not identical in meaning. The internet

is not internet. At times, people confuse the two terms that are related but not identical in meaning" The Internet

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

70/390	SUBMITTED TEXT	36 WORDS	87%	MATCHING TEXT	36 WORDS

when you are on the Web, you are on the Internet but not the other way round. For example, those sending e-mail are not on the Web, unless they are sending e-mail via a Web

When you are on the \Web, you are oq the- Internet but not the other wly round. For example-, rhose sending e-mail are not on the 'Web, unless they are sending e-mail via a Web

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

71/390	SUBMITTED TEXT	48 WORDS	86%	MATCHING TEXT	48 WORDS

A server is the ultimate destination point on the Internet. It is where the information you are seeking is stored. When you send a message to retrieve a piece of information through the Internet, the browser picks up the message, reformats it, and sends it through various

A server is the ultimate destination point on the Interner. It is where the information you are seeking is stored. \When you send a message to retrieve a piece of information through the Interrr.r, th! browser picks up the message, reformats it, and ,.rr& it through various

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

72/390	SUBMITTED TEXT	16 WORDS	80%	MATCHING TEXT	16 WORDS

physical layer where cables and wires transmit the message to the appropriate server. Once there,

physical iaye. where cables and wires transmit the message to the appropriate ,"*.r. Once there,

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

73/390	SUBMITTED TEXT	115 WORDS	81%	MATCHING TEXT	115 WORDS

server retrieves the information and sends it back to the browser to be viewed by the user. There are various kinds of servers, depending on the information sought by the user. Since most of the focus in this book is on the World Wide Web, we will use the word "server" to refer to WWW servers. z Browser: A browser is a software program loaded on a PC which allows to access or read information stored on the Internet. It is the vehicle that enables you to interface with the Internet. The browser takes your instructions and converts them into a language and a format that can be sent to a remote site and

server retrieves the information and sends it back to the browser to b. ,ie*"d by the user. There are various kinds of seryers, depending on the information sought by the user. Since mosr of the focus in this book is on the \7orld \7ide \tr7eb, we will use the word "server" to refer to \w\ [w seryers. Browser A browser is a software Programme loaded on a PC which allows to access or read information stored on the Internet. It is the vehicle that enables you to interface v'ith the Inrerner. The browser takes your instructions and converts them into a language and a format that can be sent to a remote site and.*".

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74/390	SUBMITTED TEXT	31 WORDS	93%	MATCHING TEXT	31 WORDS

Protocols: There are two main security protocols. The first is Secure Sockets Layer (SSL) – a protocol for transmitting private information in a secure way over the Internet. Developed by

Protocols There are two main security protocols. The first is Secure Sockets Layer (SSL) - a protocol for transmitting private information in a secur e way over the Internet. Developed by

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

75/390	SUBMITTED TEXT	55 WORDS	92%	MATCHING TEXT	55 WORDS

To date, it is the most widely used security protocol on the Internet, providing security services for messages or streams of data. The second security protocol is S-HTTP secure HTTP (S-HTTP): an extension to HTTP that provides various security features such as client/server authentication and allows Web clients and servers to specify privacy capabilities.

To date, it is the most widely used security Protocol on the Internet, providing security services for messages or streams of data. The second security protocol is S-HTTP ,..rr. Uffp (S-HTTP): an extension to HTTP that provides various security features such as client/server authentication and allows \7eb clients and servers to specify privacy capabilities.

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

76/390	SUBMITTED TEXT	36 WORDS	100%	MATCHING TEXT	36 WORDS

Telnet: An Internet service that allows a visitor to access remote computers as if they were local. Telnet is a basic Internet service that allows you to access remote computers as if they were local.

Telnet An Internet service that allows a visitor to access remote comPuters as if they were local. Telnet is a basic Internet service that allows you to access remote computers as if they were local.

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77/390	SUBMITTED TEXT	40 WORDS	96%	MATCHING TEXT	40 WORDS

use Telnet, you must have the Internet address of the remote computer. Once you transmit the computer address, you are asked to login before being allowed to access computer files or use the computer. Login entering your user name

use Telnet, you must have the Internet address of the remote computer. Once you transmit the computer address, you are asked to login before being allowed to access computer files or use the computer. Login Lrrtering your user name

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78/390	SUBMITTED TEXT	20 WORDS	89%	MATCHING TEXT	20 WORDS

password. Once logged in, the information you read and actions you take are acted upon by the remote computer.

password. Once logged in the information yc,u read and actions you take are acted upon by the remote computer.

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79/390	SUBMITTED TEXT	30 WORDS	100%	MATCHING TEXT	30 WORDS

Bulletin Board Systems (BBS): BBS is a computer based meeting and announcement system that allows local people to exchange information free of charge. People often confuse Bulletin Board Systems (

Bulletin Board Systems (BBS) BBS is a computer based meeting and announcement system that allows local people to exchange information free of charge. People often confuse Bulletin Board Systems

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80/390	SUBMITTED TEXT	177 WORDS	95%	MATCHING TEXT	177 WORDS

and pay services. A BBS generally has a simple interface to the Internet for users to access services like e-mail and NetNews. By calling a BBS via your PC, you can locate all kinds of information. The e-mail part of this system, for example, accepts e-mail during the day, compiles it, and sends it once or twice a day as a batch. It also receives incoming e-mail the same way. This is probably satisfactory service for small-time users or those with no time requirements. An alternative type of BBS is service by subscription. These systems are so popular that system owners have added better computer hardware, better storage, more phone lines, etc. The cost of keeping the system current requires users to pay a set fee per month. Pay services like America Online and Prodigy have become household names, offering millions of users access to popular telecommunication offerings that include stock quotes, Internet access, setting up your stock portfolio, and other specialized services. Many pay services follow a similar procedure. First, you subscribe at

and pay services' A BBS generally has a simple interface to the Internet for users to access services like e-mail and NetNews. By calling a BBS ,ria your PC, you can locate all kinds of information. The e-mail part of this system, for .rrrrrpl", acceprs e-mail during the day, compiles it, and sends it once or twice a day as a batch. It also recei.res incoming e-mail the same way. This is probably satisfactory service for small-time users or those with no time requirements. An alternative type of BBS is service by subscription. These systems are so popular that system owners have added better computer hardware, better storage, more phone lines, eic. The cost of keeping the system current requires users to pay a set fee per month. Pay services like America Online and Prodigy have become household names, offering millions of users access to popular telecommunication offerings that include stock quotes, Internet access, setting uP your stock portfolio, and other specialized services. Many pay services follow a similar procedure. First, you subscribe at

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81/390	SUBMITTED TEXT	53 WORDS	95%	MATCHING TEXT	53 WORDS

which covers basic access to the service. The fee allows you to do e-mail, interactive real-time communication, watch the news, and the like. Pay services offer other options that are hard to get on the Internet. For example, a live news feed and free 24 24

which covers basic access to the service. The fee allows you to do e-mail, interactive real-time communication, watch the net's, and the like. Pay services offer other options that are hard to get on the Internet. For example, a live news feed and free

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82/390	SUBMITTED TEXT	223 WORDS	93%	MATCHING TEXT	223 WORDS

online (no delay) stock quotes are available at a membership fee; some are free. Security software is also included to ensure privacy, confidentiality, and integrity of the exchange process. z E-mail: Electronic Mail or e-mail is a system of electronic correspondence by which users send and receive messages over a network of computer and telecommunication links. The messages may consist of short notes and greetings, or extensive (huge) text files plus graphics (drawings) and photographic images, video clips, or sound. Thus, e-mail is an "electronic post office". It provides a "store-and-forward" service. It lets people communicate even in the absence of the receiver at the other end. It means that you can send e-mail message whenever you want. The person to whom you have sent the message, can read them (after opening his computer) whenever he wants. Thus, the sender and the receiver don't have to connect themselves at the same time to communicate. The ability to compose send and receive electronic mail is enormously popular on the Internet. Many people use this as the primary way of interacting with the outside world. Electronic mail eliminates most of the problems and delays of getting a physical document from one person to another. The message becomes available to the addresses as soon as it is sent. Unlike telephone call, both parties need

online (no delay) stock quotes are available at a membership fee; some are free. Security software is also included to ensure privac!, confidentiality, and integrity of the exchange Process' e-mail Electronic N{ail or e-mail is a system of electronic correspondence by which users send and receive messages over a network of computer and telecommunication links. The messages malr consist of short notes and greerings, or extensive (huge) text files plus graphics (drawings) and photographic images, video clips, or sound. Thus, e-mail is an "electronic post office". It provides a "store-and-forward" service. It lets people communicate even in the absence of the receiver at the cther end. It means that you can send e-mail message whenever you want. The person to whom you have sent the message, can read them (after opening his computer) whenever he wants. Thus, the sender and the receiver don't have to connect themselves at the same time to communicate' The ability ro compose send and receive electronic mail is enormously popular on the Internet. Many people use rhis as the primary way of interacting with the outside world. Electronic mail eliminates -.it of the problems and delays of getting a physical document from one Person to another. The message becomes available to the addresses as soon as it is sent. Unlike telephone call, both parties need

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83/390	SUBMITTED TEXT	13 WORDS	100%	MATCHING TEXT	13 WORDS

available simultaneously for communication to succeed. Some electronic mail packages have an "

available simultaneously for communication to succeed. Some electronic mail packages have an 114

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84/390	SUBMITTED TEXT	18 WORDS	67%	MATCHING TEXT	18 WORDS

OF INTERNET The Internet provides numerous advantages to managers they use it to glean intelligence about rivals,

OF INTERNET The .Internet provides numerous uses to managers monitor sale, promote their products and services etc. they use it to glean intelligence about rivals,

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85/390	SUBMITTED TEXT	38 WORDS	73%	MATCHING TEXT	38 WORDS

monitor sale, promote their products and services etc. The advantages of internet are: z Marketing and selling products and services. The "buy and sell" aspect of Internet commerce has attracted more media attention than any other networked

monitor sale, promote their products and services etc. they use it to glean intelligence about rivals, The advantages of inrernet are: 1' Marketing and selling products and seruices: The "buy and sell" aspect of Internet commerce has attracted more media affention than any other networked ,.

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

86/390	SUBMITTED TEXT	47 WORDS	78%	MATCHING TEXT	47 WORDS

Thousands of e-corporations have sold over $1 million each in 2000-02. The highest sales volume was in business-to-business commerce, and it is growing. The next highest sales were to government agencies, followed by colleges and universities. In terms of revenue, business-to-consumer ranks fourth in Internet revenue.

Thousands of e-corporations have sold over $1 millions each in 2000. The highest sales vol.rme was in business-to-business comaerce, and it is growing. The next highest sales were to government agencies, followed by colleges and universiiies. In terms of ,.r..r"r., business-to-consumer ranks founh in Internet revenue. 2'

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87/390	SUBMITTED TEXT	71 WORDS	61%	MATCHING TEXT	71 WORDS

By advertising the products/services on net, the enterprise is on equal footing with larger company. z Excellent customer support resource and service. The most common support resource created is FAQs (Frequently Asked Questions). Most web sites create customer feedback in the form of suggestions and complaints. z Doing business fast. Internet promotes e-selling in fraction of seconds. Thus, it promotes the growth of a customer base. z Obtaining users opinion.

By advertising the products/services on ner, the enterprise is on equal rootlng wrth larger company. 3' Excellent customer support resouree and sen,iee: The most common support resource created is FAQs (Frequently Asked Questions). Most web sires creare cusromer feedback in the form of suggesrions and complaints. 4' Doeng business fast: Internet promotes e-selling in fraction of seconds. Thus, it promotes the growth of a customer base. 5' obtaining users opinion:

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

88/390	SUBMITTED TEXT	15 WORDS	90%	MATCHING TEXT	15 WORDS

promotes interactive surveys. The users opinions can be gathered anywhere as it provides real-time

promotes. interactive surveys. The users opinions can be gathered anywhere as it provide real-time

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89/390	SUBMITTED TEXT	46 WORDS	78%	MATCHING TEXT	46 WORDS

user. z Promoting of economy and efficiency. The cost of establishing and maintaining the website is far less than off line trading. From a marketing view, the web site provides user information more quickly, in a more timely fashion, and the convenience of the user.

user. 6' Promoting of econo.mi and eficienclt'The cost of establishing and maintaining the website is far less than off line trading. From a marketing view, the *"b site provide, ,rl". information more quickly, in a more timely fashion, and the convenience of the user. 118

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

90/390	SUBMITTED TEXT	50 WORDS	63%	MATCHING TEXT	50 WORDS

The ISPs offer a variety of services like: z Linking consumers and businesses to the Internet (e.g., America Online, VSNL, Ernet, Microsoft Network, CompuServe) z Network management and system integration z Monitoring and maintaining customers' Web sites z Backbone access services for other ISPs like PSI, BSNL, and UUNET

The ISPs offer a variety of services like: . Linking consumers and businesses to the Internet (e.g., America Online, VSNL, Ernet, Microsoft Network, CompuServe) . Network management and system integration o Monitoring and maintaining customers' Web sites M.S. Universitv - D.D.C.E. r Backbone access services for other ISps like psl, BSNL, and uuNET .

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91/390	SUBMITTED TEXT	19 WORDS	100%	MATCHING TEXT	19 WORDS

Payment systems for online purchases. Initially the cost of Internet access was high, however with the increase in

Payment systems for online purchases. Initially the cost of Internet access was high, however with the increase in

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

92/390	SUBMITTED TEXT	13 WORDS	87%	MATCHING TEXT	13 WORDS

down. Many governments are funding the use of the internet because of

down. Many governments are funding the use of the inrerner because of

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

93/390	SUBMITTED TEXT	28 WORDS	87%	MATCHING TEXT	28 WORDS

One can contact anyone, anywhere, anytime for a monthly fee. The exceptions are web sites that charge a membership fee or a fee for access to privileged

One can contact anyone, anywhere, an,vtime for a monthly fs.. The exceptions are web sites that charge a membership fee or a fee for access to privileged

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94/390	SUBMITTED TEXT	33 WORDS	75%	MATCHING TEXT	33 WORDS

everything one needs on the Internet is free. Among the free services are: z Hotlist that tell the user what is popular and what is not. z Comics that focus on entertainment

everything one needs on the Internet is free. Among the free services are: . Hotlist that tell the user what is popular and whar is not. a Comics that focus on entertainment

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95/390	SUBMITTED TEXT	27 WORDS	69%	MATCHING TEXT	27 WORDS

Software archives that list the latest free software available. z Weather services that provide free weather forecasts anywhere in the world. z Magazines and broadcasting stations

software archives that list the latest free software available. ' \ fleather services that provide free weather forecasrs an1'where in the world. o Magazines and broadcasting stations

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96/390	SUBMITTED TEXT	41 WORDS	77%	MATCHING TEXT	41 WORDS

help locate items or subjects on the Internet. z Dictionaries that include thesauruses and "fact" books on almost all subjects. z Government services that publicize what is available from them. The problem for ISPs is sudden growth without advance planning

help locate irems or subjects on the Interner. o Dictionaries that include thesauruses and "facr" books on almosr all subjects. o Governmenr services that publicize what is available from them. The problem for ISPs is sudden growth without advance planning

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97/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

maintain profitability and meet or beat the competition, while maintaining

maintain profitability and meet or beat the competition, while maintaining

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

98/390	SUBMITTED TEXT	13 WORDS	87%	MATCHING TEXT	13 WORDS

satisfaction. To do all this well requires professional management, a highly skilled

satisfaction. To do all this well requires professional management, a hlghly skilled

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99/390	SUBMITTED TEXT	38 WORDS	86%	MATCHING TEXT	38 WORDS

a healthy budget to bring the technology in line with the voracious appetite of today's consumer. The trick is to ensure a balance between creativity and control and between managing growth and a stable technical infrastructure. 2.8

a healthy budget to brirrg the technology in line with the voracious appetiie of today's consumer. The trick is to ensure a balance between creativity and control and beffi,een managing growth and a stable technical infrastructure.

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100/390	SUBMITTED TEXT	10 WORDS	100%	MATCHING TEXT	10 WORDS

ARPA to allow NSF-funded supercomputer centers and selected researchers

ARPA to allow NSF-funded supercomputer centers and selected researchers

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101/390	SUBMITTED TEXT	39 WORDS	48%	MATCHING TEXT	39 WORDS

to connect to another computer. This process is called remote login. The computer, which makes the call for connection, is known as local computer and the computer, which accepts the connection, is known as remote computer or host.

SA 178E1210-Ecommerce Application & Securities.pdf (D165202930)

102/390	SUBMITTED TEXT	34 WORDS	66%	MATCHING TEXT	34 WORDS

use the ARP AN ET. Believing that ARP ANET was I not suitable, NSF instituted the NSF Connections program in 1986 to broaden the base of network users with their own computer facilities

use the ARPANET. Believing that ARPANET was I not suitable, NSF instituted the NSF Connections programme in 1986 to broaden the base of network users with their own compurer facilities ,

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103/390	SUBMITTED TEXT	58 WORDS	91%	MATCHING TEXT	58 WORDS

to help universities achieve access to supercomputers (by supplying hardware and telecommunications lines for direct, point-to-point connections). In 1986, it launched the NSFNET network backbone program. 1987: CSNET merged with BITNET, a worldwide network connecting IBM mainframes that was initiated in 1980-81. CSNET operations were continued under the Corporation for Research and Education Networking (CREN), whose operating

to help universities achieve access to supercomputers (by supplying hardware and telecommunications lines for direct, point-to-point connections). In 1986, it launched the NSFNET network backbone Programme. 1982 CSNET merged with BITNET, a worldwide network connecring IBM mainframes that was initiated in 1980-81. CSNET operations were continued under the Corporation for Research and Education Networking (CRE||, whose operating

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104/390 **SUBMITTED TEXT** 69 WORDS **92%** **MATCHING TEXT** 69 WORDS

were completely covered by member organizations' dues. 1987: After significant congestion was experienced in 1987, the backbone was upgraded from 56 kbps to TI service (1.5 Mbps) and became operational in 1988. 1988: The Internet virus is unleashed by a graduate student at Cornell University, focusing attention on network vulnerability to security threats. Immediate steps were taken to make the network more secure. 35	were complelely covered by member organizations' dues. 1987: After significant conBestion was experienced in 7987, the backbone was upgraded from 56 kbps to TI service (1.5 Mbps) and became operarional in 1988. 1988: The Internet virus is unleashed by a graduate studenr at Cornell University, focusing atrenrion on network vulnerability to security threats. Immediate steps were taken to make the network more secure.

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105/390 **SUBMITTED TEXT** 20 WORDS **100%** **MATCHING TEXT** 20 WORDS

Twenty years after its birth at UCLA, ARPANET was officially decommissioned; its descendant, the NSFNET, inherited its role as	Twenty years after its birth at UCLA, ARPANET was officially decommissioned; its descendant, the NSFNET, inherited its role as

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106/390 **SUBMITTED TEXT** 64 WORDS **95%** **MATCHING TEXT** 64 WORDS

research and education 1990 communities' backbone network. The first relay between a commercial electronic mail carrier (MCI Mail) and the Internet took place through the Clearinghouse for Networked Information. Its mission accomplished, CSNET service was discontinued. For the first time, commercial networks were connected to the NSFNET backbone through the Commercial Internet exchange (CIX) Association. CIX was formed by General Atomics (CERFnet), Performance	research and education 1990 communities' backbone network. The first relay between a commercial electronic mail carrier $dCI Mail) and the Internet took place through the clearinghouse for Networked Information. Its mission accomplished, CSNET service was discontinued. For the first time, commercial networks were connected to the NSFNET backbone through the Commercial Interner exchange (CIX) Association. CIx was formed by General Atomics (CERFnet), Performance

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107/390 **SUBMITTED TEXT** 32 WORDS **85%** **MATCHING TEXT** 32 WORDS

Inc. (PSINet), and UUNET Technologies, Inc. (AlterNet). 1991: Anew bread of distributed information services called Wide Area Information Servers (WAIS) released by the now-bankrupt Thinking Machines Corporation; Gopher was released	Inc. (PSINet), and ULINET Technologies,Inc. (AlterNet). 1991; Anew bread of distributed information services called \(ide Area Information Servers ($7AIS) released by the now-bankrupt Thinking Machines Corporarion; Gopher was released

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108/390 **SUBMITTED TEXT** 13 WORDS **83%** **MATCHING TEXT** 13 WORDS

when the Advanced Research Projects Agency (ARPA) of the Department of Defense (	

SA ODL_MBA-Computer Application for Business_Block4.docx (D133839947)

109/390	SUBMITTED TEXT	43 WORDS	83%	MATCHING TEXT	43 WORDS

University of Minnesota, and the World Wide Web was announced on alt.hypertext by Tim Berners-Lee of CERN. The U.S. government made a decision to turn NSFNET into a faster research network called National research and Education Network (NREN) as defined in

University of Minnesota, and the I7orld \7ide \7eb was announced on ali.hypertext by Tim Berners- Lee of CERN. The U.S. government made a decision to turn NSFNET into a fasrer research network called National research and Education Network (NREN) as defined in

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110/390	SUBMITTED TEXT	64 WORDS	84%	MATCHING TEXT	64 WORDS

High-Performance Computing Act of 1991. 1993: National Information Infrastructure announcement sparks interest in the Information 1993 Superhighway. Businesses and media suddenly realized there was something called the Internet and began to take an interest in its exploitation. 1994: Two million copies of a freeware Mosaic – a multimedia browser for the WWW, written by Marc Andresen, at that time an undergraduate student

High-Performance Compuring Act of t99t. 1993; National Information Infrastructure announcement sparks interesr in the Information 1993 Superhighway. Businesses and media suddenly realized there was somerhing called the Internet and began to take an interest in its exploirarion. 7994: Two million copies of a freeware Mosaic - a multimedia browser for the \rutr$tr, written by Marc Andresen, at that time an undergraduate student

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111/390	SUBMITTED TEXT	54 WORDS	93%	MATCHING TEXT	54 WORDS

of Illinois at Urbana Campaign – were distributed over the Internet and attained incredible popularity. This milestone event represents anew chapter in electronic commerce. 1995: The old NSFNET backbone is decommissioned and anew architecture based on Network Access Points (NAPs) is installed. 2000: IT Act 2000 passed by the Government of India. 2.14

of Illinois at Urbana Campaign - were distributed over the Internet and artained incredible popularity. This milestone event represents anew chapter in electronic commerce. 7995: The old NSFNET backbone is decommissioned and anew architecture based on Network Access Points (NAP.) is installed. 2000: IT Act, 2000 passed by the Government of India.

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112/390	SUBMITTED TEXT	16 WORDS	90%	MATCHING TEXT	16 WORDS

When you are on the Web, you are on the Internet, but not the other

When you are on the \Web, you are oq the- Internet but not the other

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113/390	SUBMITTED TEXT	52 WORDS	87%	MATCHING TEXT	52 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce P.T.Joseph , E:cotttfixerce- A Managerinl Perspectioe G.Winfield Treese & Lawrence C.Stewart, Designing Systems for lnternet Commerce Kamelesh K Bajaj Debjani Nag, E commerce The Cutting Edge of Business Dr.Ravi Kalakota, Marcia Robinson, E Business Road Map for Success

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114/390	SUBMITTED TEXT	28 WORDS	92%	MATCHING TEXT	28 WORDS

Vision to Fulfillment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 38 38

vision to Fulfilment, 3rd Edition, pHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing,3rd Edition, Pearson Education, 2003.

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115/390	SUBMITTED TEXT	18 WORDS	95%	MATCHING TEXT	18 WORDS

LESSON 3 ELECTRONIC DATA INTERCHANGE CONTENTS 3.0 Aims and Objectives 3.1 Introduction 3.2 Electronic Data Interchange 3.3

LESSON 6 ELECTRONIC DATA INTERCHANGE CONTENTS 6.0 Aims and Objectives 6.L Introduction 6.2 Electronic Data Interchange 6.3

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116/390	SUBMITTED TEXT	17 WORDS	89%	MATCHING TEXT	17 WORDS

Electronic Data Interchange (EDI) Applications 3.10 EDI Application in Business 3.11 EDI Applications in e-Commerce 3.12

Electronic Data Interchange 6.3 EDI Examples 6.3.1 EDI Applications in Business 6.3.2 EDI Applicarions in e-Commerce 6.4

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117/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 3.13 Keywords 3.14 Questions for Discussion 3.15 Suggested Readings 3.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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118/390	SUBMITTED TEXT	53 WORDS	85%	MATCHING TEXT	53 WORDS

Commerce is a term popularized by the advent of commercial services of the Internet. Internet e-commerce is however, only the part of overall sphere of e-commerce. The commercial use of Internet is perhaps typified by once-off sale to consumers. Other types of transactions use other technologies. Electronic Markets 39

Commerce is a term popularized by the advent of commercial services of the Interner. lnternet e-commerce is however, only the part of overall sphere of e-commerce. The commercial use of lnternet is perhaps tlpified by once-off sale to consumers. Other types of rransactions use other technologies. Electronic Markets @

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119/390	SUBMITTED TEXT	335 WORDS	93%	MATCHING TEXT	335 WORDS

EMs) are in use in a number of trade segments with an emphasis on search facilities and Electronic Data Interchange (EDI) is used for regular and standardized transactions between organizations. In this lesson we will study the concept of EDI. 3.2 ELECTRONIC DATA INTERCHANGE EDI was developed in early 60s as a means of accelerating the movement of documents related to shipments and transportation. However, from the beginning of 80s it is now widely used in various other sectors like automotives, retails, and international trade. Its relevance and usage is growing at a very fast pace. EDI is based on a set of standardized messages for the transfer of structured data between computer applications. It may have many applications e.g., sending the test results from the pathology laboratory to the hospital or dispatching exam results from exam boards/university to school/college, but it is primarily used for the trade exchanges: order, invoice, payments and many other transactions that can be used in national and international trade exchange. Notable users of EDI are vehicle assemblers, ordering components for their production lines, and supermarkets (and other multiple retailers), ordering the goods needed to restock their shelves. EDI allow the stock control/material management system of the customer to interface with the stock control/production systems of the suppliers without the use of paper documents or the need of human intervention. The EDI is used for regular repeat transactions. EDI is a formal system and it does not really have a place in the search and negotiation phases. EDI, when initially introduced was seen by many as a universal, or at least a generalized form of trading. In the event its adoption has been limited to a number of trade sectors where the efficiency of supply chain is of vital importance. EDI is apart of schemes for just-in-time manufacture of quick response supply. Mature use of EDI allows for a change in the nature of the product or service being offered mass customization is such an example. 3.3

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120/390	SUBMITTED TEXT	39 WORDS	78%	MATCHING TEXT	39 WORDS

DEFINITION OF EDI Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance between computers of independent organizations. (The Accredited Standards Committee for EDI of the American National Standards Institute)

definition of Erectronic Data Interchange: ' Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance b.t*""r, compurers of independent organizations. (The Accredited standards committee for EDI of the American National Siandards Institute) '

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121/390	SUBMITTED TEXT	44 WORDS	93%	MATCHING TEXT	44 WORDS

Data Interchange is the interchange of standard formatted data between computer application systems of trading partners with minimal manual intervention. (UN/EDIFACT Training Guide) Electronic Data Interchange is the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard

Data Interchange is the interchange of standard formatted data between computer application systems of trading Partners with minimal manual intervention. (I-IN/EDIFACT Training Guide) ' Electronic Data Interchange is the electronic transfer, from compurer to computer, of commercial and administrative data using an agreed standard

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122/390	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS

EDI ARCHITECTURE The EDI architecture has four layers and these are:

EDI Architecture The EDI architecture has four layers and these are: .

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123/390	SUBMITTED TEXT	15 WORDS	89%	MATCHING TEXT	15 WORDS

ANSI X!2 Business from standard Electronic mail X435 MIME Point to Point FTP, TELNET

ANSI X!2 Business from standard EDI Transport layer Electronic mail X435 MIME Point to Point FTP, TELNET '

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124/390	SUBMITTED TEXT	101 WORDS	44%	MATCHING TEXT	101 WORDS

for a purchase, shipment and payment normally follows the following steps: Step 1 Buyer's computer send purchase order to seller computer. Step 2 Seller's computer sends purchase order confirmation to buyer's computer. 41 Electronic Data Interchange 41 Step 3 Seller's computer send booking request to transport company's computer. Step 4 Transport company's computer sends booking confirmation to seller's computer Step 5 Sellers computer sends advance ship notice to buyer's computer. Step 6 Transport computer sends status to seller's computer. Step 7 Buyers computer sends receipt advice to seller's computer. Step 8 Sellers computer sends invoice to

for a purchase, shipment and payment normally follows the following stepsr Step 1 Buyer's computer send purchase order to seller computer Step 2 Seller's computer sends purchase order confirrnation to buyer's comPuter D.C.E. step 3 seller's computer send booking request to transport company's step 4 Transport company's compurer sends booking confirmation to Step 5 Sellers compurer sends advance ship notice ro buyer's compurer Step 6 Transport computer sends status to seller,s computer step 7 Buyers computer sends receipt advice to seller's computer Step 8 Sellers computer sends invoice ro buyer,s compurer Step 9 Buyers computer sends paymenr to

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125/390	SUBMITTED TEXT	24 WORDS	87%	MATCHING TEXT	24 WORDS

BENEFITS OF EDI The various benefits are: z Reduction on use of paper usage z Greater emphasis on problem resolution and customer service

Benefits of EDI The various benefits are . Reduction on use of paper usage o Greater emphasis on problem resolution and customer service .

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126/390	SUBMITTED TEXT	37 WORDS	62%	MATCHING TEXT	37 WORDS

Increase in customer/supplier base z Improvement in international trade z Bank checks z Interbank electronic fund transfer z Automated Clearing House (ACH) transfers: ™ Bankwire ™ FedWire ™ CHIPS (Clearing House Interbank Payment System) ™

Increase in Customer/Supplier Base . Improvement in international trade . Bank Checks . Interbank Electronic Fund T::ansfer . Automated Clearing F{ouse (ACH) Transfers * Bankwire * Fed'Wire l. CHIPS (Clearing House Interbank Payment System)

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127/390	SUBMITTED TEXT	119 WORDS	78%	MATCHING TEXT	119 WORDS

Worldwide Intebank Financial Telecommunication) z Usage in health care save lot of cost z Improvement in production by using just-in-time approach z Better business information and knowledge access z Better design of product and effective procurement z Improved legal services in terms of good postal service. The indirect benefit include the following: z Quick matching up of reduction in delay leading to better cash flow z The ability to order regularly and quickly reduces the stock holding. The reduced stock holding cuts the cost of warehousing z An established EDI system should be of considerable advantage to both customer and supplier. Shifting to a new supplier require that the electronic trading system and trading relationship be redeveloped

Worldwide Intebank Financial Telecommunication) . Usage in Health Care save lot of cost . Improvement in Production by using Just-in-time approach . Better business information and knowledge access . Better design of product and effective procurement . Improved legal services in terms of good postal service The Indirect benefit include the following: . Quick matching up of reduction in delay leading to better cash flow . The ability to order regularly and quickly reduces the stock holding. The reduced stock holding cuts the cost of warehousing . An established EDI rystem should be of considerable advantage to both cusromer and supplier. Shifting to a new supplier require that the electronic trading system and trading relationship be redeveloped. 86

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128/390	SUBMITTED TEXT	59 WORDS	100%	MATCHING TEXT	59 WORDS

There is a steady increase in the number of customers, particularly large, customers that will only trade with suppliers that do business via EDI. Supermarkets and vehicle assemblers are prime examples. Thus, being ready and bale to trade electronically can be a major advantage when competing for new business opportunities. 42 42

There is a steady increase in the number of customers, particularly large, customers that will only trade with suppliers that do business via EDI. Supermarkets and vehicle assemblers are prime examples. Thus, being ready and bale to trade electronically can be a major advantage when competing for new business opportunities. 6.4.3

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129/390	SUBMITTED TEXT	80 WORDS	98%	MATCHING TEXT	80 WORDS

AND EDI All the software, hardware and networks must work together so that the information flows from one source to another in desired manner. Thus, at the heart of any EDI application is the EDI standards. The essence of EDI is the coding and structuring of the data into a common and generally accepted format-anything less is nothing more than a system of file-transfers. Coding and structuring the documents for business transactions is no easy matter. There have been

and EDI Ail the software, hardware and networks must work together so that the information flows from one source to another in desired manner. Thus, at the heart of any EDI application is the EDI standards. The essence of EDI is the coding and structuring of the data into a common and generally accepted format-anything less is nothing more than a system of file-transfers. Coding and structuring the documents for business transactions is no easy matter. There have been

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130/390	SUBMITTED TEXT	26 WORDS	86%	MATCHING TEXT	26 WORDS

number of EDI standards developed in various industry sector or with in a specific country and there are more complex committee structures and procedures to

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131/390	SUBMITTED TEXT	41 WORDS	100%	MATCHING TEXT	41 WORDS

It was developed by the United Nations. Is a family of standards similar to ANSI X-12 (The Accredited Standard Committee in 1979). EDIFACT was based on TRADESCOMS, developed by the UK today EDIFACT and ANSI are working towards compatibility. 3.8

It was developed by the United Nations" Is a family of standards similar to ANSI X-12 (The Accredited Standard Committee in 1979). EDIFACT was based on TRADESCOMS, developed by the UK today EDIFACT and ANSI are working towards compatibility. 6.5

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132/390	SUBMITTED TEXT	46 WORDS	74%	MATCHING TEXT	46 WORDS

EDI) APPLICATIONS Any EDI application – whether using EDI outsourcing or EDI software/managed services – involves four main components including: EDI and Infrastructure Layer (Software and hardware for converting data into and out of EDI) Like any other application, the EDI software needs hardware

EDI EXAMPLES Any EDI example - whether using EDI outsourcing or EDI sofrware/m anaged services involve four main components including: EDI and Infrastructure Lajter (software ahd hardware for converting data into and out of EDI). Like.any other application, the EDI software needs hardware

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133/390	SUBMITTED TEXT	49 WORDS	73%	MATCHING TEXT	49 WORDS

run on. The first piece of the EDI puzzle is the EDI software layer itself – the EDI translator itself. Like any other software application, the EDI software needs hardware to run on. These systems will need sophisticated antivirus, firewall, and possibly intrusion detection software. By definition, EDI

run on. The first piece of the EDI puzzle is the EDI software layer itself - the EDI translaror itself. Like any other sofrware application, the EDI software needs hardware to nrn on. These systems *itt ,."a sophisticated antivirus, iirewall, and possibly intrusion detection software. By definition, EDI

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134/390	SUBMITTED TEXT	46 WORDS	88%	MATCHING TEXT	46 WORDS

communicates with companies on the other side of the firewall, which leaves it immensely vulnerable to attack. EDI is also an application that must operate on a 24x7 basis since orders are often sent by customers during off-peak hours. Thus, system monitoring software is required

communicates with companies on the other side of the firewall, which leaves ii immensely ,"ulnerable to artack. EDI is also an application that must operate on a 24x7 basis since orders are often sent by customers during off-peak hours' Thus, system monitoring software is required ,

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135/390	SUBMITTED TEXT	13 WORDS	87%	MATCHING TEXT	13 WORDS

that the servers are performing optimally and send alerts the moment anything

that the servers are performing optimally and send alerts the momenr anything

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136/390	SUBMITTED TEXT	30 WORDS	93%	MATCHING TEXT	30 WORDS

EDI Mapping Layer (Software for reconciling data between you and your trading partners) The mapping layer is where the electronic trading parameters are set up for every EDI relationship

EDI Mapping Layer (Software for reconciling data between you and your trading Partners) The mappin g layer is where the electronic trading parameters are set up for every EDI relationship *",

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137/390	SUBMITTED TEXT	33 WORDS	65%	MATCHING TEXT	33 WORDS

These maps, which sit on top of the translation layer, are slightly different for each trading partner due to particular supply chain or business process requirements of the relationship. Also, since a

These maps, which sit on top of the translation layer, are slightly different for each tradlng parrner due to'particular s'rpply chain or business Process requirements of the relationship]ajro, since a -

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138/390	SUBMITTED TEXT	37 WORDS	94%	MATCHING TEXT	37 WORDS

needed for each transaction with every unique trading partner, the number of maps can add up quickly. For example, if Company A has 10 trading partners that it conducts business with using EDI, and each trading

needed for .r.h transaction with every unique trading partner, the number of maps can add uP quicklY. For example, if Company A has 10 trading partners that it conducts business with using EDI, and each trading

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139/390	SUBMITTED TEXT	73 WORDS	77%	MATCHING TEXT	73 WORDS

A to conduct three transactions, 30 maps are needed. As companies add partners over time, those numbers keep going up; as do the requirements for keeping the maps and the data they're transmitting synchronized. EDI Connectivity Layer (Software and network technology for transporting data between you and your trading partner) The third EDI layer is connectivity. While the first two components have to do with data processing, the third is all about

A to .ot drct three transactions, 30 maps are needed' As companies ,dd pal.tners over time, those ,r,r*b.., keep going uP; as do the requirements for keeping the maps and the data they're transmitting synchronized. EDI C onne ctiaitg I-a1 e r (Software and network technology for transporting data between you and your trading partner) The third EDI layer is connecrivity. Vhile the first two components have to do with data processing, the third is all about

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140/390	SUBMITTED TEXT	69 WORDS	90%	MATCHING TEXT	69 WORDS

between Company A and its trading partners. The upfront costs here have to do with providing the numerous communications methods that trading partners might require. These include a VAN mailbox, which provides access to a specialized proprietary network, often called a value-added network; AS2 software support, which is a secure Internet protocol that large trading partners such as Wal-Mart often use; and even secure FTP sites available via

between Company A and its trading Partners. The upfront costs here have to do with proiidirrg the numerous communications methods that trading Partners might require. These include a VAN mailbox, which provides access to a specialized proprietary ,r.i*ork, often called a value-added network; AS2 software support, which is a secure Internet protocol that large trading parrners such as \X/al-Mart often use; and even secure FTP sites available via

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141/390	SUBMITTED TEXT	17 WORDS	100%	MATCHING TEXT	17 WORDS

today have to support all three to satisfy their full trading partner community. After setup, high

today have to support all three to satisfy their full trading Partner community. After setup, high .

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142/390	SUBMITTED TEXT	56 WORDS	80%	MATCHING TEXT	56 WORDS

with the ongoing transaction fees for using a VAN, software maintenance fees for FTP and AS2 software, and staffing associated with upkeep. EDI Application Integration Layer (Software for exchanging data into and out of your accounting system) Application integration allows companies to move data between their own ERP and/or accounting systems and the EDI translator.

with the ongoing transaction fees for using a VAN, softn are *"irt"rrrr.e"fees for FTP and AS2 software, and staffing associated with upkeep' EDI Application I ntegration La1 er (software for exchanging data into and out of your accounting system) Application integration allows companies to move data between their own ERP and/ot accounting ,yri.*, and the" EDI translaror.

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143/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

last of the EDI pieces is application integration. In short,

last of the EDI pieces is application integration. In short,

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144/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

integration allows companies to move data between their own ERP or accounting systems

integration allows companies to move data between their own ERP or accounting systems *

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145/390	SUBMITTED TEXT	68 WORDS	76%	MATCHING TEXT	68 WORDS

EDI translator to eliminate manual keying of data – an extremely valuable feature. In some cases, prebuilt software modules, called adapters, can be used to reduce development time for certain ERP and accounting systems. Once implemented, the integration layer has to be maintained to keep it current with accounting system version upgrades and changes to trading partner EDI specifications. 44 44

EDI rranslaror to eliminaie manual keying of data - an extremely valuable feature. In some cases, prebuilt software modules, called adapters, can be used to reduce development time for certain ERp and accounting systems. Once imple*..rt.d, the integration layer has to be maintained to keep it current *ith acco.rritirrg ,yrt".r, ,e.rion upgrades and changes to trading Partner EDI specifications' 6.3.1

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146/390	SUBMITTED TEXT	26 WORDS	94%	MATCHING TEXT	26 WORDS

is widely-used technology for the automated exchange of documents between dissimilar applications. It allows value chain partners to exchange purchase orders, invoices, advance ship notices,

is widely-used technology for the automated exchange of documents between dissimilar applicatlons. It allows value chain partners to exchange purchase orders, invoices, advance ship notices, ,

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147/390	SUBMITTED TEXT	34 WORDS	95%	MATCHING TEXT	34 WORDS

business documents directly from one business system to the other, without human intervention. Proven advantages are fewer errors, lower administrative costs, and faster order-to-cash cycles. The high penetration levels of Electronic Data Interchange (

business documents dlrectly from one business system to the other, without human intervention. Proven advantages are fewer errors, lower administrative costs, and faster order-to-cash cycles. The high penetrarion levels of Electronic Data Interchange,

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148/390	SUBMITTED TEXT	23 WORDS	71%	MATCHING TEXT	23 WORDS

a mechanism for inter-organizational electronic commerce, has revolutionized the way organizational conduct their business. Major benefits derived from EDI, however, depend upon

a mechanism for inter-organizational electronic commerce, has revolutionizecl the way organisational's conduct their business. Maior benefits derived from EDI, lrowever, depend upon

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149/390	SUBMITTED TEXT	67 WORDS	80%	MATCHING TEXT	67 WORDS

of appropriate controls to overcome potential risks and exposures inherent in integrating and utilizing of the system. As many resources and skills are required for the implementation of EDI controls, their design should proceed carefully. A data envelopment analysis is the model to analyze the efficiency of controls in the context of finance and trade. The model uses eight variables of formal or automated EDI

of appropriate controls to overcome Potential risks lvl.S. University - D.D.C.E. Electronic Data Interchange 83 and exPosures inherent in integrating and utilizing of the sysrem. As many resources and skills are required for the implementation of EDI controls, thJi, design should proceed .rr"frlly. A data envelopment analysis is the model to analyze the efficiency of controls in the conrexr of finance and trade' The model uses eight variables of formal or auromared EDI

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150/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

as input and four variables of EDI implementation and performance as output. Automated

as input and four variables of EDI implementation and performance_as-output. Automated

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151/390	SUBMITTED TEXT	23 WORDS	100%	MATCHING TEXT	23 WORDS

are more efficiently utilized in financial than in trade applications, while formal controls are more efficiently used in trade applications. Every company

are more efficiently utilized in financial than in trade applications, while formal controls are more efficiently used in trade applications. Every comPany ..

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152/390	SUBMITTED TEXT	30 WORDS	77%	MATCHING TEXT	30 WORDS

the relative amount of reduction in each mode or component of controls in order to make the control system efficient. z Business – commercial, industrial, or professional dealings

the relative amounr of reduction in each mode or componenr of controls in order to make the control sysrem efficient. ' Business - commercial, industrial, or professional dealings .

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153/390	SUBMITTED TEXT	33 WORDS	69%	MATCHING TEXT	33 WORDS

the buying and selling of goods, especially on a large scale z Trade – the act or instance of buying or selling These simple definitions make one thing very clear

the buying and selling of goods, especiaily on a large scale . Tradc - the act or insrance of buying or selling. These simple definitions make one thing very clear

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154/390	SUBMITTED TEXT	13 WORDS	87%	MATCHING TEXT	13 WORDS

in such transactions, advances in the use of certain technologies may actually

in such rransactions, advances in the use of certain technologies may actually

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155/390	SUBMITTED TEXT	49 WORDS	72%	MATCHING TEXT	49 WORDS

dictionary mentioned above also defines e-commerce as “commerce that is transacted electronically, as over the internet.” As larger suppliers and retailers have advanced their use of certain technologies – specifically Electronic Data Interchange (EDI) – they have been able to conduct business more efficiently. As these companies have

dictionary mentioned above also defines e-commerce as "commerce that is transacted electronically, as over the internet." As larger suppliers and retailers have advanced their use of certain technologies - specifically Electronic Data i.r,...Lrg. - they have been able to conducr business more efficiently. As these companies have

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156/390	SUBMITTED TEXT	16 WORDS	71%	MATCHING TEXT	16 WORDS

similar technologies by their trading partners, many small to mid-market companies have become disadvantaged in

similar technologies by their *rJi;; partners, Tany small to mid-market companies have become disadvantages in

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

157/390	SUBMITTED TEXT	78 WORDS	90%	MATCHING TEXT	78 WORDS

with such firms. EDI is a set of protocols for conducting electronic business over computer networks. Traditionally, these networks have been private WANS; but EDI is now done over the Internet. EDI defines the electronic exchange of structured business data, such as purchase orders, invoices, and shipping notices, typically between one organization and another. The relationship is usually between a vendor and customer. For example, EDI provides a way for a customer's computer to place orders

with such firms. EDI is a set of protocols for.conducting electronic business over compurer nerworks. Traditionally, these networks have been private \7ANS; but EDI is now done over the Internet. EDI defines the electronic.exchange of structured business data, such as purchase orders, invoices, and shipping notices, typically between one organization and another. The relationship is usually between a vendor and customer' For example, EDI provides a way for a customer's comfute, to plr." orders

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158/390	SUBMITTED TEXT	39 WORDS	83%	MATCHING TEXT	39 WORDS

a vendor's computers, based on reorder levels. The EDI system coordinates the transaction, initiates deliveries, and generates invoices. It is important to differentiate between EDI and electronic commerce. Electronic commerce encompasses all aspects of electronic business exchanges, including person-

a vendor's comPuters, based on reorder levels. The EDI system coordinates the transaction, initiates deliveries, and generates invoices. It is important to differentiate between EDI and electronic commerce. Elecrronic cornmerce :nc.gmPasses all aspects of electronic bLsiness exchanges, including person-

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

159/390	SUBMITTED TEXT	59 WORDS	92%	MATCHING TEXT	59 WORDS

EDI is a subset of electronic commerce that encompasses the exchange of business information in a standardized electronic form. Standard form defines things like the layout of information for an invoice or purchase order. EDI can reduce costs, workforce requirements, and errors associated with retyping orders, invoices, and other documents. With EDI, computer data already entered by one

EDI is a subset of electronic commerce that encompasses"the exchange of business information in a standardized electronic form. Standard form defines things like the"layout of information for an invoice or purchase order. EDI can reduce costs,_1131kforce requirements, and errors associated with retyping orders, invoices, and other documents. \rith EDI, computer data already enrered by one

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160/390	SUBMITTED TEXT	17 WORDS	68%	MATCHING TEXT	17 WORDS

made available to a business partner. EDI is typically handled using store-and-forward technologies similar to e-mail.

made available to a business partner. EDI is typicalllhandled using siore-and-forward tejrnologies similar to e-mail.

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

161/390	SUBMITTED TEXT	67 WORDS	83%	MATCHING TEXT	67 WORDS

Service) often serves as a "middleman" to help organizations establish business relationships and handle business transactions. EDI can be thought of in terms of messages exchanged between businesses that are engaged in electronic commerce. Within a message is a basic unit of information called the data element. A message may consist of many data elements. For example, each line item on an invoice is a data

Service) ofren serves"as a,,middleman" to help organizations establish business relationships and handle business rransacions. 84 E-Commerce APPlications EDI can be thought of in terms of messages exchanged-between businesses that are engaged in electronic commerce. \Tithin a message is a basic unit of information called the data element' A messaBe may consist of many ,lrt" "lJ*".rts. For example, each line item on an invoice is a data .

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162/390	SUBMITTED TEXT	30 WORDS	100%	MATCHING TEXT	30 WORDS

data elements form a compound document, which is essentially a business form. An EDI message also includes a field definition table that provides information about the data elements in

data elements form a compound document, which is essentially a business form' An EDI message also includes a field definition table that provides information about the data elements in

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163/390	SUBMITTED TEXT	18 WORDS	70%	MATCHING TEXT	18 WORDS

partners. If a business partner is small, it may have little choice but to adopt the proprietary

partners. If a business Partner is small,.it L.y rrrr" iitile choice but to adopt the proprietary

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164/390	SUBMITTED TEXT	83 WORDS	89%	MATCHING TEXT	83 WORDS

its much larger business associate. The other approach is to work with a VAN (value added network) provider, which provides EDI transaction services, security, document interchange assistance, standard message formats, communication protocols, and communication parameters for EDI. Most VANs also provide a network on which to transmit information. In many ways, the Internet is a better medium for implementing EDI than using value added network providers or installing private leased lines. The Internet is already in place as a business-to-business communication

its much larger business associate' The ot(er approach is to work with a VAN (Value Added Network) provider, which provides EDI transaction services, security, document interchange assistance, standard message formats, ;;;;;i;*io, proio.ols, and communication parameters for EDI' Most VANs also provide a network on which to transmit information. In many ways, the Internet is a better medium for implementing EDI than using value added network pr.;a*, or insralling private leased lines. The Inteinet is already in place as a business-to-business communication

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

165/390	SUBMITTED TEXT	13 WORDS	87%	MATCHING TEXT	13 WORDS

costs are cheaper and, in most cases, the organization is already connected

costs are cheaper and, in most cases, the organization is alteady connected

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

166/390	SUBMITTED TEXT	41 WORDS	100%	MATCHING TEXT	41 WORDS

it easier for more businesses to join the electronic commerce web, especially those who previously could not afford the expense of EDI. The use of VPNs is growing for EDI and e-commerce-related traffic. A VPN can secure and give preferential

it easier for more businesses to join the electronic commerce web, especially those who previously could not afford the expense of EDI' The use of VpNs is growing for EDI and e-commerce-related traffic' A VPN can secure and give preferential ,

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

167/390	SUBMITTED TEXT	31 WORDS	76%	MATCHING TEXT	31 WORDS

EDI traffic. The term extranet is usually used to refer to a secure Internet connection between trading partners. The protocol for VPNs are L2TP (Layer 2 Tunneling Protocol), PPTP (Point-to-Point

EDi traffic. The term extranet is usually used to refer to a secure Internet connecrion berween trading parrners. The protocol for VPNs are L2TP $-ayer 2 Tunneling Protocol), ppTP @oint-to-Point

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

168/390	SUBMITTED TEXT	85 WORDS	100%	MATCHING TEXT	85 WORDS

EDI was first developed by the automobile/transportation industry in the 1970s. Today, it is widely used in a variety of industries, including distribution, finance and accounting, health care, manufacturing, purchasing, retail, tax form filing, and shipping. Early EDI packages used rather simple standard forms that forced companies to convert data to fit the forms. Newer EDI systems allow companies to create custom systems using simple programming or authoring tools. Even more recently, EDI has been adapted for the Internet and to work with XML,

SA Thesis Submission2.doc (D3268204)

169/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

the IETF's IPSec (IP Security). See "VPN (Virtual Private Network)."

the IETF's IPSec (IP Security). See "VPN (Virtual Private Network)." 6.4

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

170/390	SUBMITTED TEXT	25 WORDS	74%	MATCHING TEXT	25 WORDS

application) of business information in a standardized electronic form. The EDI, trading partners establishes computer-computer links that enables them to exchange information electronically. Electronic

application) of business information in a standardized electronic form. The EI]I, trrdirrg prrrrr.., "t,"Liirh computer-computer links that enables them to exchange information electronically. Electronic

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171/390	SUBMITTED TEXT	41 WORDS	91%	MATCHING TEXT	41 WORDS

Data Interchange is the interchange of standard formatted data between computer application systems of trading partners with minimal manual intervention. Electronic data interchange is the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard

Data Interchange is the interchange of standard formatted data between computer application systems of trading Partners with minimal manual intervention. (I-IN/EDIFACT Training Guide) ' Electronic Data Interchange is the electronic transfer, from compurer to computer, of commercial and administrative data using an agreed standard

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

172/390	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS

is widely-used technology for the automated exchange of documents between dissimilar

is widely-used technology for the automated exchange of documents between dissimilar

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

173/390	SUBMITTED TEXT	15 WORDS	76%	MATCHING TEXT	15 WORDS

a mechanism for inter- organizational electronic commerce, has revolutionized the way organizational conduct their business.

a mechanism for inter-organizational electronic commerce, has revolutionizecl the way organisational's conduct their business.

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174/390	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS

EDI is a set of protocols for conducting electronic business over

EDI is a set of protocols for.conducting electronic business over

W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

175/390	SUBMITTED TEXT	22 WORDS	100%	MATCHING TEXT	22 WORDS

The EDI system coordinates the transaction, initiates deliveries, and generates invoices. It is important to differentiate between EDI and electronic commerce.

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W https://www.msuniv.ac.in/Download/Pdf/4f0207e1252447e

176/390	SUBMITTED TEXT	20 WORDS	100%	MATCHING TEXT	20 WORDS

EDI is a subset of electronic commerce that encompasses the exchange of business information in a standardized electronic form.

EDI is a subset of electronic commerce that encompasses"the exchange of business information in a standardized electronic form.

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177/390	SUBMITTED TEXT	14 WORDS	83%	MATCHING TEXT	14 WORDS

The data element dictionary defines the content and meaning of data elements. 3.13

The data "L*.rr. dictionary defines the content and meaning of data elements.

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178/390	SUBMITTED TEXT	27 WORDS	66%	MATCHING TEXT	27 WORDS

FOR DISCUSSION 1. Discuss the EDI architecture. 2. Explain EDI transaction steps. 3. What is meant by EDI? 4. What are the advantages of EDI?

FOR DTSCUSSTON 1. 2. Discuss the EDI archirecrure. Explain EDI transaction steps. heck Your P 92 E-CommerceApplications 3. 'What is meant by EDI? 4. 'W'hat are the advantages and disadvantages of EDI? 5. \7

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179/390	SUBMITTED TEXT	72 WORDS	91%	MATCHING TEXT	72 WORDS

EDI is based on a set of standardized messages for the transfer of structured data between computer applications. It may have many applications e.g., sending the test results from the pathology laboratory to the hospital or dispatching exam results from exam boards/university to school/college, but it is primarily used for the trade exchanges: order, invoice, payments and many other transactions that can be used in national and international trade exchange.

EDI is based on a set of standardized messages for the transfer of structured data between comPuter applications. It may have many applications e.g., sending the test results from the pathology lrbor"tory ro the hospital or dispatchirrg "*r- results from exam boards/university to school/college, but it is primarily used for the trade exchanges: order, invoice, payments and many other transactions that can be used in national and international trade exchange.

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180/390	SUBMITTED TEXT	63 WORDS	94%	MATCHING TEXT	63 WORDS

Notable users of EDI are vehicle assemblers, ordering components for their production lines, and supermarkets (and other multiple retailers), ordering the goods needed to restock their shelves. EDI allow the stock control/material management system of the customer to interface with the stock control/production systems of the suppliers without the use of paper documents or the need of human intervention. 3. The EDI

Notable users of EDI are vehicle assemblers, ordering components for their production lines, and supermarkets (and other multiple retailers), ordering the goods needed to restock their shelves. EDI allow the ,ro.k .orrrrol/material management system of the customer to interface with the stock control/production systems of the suppliers without the use of paper documents or the need of human intervention. The EDI

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181/390	SUBMITTED TEXT	52 WORDS	87%	MATCHING TEXT	52 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

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182/390	SUBMITTED TEXT	29 WORDS	100%	MATCHING TEXT	29 WORDS

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 48 48

vision to Fulfilment, 3rd Edition, pHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing,3rd Edition, Pearson Education, 2003.

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183/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 4.10 Keywords 4.11 Questions for Discussion 4.12 Suggested Readings 4.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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184/390	SUBMITTED TEXT	39 WORDS	75%	MATCHING TEXT	39 WORDS

Technology is setting the pace for how a company does business, how it launches new products and enters anew market, how it deals with suppliers, and how it communicates with customers and others in the new marketplace.

Technology is setting the pace for how a company does business, how it launches new 8 E-Commerce Applications M.S. University - D.D.C.E. Products and enters into a new market, how it deals with suppliers, and how it communicates wirh customers and others in the new marketplace.

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185/390	SUBMITTED TEXT	13 WORDS	83%	MATCHING TEXT	13 WORDS

wireless devices such as phones, pagers, and PDAs (Personal Digital Assistants). The

SA CMP513-Ecommerce technology-R.pdf (D164968100)

186/390	SUBMITTED TEXT	15 WORDS	90%	MATCHING TEXT	15 WORDS

xml version="1.0"?< 2. >!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN" "http://www.wapforum.org/DTD/wml_1.1.xml"< 3. >wml< 4. >/

xml version="1.0"?< >!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN" "http://www.wapforum.org/DTD/wml12.dtd"< >wml< >

W https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBAA7033.pdf

187/390	SUBMITTED TEXT	32 WORDS	85%	MATCHING TEXT	32 WORDS

Wireless Application Protocol (WAP) is an application environment and group of communication protocols for wireless devices modeled to activate manufacturer-vendor and technology-independent access to the Internet and advanced telephony services. 4.7

SA Enterprise Business Application.docx (D119009350)

188/390	SUBMITTED TEXT	17 WORDS	73%	MATCHING TEXT	17 WORDS

the initial purpose of defining an industry-wide specification for developing applications over wireless communications networks. The

The initial purpose of this standard was to define industry wide specification for developing application over wireless communication networks. ? The

W https://old.amu.ac.in/emp/studym/99994254.pdf

189/390	SUBMITTED TEXT	18 WORDS	91%	MATCHING TEXT	18 WORDS

is a lightweight markup language, analogous to HTML, but optimized for use in hand-held mobile terminals. 4.11

is a lightweight markup language, similar to HTML, but optimized for use in hand-held mobile terminals.

W https://old.amu.ac.in/emp/studym/99994254.pdf

190/390	SUBMITTED TEXT	52 WORDS	87%	MATCHING TEXT	52 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

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191/390	SUBMITTED TEXT	28 WORDS	100%	MATCHING TEXT	28 WORDS

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 56 56

vision to Fulfilment, 3rd Edition, pHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing,3rd Edition, Pearson Education, 2003.

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192/390	SUBMITTED TEXT	27 WORDS	83%	MATCHING TEXT	27 WORDS

is an application environment and group of communication protocols for wireless devices modeled to activate manufacturer-vendor and technology-independent access to the Internet and advanced telephony services.

SA Enterprise Business Application.docx (D119009350)

193/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 5.9 Keywords 5.10 Questions for Discussion 5.11 Suggested Readings 5.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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194/390	SUBMITTED TEXT	32 WORDS	85%	MATCHING TEXT	32 WORDS

Wireless Application Protocol (WAP) is an application environment and group of communication protocols for wireless devices modeled to activate manufacturer-vendor and technology-independent access to the Internet and advanced telephony services. 4.12

SA Enterprise Business Application.docx (D119009350)

195/390	SUBMITTED TEXT	37 WORDS	71%	MATCHING TEXT	37 WORDS

processes define interaction models between consumers and merchants for on-line commerce. This is essential as to buy and sell goods, a buyer, seller, and other parties must interact in ways that represent some standard business processes.

processes define interaction model between consumers and merchants for commerce. This is necessary because to buy and sell goods, a buyer, seller, and other parties most interact in ways that some standard business processes.

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196/390	SUBMITTED TEXT	27 WORDS	89%	MATCHING TEXT	27 WORDS

that a common way of doing business over the I-way will be essential to the future growth of e-commerce. A well-established standard process for processing credit,

that a common way of doing business over the I-way will be essential to the future growth of ecommerce. A well established standard process for processing credit

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197/390	SUBMITTED TEXT	33 WORDS	95%	MATCHING TEXT	33 WORDS

of a common process for managing and completing transactions will result in electronic commerce being entangled in a mesh of bilateral ad hoc mechanisms that are specific to every company doing business

of a common process for managing and completing transactions will result in electronic commerce being entangled in a mesh of bilateral ad hoc mechanism that are specific to every company doing business

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198/390	SUBMITTED TEXT	19 WORDS	100%	MATCHING TEXT	19 WORDS

process models, it is prudent to review existing business process models used in the manufacturing and retailing industries.

process models, it is prudent to review existing business process models used in the manufacturing and retailing industries.

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199/390	SUBMITTED TEXT	36 WORDS	92%	MATCHING TEXT	36 WORDS

provide the understanding required to determine the features needed in an architectural model designed specifically for electronic commerce. Within the scope of such architecture, demonstrate the ability to solve all the problems that the current

provide the understanding required to determine the features needed in an architectural model designed specifically for electronic commerce. Then, of course, within the scope of such architecture, we must demonstrate the ability to solve all the problems that the current

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200/390	SUBMITTED TEXT	28 WORDS	100%	MATCHING TEXT	28 WORDS

The idea behind a general architecture is that it would lead to a set of methods and tools from which specific protocols can be easily implemented. 5.2

The idea behind a general architecture is that it would lead to a set of methods and tools from which specific protocols can be easily implemented.

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201/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

card purchases has contributed to the widespread dissemination of credit,

card purchases has contributed to the widespread dissemination of credit

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202/390	SUBMITTED TEXT	38 WORDS	82%	MATCHING TEXT	38 WORDS

weapons. Designing and implementing new mercantile processes is the most powerful weapon available to wage that war effectively. The designing and developing a common mercantile process (or set of processes) is expected to increase convenience for consumers.

weapons. And designing and implementing new mercantile processes is the most powerful weapon variable to wage that war effectively. The establishment of a common mercantile process (or set of processes) is expected to increase convenience for consumers

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203/390	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS

A smart card, chip card, or Integrated Circuit Card (ICC), is

SA Enterprise Business Application.docx (D119009350)

204/390	SUBMITTED TEXT	15 WORDS	100%	MATCHING TEXT	15 WORDS

Any major purchase can be assumed to involve some amount of pre purchase deliberation,

SA 023E2440_Applied E- commerce.pdf (D165201746)

205/390	SUBMITTED TEXT	13 WORDS	87%	MATCHING TEXT	13 WORDS

actual purchase itself information search activities should constitute the major part of

SA 023E2440_Applied E- commerce.pdf (D165201746)

206/390	SUBMITTED TEXT	13 WORDS	100%	MATCHING TEXT	13 WORDS

duration, but comparison of alternatives and price negotiation would be included in

SA 023E2440_Applied E- commerce.pdf (D165201746)

207/390	SUBMITTED TEXT	25 WORDS	75%	MATCHING TEXT	25 WORDS

information on customer characteristics associated with reduced purchase deliberation times can be quite valuable when attempting to target selective communications to desired audiences properly.

SA 023E2440_Applied E- commerce.pdf (D165201746)

208/390	SUBMITTED TEXT	21 WORDS	78%	MATCHING TEXT	21 WORDS

after making some comparisons. 3. Analytical buyers, who do substantial research before making the decision to purchase products or services.

SA 023E2440_Applied E- commerce.pdf (D165201746)

209/390	SUBMITTED TEXT	31 WORDS	85%	MATCHING TEXT	31 WORDS

Generally planned purchases: The need was recognized, but the shopper decided in-store on the actual manufacturer of the item to satisfy the need. 2. Specifically planned purchases: The need was

SA 023E2440_Applied E- commerce.pdf (D165201746)

210/390	SUBMITTED TEXT	21 WORDS	77%	MATCHING TEXT	21 WORDS

Information Search Process by Consumers: The degree of care, perception, and effort directed toward obtaining data or information related to

information search process: Information search is defined as the degree of care, perception and effort directed toward obtaining data or information related to

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211/390	SUBMITTED TEXT	21 WORDS	85%	MATCHING TEXT	21 WORDS

of consumer search behaviour is undocumented in the existing literature and represents an area that must be better understood before

of consumer research behavior is undocumented in the existing literature and represents an area that must be better understood before

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212/390	SUBMITTED TEXT	20 WORDS	100%	MATCHING TEXT	20 WORDS

search is an activity designed to balance the cost of acquiring information with the benefits of improved final decisions.

search is an activity designed to balance the cost of acquiring information with the benefits of improved final decisions.

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213/390	SUBMITTED TEXT	16 WORDS	88%	MATCHING TEXT	16 WORDS

Together, these dimensions impose a series of demands on the search process used.

Together, these dimensions impose a series of demand on the search process used.

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214/390	SUBMITTED TEXT	21 WORDS	52%	MATCHING TEXT	21 WORDS

to facilitate better consumer and organisational search. Information brokerages are needed for three reasons: comparison-shopping, reduced search costs, and integration.

To facilitate better consumer and organizational search, intermediaries called information brokers or brokerages are coming into existence. Information brokerages are needed for three results; a comparison shopping, reduce search costs, and integration. 2.

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215/390	SUBMITTED TEXT	30 WORDS	94%	MATCHING TEXT	30 WORDS

the store. 4. Reminder purchases: The shopper was reminded of the need by some store influence. This shopper is influenced by in-store advertisements and can substitute products readily.

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216/390	SUBMITTED TEXT	46 WORDS	57%	MATCHING TEXT	46 WORDS

Purchase Consummation After identifying the products to be purchased, the buyer and the seller must interact in some way to actually carry out the mercantile transaction. A mercantile transaction is defined as the exchange of information between the buyer and the seller followed by

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217/390	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS

the payment model mutually agreed on, they may interact by exchanging

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218/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

A single mercantile model will not be sufficient to meet the needs of

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219/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

In very general terms, a simple mercantile protocol would require the following transactions:

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220/390	SUBMITTED TEXT	22 WORDS	78%	MATCHING TEXT	22 WORDS

Buyer and vendor may engage in negotiation. z If satisfied, buyer authorises payment to the vendor with an encrypted transaction containing

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221/390	SUBMITTED TEXT	51 WORDS	58%	MATCHING TEXT	51 WORDS

On notification of adequate funds to cover financial transaction, vendor delivers the goods to buyer or in the case of information purchase provides a cryptokey to unlock the file. z On receiving the goods, the buyer signs and delivers receipt. Vendor then tells billing service to complete the transaction.

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222/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

At the end of the billing cycle, buyer receives a list of transactions.

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223/390	SUBMITTED TEXT	18 WORDS	96%	MATCHING TEXT	18 WORDS

mercantile protocols where the payment is the form of electronic cash and credit cards. 1. Mercantile

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224/390	SUBMITTED TEXT	22 WORDS	88%	MATCHING TEXT	22 WORDS

Such currency is simply a series of bits that the issuing bank can verify to be valid. This currency is kept

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225/390	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

by the use of cryptographic techniques. After being issued some e-cash, a buyer can transfer

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226/390	SUBMITTED TEXT	73 WORDS	90%	MATCHING TEXT	73 WORDS

can verify its authenticity by sending it to the issuing bank for verification. E-cash issuing banks make money by charging either buyers or sellers a transaction fee for the use of their e-cash. Electronic cash is similar to paper currency and has the benefits of being anonymous and easily transmitted electronically. It still entails the risk of theft or loss, however, and so requires significant security by the buyer when storing e-cash.

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227/390	SUBMITTED TEXT	40 WORDS	88%	MATCHING TEXT	40 WORDS

Processor (TPP) captures information at the point of sale, transmits the information to the credit card issuer for authorization, communicates a response to the merchant, and electronically stores the information for settlement and reporting. Once the information leaves the

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228/390	SUBMITTED TEXT	16 WORDS	77%	MATCHING TEXT	16 WORDS

Credit authorisation is processed at point-of-sale terminals using dial-up telephone access into the TPP networks

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229/390	SUBMITTED TEXT	26 WORDS	64%	MATCHING TEXT	26 WORDS

The credit card number is checked against the database and the transaction is either approved or denied, typically within seven seconds. A similar procedure is

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230/390	SUBMITTED TEXT	31 WORDS	95%	MATCHING TEXT	31 WORDS

Once the electronic authorisation function is completed, the information is processed within the system for client reporting. The data are then transmitted for settlement to the appropriate institution or processor.

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231/390	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

Cost of Electronic Purchasing: On the surface, cash seems to be preferable to electronic payments.

Cost of Electronic Purchasing: On the surface, cash seems to be preferable to electronic payments.

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232/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

consumers appear to spend more when using cards than when

consumers appear to spend more when using cards than when

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233/390	SUBMITTED TEXT	29 WORDS	82%	MATCHING TEXT	29 WORDS

After the transaction is complete, a set of activities related to account settlement are initiated. In a credit or debit transaction, the merchant's account is credited and either

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234/390	SUBMITTED TEXT	16 WORDS	96%	MATCHING TEXT	16 WORDS

settlement institution then enters the transaction data into the settlement process. In addition to data

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235/390	SUBMITTED TEXT	50 WORDS	91%	MATCHING TEXT	50 WORDS

In the ongoing relationship with the customer, this step can produce some of the most heated disagreements; every interaction becomes a zero-sum game that either the company or the customer wins. To compound the problem, most companies design their mercantile processes for one-way merchandise flow: outbound to the customer.

In the ongoing relationship with the customers, this step can produce some of the most heated disagreements; every interaction becomes a zero-sum-game that either the company or the customer wins. To compound the problems, most companies designed their mercantile processes for one way merchandise flow; outbound to the customer.

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236/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

Post-purchase Interaction As long as there is payment for services, there will be

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237/390 **SUBMITTED TEXT** 18 WORDS **100%** **MATCHING TEXT** 18 WORDS

other customer service issues that need to be considered. Returns and claims are an important part of

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238/390 **SUBMITTED TEXT** 12 WORDS **95%** **MATCHING TEXT** 12 WORDS

purchasing process that impact administrative costs, scrap and transportation expenses, and

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239/390 **SUBMITTED TEXT** 16 WORDS **81%** **MATCHING TEXT** 16 WORDS

customer properly, a company should inform a customer right away when an item ordered is sold-

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240/390 **SUBMITTED TEXT** 36 WORDS **94%** **MATCHING TEXT** 36 WORDS

Database access and compatibility issues: Unless the customer can instantly access all the computers of all the direct-response vendors likely to advertise on the Information Superhighway – on a real-time basis, with compatible software –

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241/390 **SUBMITTED TEXT** 11 WORDS **100%** **MATCHING TEXT** 11 WORDS

The business process model from a consumer's perspective consists of

The business process model from a consumer's perspective consists of 7

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242/390 **SUBMITTED TEXT** 48 WORDS **89%** **MATCHING TEXT** 48 WORDS

phases: 1. Pre-purchase phase 2. Purchase consummation 3. Post-purchase interaction Pre-purchase Preparation Phase It includes search and discovery for a set of products in the larger information space capable of meeting customer requirements and product selection from the smaller set of products based on attribute comparison.

phases: Pre-purchase phase, Purchase consummation, and post purchase interaction. 1. Pre-Purchase Phase-4: It includes search and discovery for a set of products in the large information space, capable of meeting customer requirements and product selection from the smaller set of products based on attributes comparison.

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243/390	SUBMITTED TEXT	14 WORDS	80%	MATCHING TEXT	14 WORDS

Customer service issues: Customers often have questions about the product (color, size, shipment),

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244/390	SUBMITTED TEXT	38 WORDS	83%	MATCHING TEXT	38 WORDS

protocols that specify the flow of information and documents associated with purchasing and negotiation with merchants for suitable terms, such as price, availability, and delivery dates; and electronic payment mechanisms that integrate payment into the purchasing process.

protocols that specify the flow of information and documents associated with purchasing and negotiation with merchants for suitable terms such as price, availability and delivery and e-payment mechanism that integrates payment into the purchasing process.

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245/390	SUBMITTED TEXT	17 WORDS	91%	MATCHING TEXT	17 WORDS

Post-purchase Interaction Phase It includes customer service and support to address customer complaints, product returns, and

Post Purchase Interaction: It includes customer service and support to address customer complaints, product returns and

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246/390	SUBMITTED TEXT	20 WORDS	100%	MATCHING TEXT	20 WORDS

The order-to-delivery cycle from the merchant's perspective is generally managed with an eye towards standardisation and cost. This view,

The order-to-delivery cycle from the merchant's perspective is generally managed with an eye towards standardisation and cost. This view,

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247/390	SUBMITTED TEXT	33 WORDS	68%	MATCHING TEXT	33 WORDS

on the assumption that an organisation must create a set of operating standards for service and productivity, then perform to those standards while minimising the cost of doing so. Often, when orders

on the assumption that-an organisation must create a set of opeiating standards for service and productivity, th.r, p"r^for.n to those standards while. minimising the cost doi.rg so. Often, *h., orders .

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248/390	SUBMITTED TEXT	44 WORDS	79%	MATCHING TEXT	44 WORDS

the company measures how the actual delivery stacks up against the guidelines for that activity and what the action costs. If the service standards are met with minimal expense, the company judges the delivery successful. The strengths of this philosophy lie in:

the comPany measures how the actual delivery stacks ,.rp .g"imt the guidelines for that activity and what the action costs. If the service standards are met with minimri .*p..rr", the company judges the delivery successful. Thrc.strengths of this philosophy lie in (

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249/390	SUBMITTED TEXT	89 WORDS	82%	MATCHING TEXT	89 WORDS

of low-cost provider z Its stress on benchmarking service z Its emphasis on responsiveness as well as continuous improvement. However, this model is incomplete for e-commerce. As an operations- focused, inward-looking vision, it's out of sync with the e-commerce accent on flexibility, customisation, and customer service. Those companies concentrating on performance standards and cost metrics may be headed for big trouble in the e-commerce environment, because the nature of products and services is dramatically different. Instead of asking whether the 76 76

of low-cost provider, (ii) its stress on benihmarki.g r.*i.", and (iii) its .-phr.i. on responsiveness as well as continuous improvement. However, this model is incomplete for e-commgrce: As an operations-focused, inwardlooking vision, it's out of sync with the e-commerce accent on flexibility, ..rsto-iration, and customer service. Those companies concentrating on performance standards and cost metrics may be headed for big trouble in the e-commerce environment, because the nature of products and services is dramaticall"y different. Instead of asking whether the

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250/390	SUBMITTED TEXT	46 WORDS	79%	MATCHING TEXT	46 WORDS

effectively, the traditional view is concerned with the percentage of cases of products that were shipped on time and at what cost. To fully realise and maintain a competitive advantage in the on-line environment, a company must build a robust vision of what its order-to-delivery

effectively, the traditional view is concerned with the Percentage of cases of products that were shipped on rime and at what cosr. To fully realise and maintain a competitive _advantage in the online .r',ri.orr-..rr, a company mu$ build a robust vision of what its order-to-delivery .

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251/390	SUBMITTED TEXT	24 WORDS	100%	MATCHING TEXT	24 WORDS

better understanding, it is necessary to examine the Order Management Cycle (OMC) that encapsulates the more traditional order-to-delivery cycle. The typical OMC includes

better understanding, it is necessary to examine the order management cycle (OMC) that encapsulates the more traditional order to delivery cycle. The typical OMC includes 8

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252/390	SUBMITTED TEXT	54 WORDS	73%	MATCHING TEXT	54 WORDS

and may differ for individual products and services. However, OMC has the following generic steps. 5.7.1 Customer Enquiry and Order Generation The business process begins long before an actual order is placed by the customer. What happens in the first step, order planning, already shows how and why lack of cohesive operations

and may differ for individual products and services. However, oMC has the following generic steps. (, customcr E?and orfur Generation: The business process begins long before an actual order is placed by the customer. Vhat happens in the first step, p"lanning] akeady shows how and why lack of cohesive operations

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253/390	SUBMITTED TEXT	216 WORDS	89%	MATCHING TEXT	216 WORDS

Those farthest from the customer make crucial decisions and open up debate between interdependent functions right from the start. For example, people close to the customer, either in the sales force or in a marketing group at company headquarters, develop a sales forecast. At the same time, a group in the operations or manufacturing function drafts a capacity plan that specifies how much money will be spent, how many people will be hired, and how much inventory will be created. The production planners often develop the final forecast used to hire workers and build inventory. The lack of internal communication can cause the final result to differ significantly from what is actually needed. Order planning leads into order generation. Orders are generated in a number of ways in the e-commerce environment. The sales force broadcasts ads (direct marketing), sends personalised e-mail to customers (cold calls), or creates a WWW page. Regardless of the specific marketing approach, the result is almost always the same. The sales and marketing functions worry about order generation, and the other functions stay out of the way. Little coordination takes place across functional boundaries. 5.7.2 Pricing of Product Pricing is the bridge between customer needs and company capabilities. But most companies do not understand how to execute order-based pricing in

Those farthest from the cusromer make crucial decisions and open up debate beiween interdependent functions right from the For example, people close to the customer, either in the sales force or in "a marketing group at comPany headquarters, develop a sales forecast. At the same time, a group in the oplr"'rio6 o, manufacturing function drafts a capacity plan that specifies ho* -.r.limoney will be spent, how many people will be hired, and how much inventory will be created. The production planners 16 E-Commerce Applications M.S. University - D.D.C.E. often develop the final forecast used to hire workers and build inventory. The lack of internal communication can cause the final result to differ significantly from what is actually needed. Order planning leads into order generation. Orders are generated in a number of ways in the e-commerce environment. The sales force broadcasts ads (direct marketing), sends personalized e-mail to customers (cold calls), or creates a \U-W"W page. Regardless of the specific marketing approach, the result is almost always the same. The sales and marketing functions worry about order generation, and the other functions stay out of the way. Little coordination takes place across functional boundaries. (ir) Pricing of Prod.uct: Pricing is the bridge between customer needs and company capabilities. But most companies do not understand how to execute order-based pricing in

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254/390	SUBMITTED TEXT	18 WORDS	73%	MATCHING TEXT	18 WORDS

To meet these expectations and understand the behaviour of the online shopper, there is a need for

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255/390	SUBMITTED TEXT	161 WORDS	98%	MATCHING TEXT	161 WORDS

markets. Pricing at the individual order level depends on understanding the value to the customer that is generated by each order, evaluating the cost of filling each order; and instituting a system that enables the company to price each order based on its value and cost. Although order-based pricing is difficult work that requires meticulous thinking and deliberate execution, the potential for greater profits is simply worth the effort. Often, battles erupt between engineers who do the estimation, accountants who tabulate costs, management that oversees pricing, and the sales force that actually quotes a price. Each group questions the judgement, competence, and goals of the others. Meanwhile, of course, the customer waits for the bid or quote, unattended. 5.7.3 Receipt of Order and Entry After an acceptable price quote, the customer enters the order receipt and entry phase of OMC. Traditionally, this was under the purview of departments variously titled customer service, order entry, the inside sales desk, or

markets. Pricing at the individual order level depends on understanding the value to the customer that is generated by each order, evaluating the cost of filling each order; and instituting a system that enables the company to price each order based on its value and cost. Although order-based pricing is difficult work that requires meticulous thinking and deliberate execution, the potential for greater profits is simply worth the effort. Often, battles erupt between engineers who do the estimation, accountants who tabulate costs, management that oversees pricing, and the sales force that actually quotes a price. Each group questions the judgement, competence, and goals of the others. Meanwhile, of course, the customer waits for the bid or quote, unattended. (iii) Receipt of Ordzr and Entry: After an acceptable price quote, the customer enters the order receipt and entry phase of OMC. Traditionally, this was under the purview of departments variously titled customer service, order entry, the inside sales desk, or

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256/390	SUBMITTED TEXT	36 WORDS	100%	MATCHING TEXT	36 WORDS

liaison. These departments are staffed by customer service representatives, usually either very experienced, long-term employees or totally inexperienced trainees. In either case, these representatives are in constant contact with customers. 77

liaison. These departments are staffed by customer service representatives, usually either very experienced, long-term employees or totally inexperienced trainees. In either case, these representatives are in constant contact with customers.

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257/390	SUBMITTED TEXT	303 WORDS	95%	MATCHING TEXT	303 WORDS

and Prioritisation Customer service representatives are often responsible for choosing which orders to accept and which to decline. In fact, not all customer orders are created equals; some are simply better for the business than others. In particular, the desirable orders are those that fit the company's capabilities and offer healthy profits. These orders fall into the "sweet spot" region, which represents a convergence of great customer demand and high customer satisfaction, which in turn translates into customer retention. The importance of order selection and prioritisation is another important matter. Companies that put effort into order selection and link it to their business strategy stand to make more money, regardless of production capacity. In addition, companies can make gains by the way they handle order prioritisation-that is, how they decide which orders to execute faster. These decisions are usually made not by top executives who articulate corporate strategy but by staff who have no idea what that strategy is. While customer service reps decide which order gets filled when, they often determine which order gets lost in limbo. In sum, there is little recognition of the importance that should be placed on order selection and prioritisation in e-commerce. 5.7.5 Production Schedule During the ordering scheduling phase the prioritised orders get slotted into an actual production or operational sequence. This task is difficult because the different function departments-purchasing, marketing, customer service, operations, or production-may have conflicting goals, compensation systems, and organizational imperatives: Production people seek to minimize equipment changeovers, while marketing and customer service reps argue for special service for special customers. And if the operations staff schedules orders unilaterally, both customers and their reps are completely excluded from the process. Communication between the functions is often non-existent, with customer service reporting to sales and physically separated from production scheduling, which reports to

and Prioritisation: Ctstomer sen'ice representatives are often responsible for choosing which orders to accept and which to decline. In fact, not all customer orders are created equals; some are simply better for the business than others. In particular, the desirable orders are those that fit the company's capabilities and offer healthy profits. These orders fall into the "sweet spot" region, which represents a convergence of great customer demand and high customer satisfaction, which in turn translates into customer retention. The importance of order selection and prioritisation is another important matter. Companies that put effort into order selection and link it to their business strategy stand to make more money, regardless of production capacity. In addition, companies can make gains by the way they handle order prioritisation - that is, how they decide which orders to execute faster. These decisions are usually made not by top executives who articulate corporate strategy but by staff who have no idea what that strategy is. While customer service reps decide which order gets filled when, they often determine which order gets lost in limbo. In sum, there is little recognition of the importance that should be placed on order selection and prioritisation in e-commerce. (") Prcduction Schedule: During the ordering scheduling phase the prioritised orders get slotted into an actual production or operational sequence. This task is difficult because the different function departments - purchasing, marketing, customer service, operations, or production - may have conflicting goals, compensation systems, and organizational imperatives. Production people seek to minimize equipment changeovers, while marketing and customer service reps argue for special service for special customers. And if the operations staff schedules orders unilaterally, both customers and their reps ard ccmpletely excluded from the process. Communication between rhe functions is often non-existent, with customer sen'ice reporting to sales and physically ,"pr.rt"d from production-scheduling, which reports to

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258/390	SUBMITTED TEXT	81 WORDS	84%	MATCHING TEXT	81 WORDS

Fulfilment and Delivery During the order fulfilment and delivery phase, the actual provision of the product or service is made. Often, order fulfilment involves multiple functions and locations: Different parts of an order may be created in different manufacturing facilities and merged at yet another site, or orders may be manufactured in one location, warehoused in a second, and installed in a third. In some businesses, fulfilment includes third-party vendors. In service operations, it can mean sending individuals with different

Fulfilment and Deliaery.' During the order fulfilment and delivery phase, the actual provision of the product or service is made. often, order fulfilment in,rol,res multiple and locations: Different parts of an order nray be creared in different manufacruring facilitres and merged at yet another site, or orders ,rrry t" manufacrured in one location, warehoused in a second, and installed in a third. in some tusinesses, fulfilment includes third-pany vendors. In service operations, it can mean sending individuals with different

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259/390	SUBMITTED TEXT	85 WORDS	91%	MATCHING TEXT	85 WORDS

s site. The more complicated the task, the more coordination required across the organisation. And the more coordination required, the greater the chance that the order is delayed. 78 78 e-Commerce 5.7.7 Billing After the order has been fulfilled and delivered, billing is handled by the finance staff, who view their job as getting the bill out efficiently and collecting quickly. In other words, the billing function is designed to serve the needs and interests of

s sire. The more complicated the task, the more coordination required across the organisation. And the more coordination required, the greater the chance that the order is delayed. ' (vii) After the order has been fulfilled and delivered, billing is handled by the finance staff, who view their job as getting the bill out efficiently and collelting quickly. In other words, the billing function is designed to serve the needs and interests of

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260/390	SUBMITTED TEXT	25 WORDS	88%	MATCHING TEXT	25 WORDS

Often customers don't understand the bill they receive, or they believe it contains inaccuracies. The bill may not be inaccurate, but it is usually

often customers don't understand the bill they receive, or they believe ii contains inaccuracies. The bili may not be inaccurate, but it is usually

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261/390	SUBMITTED TEXT	77 WORDS	69%	MATCHING TEXT	77 WORDS

more convenient for the billing department than for the customer. 5.7.8 Customer Service and Support This phase plays an increasingly important role in all elements of a firm's profit equation: customer value, price, and cost. Depending on the specifics of the business, it can include such elements as physical installation of a product, repair and maintenance, customer training, equipment upgrading, and disposal. Because of the information conveyed and intimacy involved, posts ales service can affect

more convenient for the billing department than for the customer. (vtii)s-entice and support: This phase plays an increasingly important role in all elements of a firm's Plolit equation: customer 'alue, q.i9., and cost. o.pJ"ai"g on the specifics of the business, it can include such elements as physical installation of , p.idr.r, ."iri, and mainterrr.r.., customer training, equipment upgrading, and disposal. Because of the information .o.rrr.y"d ,rj intimacy involved, posts ales service can affect ..

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262/390	SUBMITTED TEXT	16 WORDS	90%	MATCHING TEXT	16 WORDS

profitability for years. But in most companies, the post sales service people are not linked

profitability for years' But in most companies, the post sales service people are nor linked

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263/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

card purchases has contributed to the widespread dissemination of credit,

card purchases has contributed to the widespread dissemination of credit

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264/390	SUBMITTED TEXT	14 WORDS	75%	MATCHING TEXT	14 WORDS

Information brokerages are needed for three reasons: comparison-shopping, reduced search costs, and integration.

Information brokerages are needed for three results; a comparison shopping, reduce search costs, and integration. 2.

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265/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

Pricing is the bridge between customer needs and company capabilities.

Pricing is the bridge between customer needs and company capabilities.

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266/390	SUBMITTED TEXT	50 WORDS	93%	MATCHING TEXT	50 WORDS

This task is difficult because the different function departments – purchasing, marketing, customer service, operations, or production – may have conflicting goals, compensation systems, and organizational imperatives: Production people seek to minimize equipment change-overs, while marketing and customer service reps argue for special service for special customers. 5.9

This task is difficult because the different function departments - purchasing, marketing, customer service, operations, or production - may have conflicting goals, compensation systems, and organizational imperatives. Production people seek to minimize equipment changeovers, while marketing and customer service reps argue for special service for special customers.

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267/390	SUBMITTED TEXT	52 WORDS	87%	MATCHING TEXT	52 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce P.T.Joseph , E:cotttfixerce- A Managerinl Perspectioe G.Winfield Treese & Lawrence C.Stewart, Designing Systems for lnternet Commerce Kamelesh K Bajaj Debjani Nag, E commerce The Cutting Edge of Business Dr.Ravi Kalakota, Marcia Robinson, E Business Road Map for Success

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268/390	SUBMITTED TEXT	14 WORDS	88%	MATCHING TEXT	14 WORDS

who do substantial research before making the decision to purchase products or services.

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269/390	SUBMITTED TEXT	34 WORDS	100%	MATCHING TEXT	34 WORDS

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 80 80

vision to Fulfilment, 3rd Edition, pHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing,3rd Edition, Pearson Education, 2003.

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270/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 6.15 Keywords 6.16 Questions for Discussion 6.17 Suggested Readings 6.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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271/390	SUBMITTED TEXT	16 WORDS	80%	MATCHING TEXT	16 WORDS

is defined as the exchange of information between the buyer and the seller followed by

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272/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

two different keys, a public key and a private key.

SA wlp-network-assignment.pdf (D158907359)

273/390	SUBMITTED TEXT	52 WORDS	95%	MATCHING TEXT	52 WORDS

SECRET KEY ENCRYPTION With secret key cryptography, a single key is used for both encryption and decryption. As shown in Figure 6.1, the sender uses the key (or some set of rules) to encrypt the plaintext and sends the ciphertext to the receiver. The receiver applies the same key (or

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274/390	SUBMITTED TEXT	71 WORDS	97%	MATCHING TEXT	71 WORDS

to decrypt the message and recover the plaintext. Because a single key is used for both functions, secret key cryptography is also called symmetric encryption. With this form of cryptography, it is obvious that the key must be known to both the sender and the receiver; that, in fact, is the secret. The biggest difficulty with this approach, of course, is the distribution of the key. 83

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275/390	SUBMITTED TEXT	104 WORDS	100%	MATCHING TEXT	104 WORDS

Secret key cryptography schemes are generally categorized as being either stream ciphers or block ciphers. Stream ciphers operate on a single bit (byte or computer word) at a time and implement some form of feedback mechanism so that the key is constantly changing. A block cipher is so-called because the scheme encrypts one block of data at a time using the same key on each block. In general, the same plaintext block will always encrypt to the same ciphertext when using the same key in a block cipher whereas the same plaintext will encrypt to different ciphertext in a stream cipher.

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276/390	SUBMITTED TEXT	246 WORDS	99%	MATCHING TEXT	246 WORDS

Stream ciphers come in several flavors but two are worth mentioning here. Self-synchronizing stream ciphers calculate each bit in the keystream as a function of the previous n bits in the keystream. It is termed "self-synchronizing" because the decryption process can stay synchronized with the encryption process merely by knowing how far into the n-bit keystream it is. One problem is error propagation; a garbled bit in transmission will result in n garbled bits at the receiving side. Synchronous stream ciphers generate the keystream in a fashion independent of the message stream but by using the same keystream generation function at sender and receiver. While stream ciphers do not propagate transmission errors, they are, by their nature, periodic so that the keystream will eventually repeat. Block Ciphers can operate in one of several modes; the following four are the most important: 1. Electronic Codebook (ECB) mode is the simplest, most obvious application: the secret key is used to encrypt the plaintext block to form a ciphertext block. Two identical plaintext blocks, then, will always generate the same ciphertext block. Although this is the most common mode of block ciphers, it is susceptible to a variety of brute-force attacks. 2. Cipher Block Chaining (CBC) mode adds a feedback mechanism to the encryption scheme. In CBC, the plaintext is exclusively-ORed (XORed) with the previous ciphertext block prior to encryption. In this mode, two identical blocks of plaintext never encrypt to the same ciphertext. 3.

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277/390	SUBMITTED TEXT	68 WORDS	100%	MATCHING TEXT	68 WORDS

Public-key cryptography has been said to be the most significant new development in cryptography in the last 300-400 years. Modern PKC was first described publicly by Stanford University professor Martin Hellman and graduate student Whitfield Diffie in 1976. Their paper described a two-key crypto system in which two parties could engage in a secure communication over a non-secure communications channel without having to share a secret key.

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278/390	SUBMITTED TEXT	13 WORDS	76%	MATCHING TEXT	13 WORDS

cryptographic keys—a public key and a private key. The private key is

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279/390	SUBMITTED TEXT	15 WORDS	100%	MATCHING TEXT	15 WORDS

encrypted with the public key can be decrypted only with the corresponding private key.

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280/390	SUBMITTED TEXT	115 WORDS	91%	MATCHING TEXT	115 WORDS

Encrypting data converts it to an unintelligible form called cipher. Decrypting cipher converts the data back to its original form called plaintext. The algorithm described in these standards specifies both enciphering and deciphering operations which are based on a binary number called a key. A key consists of 64 binary digits ("O"s or "1"s) of which 56 bits are randomly generated and used directly by the algorithm. The other 8 bits, which are not used by the algorithm, are used for error detection. The 8 error detecting bits are set to make the parity of each 8-bit byte of the key odd, i.e. there is an odd number of "1"s in each 8-bit byte.

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281/390	SUBMITTED TEXT	30 WORDS	94%	MATCHING TEXT	30 WORDS

Authorized users of encrypted computer data must have the key that was used to encipher the data in order to decrypt it. The encryption algorithm specified in this standard

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282/390	SUBMITTED TEXT	60 WORDS	91%	MATCHING TEXT	60 WORDS

security of the data depends on the security provided for the key used to encipher and decipher the data. Data can be recovered from cipher only by using exactly the same key used to encipher it. Unauthorized recipients of the cipher whop know the algorithm but do not have the correct key cannot drive the original data algorithmically. However,

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283/390 **SUBMITTED TEXT** 158 WORDS **97%** **MATCHING TEXT** 158 WORDS

anyone who does have the key and the algorithm can easily decipher the cipher and obtain the original data. A standard algorithm based on a secure key thus provides a basis for exchanging encrypted computer data by issuing the key used to encipher it to those unauthorized to have the data. Data that is considered sensitive by the responsible authority, data that has a high value, or data that represents a high value should be cryptographically protected if it is vulnerable to unauthorized disclosure or undetected modification during transmission or while in storage. A risk analysis should be performed under the direction of a responsible authority to determine potential threats. The costs of providing cryptographic protection using this standards as well as alternative methods of providing this protection and their respective costs should be projected. A responsible authority then should make a decision, based on these analyses, whether or not to use cryptographic protection and this standard.

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284/390 **SUBMITTED TEXT** 35 WORDS **55%** **MATCHING TEXT** 35 WORDS

Easiest to obtain, it involves the fewest checks on the user's back-round. (only the name of e-mail address are verified Class 2 I includes user's driver's license. Social security number & date of birth

easiest to get and includes the fewest checks on the user's background: only his or her name and e-mail address are verified. For class 2, the issuing authority checks the user's driver's license, Social Security number, and date of birth.

W http://www.tmv.edu.in/pdf/Distance_education/BCA%20Books/BCA%20VI%20SEM/BCA-628%20e-commerce.pdf

285/390 **SUBMITTED TEXT** 52 WORDS **87%** **MATCHING TEXT** 52 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

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286/390	SUBMITTED TEXT	30 WORDS	100%	MATCHING TEXT	30 WORDS

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 95

vision to Fulfilment, 3rd Edition, pHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing,3rd Edition, Pearson Education, 2003.

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287/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 7.19 Keywords 7.20 Questions for Discussion 7.21 Suggested Readings 7.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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288/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

two different keys, a public key and a private key.

SA wlp-network-assignment.pdf (D158907359)

289/390	SUBMITTED TEXT	50 WORDS	100%	MATCHING TEXT	50 WORDS

E-cash focuses on replacing cash as the principal, payment vehicle in consumer-oriented electronic payments. Although it may be surprising to some, cash is still the most prevalent consumer payment instrument even after thirty years of continuous developments in electronic payment systems. 98 98

SA E commerce B.com VI semester.docx (D146772307)

290/390	SUBMITTED TEXT	36 WORDS	100%	MATCHING TEXT	36 WORDS

Cash remains the dominant form of payment for three reasons: 1. Lack of trust in the banking system 2. Inefficient clearing and settlement of non-cash transactions, 3. Negative real interest rates paid on bank deposits.

SA E commerce B.com VI semester.docx (D146772307)

291/390	SUBMITTED TEXT	74 WORDS	99%	MATCHING TEXT	74 WORDS

The predominance of cash indicates an opportunity for innovative business practice that revamps the purchasing process where consumers are heavy users of cash. To really displace cash, the electronic payment systems need to have some qualities of cash that current credit and debit cards lack. For example, cash is negotiable, meaning it can be given or traded to some-one else. Cash is legal tender, meaning the payee is obligated to take it. Cash

SA E commerce B.com VI semester.docx (D146772307)

292/390	SUBMITTED TEXT	157 WORDS	100%	MATCHING TEXT	157 WORDS

Also, cash can be held and used by anyone even those who don't have a bank account, and cash places no risk on the part of the acceptor that the medium of exchange may not be good. Now compare cash to credit and debit cards. First, they can't be given away because, technically, they are identification cards owned by the issuer and restricted to one user. Credit and debit cards are not legal tender, given that merchants have the right to refuse to accept them. Nor are credit and debit cards bearer instruments; their usage requires an account relationship and authorization system. Similarly, checks require either personal knowledge of the payer or a check guarantee system. Hence, to really create a novel electronic payment method, we need to do more than recreate the convenience that is offered by credit and debit cards. We need to develop e-cash that has some of the properties of cash. 7.5

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293/390	SUBMITTED TEXT	130 WORDS	90%	MATCHING TEXT	130 WORDS

Specifically, e-cash must have the following four properties: monetary value, interoperability, irretrievability, and security. 1. E-cash must have a monetary value, bank authorized credit, or a bank-certified cashier's check. When e- cash created by one bank is accepted by others, reconciliation must occur without any problems. Stated, another way, e-cash without proper bank certification carries the risk that when deposited, it might be returned for insufficient funds. 2. E-cash must be interoperable-that is, exchangeable as payment for other e-cash, paper cash, goods or services, lines of credit, deposits in banking accounts, bank notes or obligations, electronic benefits transfers, and the like. Most e-cash proposals use a single bank. In practice, multiple banks are required with an international clearinghouse that handles the exchange-ability issues because all customers are not going to

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294/390	SUBMITTED TEXT	73 WORDS	97%	MATCHING TEXT	73 WORDS

the same bank or even be in the same country. 3. E-cash must be storable and retrievable. Remote storage and retrieval (e.g., from a telephone or personal communications device) would allow users to exchange e-cash (e.g., withdraw from and deposit into banking accounts) from home or office or while traveling. The cash could be stored on a remote computer's memory, in smart cards, or in other easily transported standard or special-purpose devices.

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295/390	SUBMITTED TEXT	56 WORDS	100%	MATCHING TEXT	56 WORDS

be easy to create counterfeit cash that is stored in a computer, it might be preferable to store cash on a dedicated device that cannot be altered. This device should have a suitable interface to facilitate personal authentication using passwords or other means and a display so that the user can view the card's contents.

SA 178E1210-Ecommerce Application & Securities.pdf (D165202930)

296/390	SUBMITTED TEXT	118 WORDS	97%	MATCHING TEXT	118 WORDS

pocket-sized electronic wallet. 4. E-cash should not be easy to copy or tamper with while being exchanged; this includes preventing or detecting duplication and double-spending. Counterfeiting poses a particular problem, since a counterfeiter may, in the Internet environment, be anywhere in the world and consequently be difficult to catch without appropriate international agreements. Detection is essential in order to audit whether prevention is working. Then there is the tricky issue of double spending. For instance, you could use your e-cash simultaneously to buy something in Japan, India, and England. Preventing double spending from occurring is extremely difficult if multiple banks are involved in the transaction. For this reason, most systems rely on post-fact detection and punishment.

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297/390	SUBMITTED TEXT	182 WORDS	99%	MATCHING TEXT	182 WORDS

CASH IN ACTION Electronic cash is based on cryptographic systems called “digital signatures”. This method involves a pair of numeric keys (very large integers or numbers) that work in tandem: one for locking (or encoding) and the other for unlocking (or decoding). Messages encoded with one numeric key can only be decoded with the other numeric key and none other. The encoding key is kept private and the decoding key is made public. By supplying all customers (buyers and sellers) with its public key, a bank enables customers to decode any message (or currency) encoded with the bank’s private key. If decoding by a customer yields a recognizable message; the customer can be fairly confident that only the bank could have encoded it. These digital signatures are as secure as the mathematics involved and have proved over the past two decades to be more resistant to forgery than handwritten signatures. Before e-cash can be used to buy products or services, it must be procured from a currency server. 7.7 PURCHASING E-CASH FROM CURRENCY SERVERS The purchase of e cash from an

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298/390	SUBMITTED TEXT	71 WORDS	88%	MATCHING TEXT	71 WORDS

currency server (or bank) involves two steps: 1. Establishment of an account and 2. Maintaining enough money in the account to back the purchase. Some customers might prefer to purchase e-cash with paper currency, either to maintain anonymity or because they don't have a bank account. Currently, in most e-cash trials all customers must have an account with a central on-line bank. This is overly restrictive for international use and

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299/390	SUBMITTED TEXT	223 WORDS	99%	MATCHING TEXT	223 WORDS

transactions, for customers should be able to access and pay for foreign services as well as local services. To support this access, e-cash must be available in multiple currencies backed by several banks. A service provider in one country could then accept tokens of various currencies from users in many different countries, redeem them with their issuers, and have the funds transferred back to banks in the local country. A possible solution is to use an association of digital banks similar to organizations like VISA to serve as a clearinghouse for many credit card issuing banks. And finally, consumers use the e-cash software on the computer to generate a random number, which serves as the "note." In exchange for money debited from the customer's account, the bank uses its private key to digitally sign the note for the amount requested and transmits the note back to the customer. The network currency server, in effect, is issuing a "bank note," with a serial number and a dollar amount. By digitally signing it, the bank is committing itself to back that note with its face value in real dollars. This method of note generation is very secure, as neither the customer (payer) nor the merchant (payee) can counterfeit the bank's digital signature (analogous to the watermark in paper currency). Payer and payee can verify

SA CMP513-Ecommerce technology-R.pdf (D164968100)

300/390	SUBMITTED TEXT	192 WORDS	99%	MATCHING TEXT	192 WORDS

knows the bank's public key. The bank is protected against forgery, the payee against the bank's refusal to honor a legitimate note, and the user against false accusations and invasion of privacy. How does this Process Work in Practice? In the case of DigiCash, every person using e-cash has an e-cash account at a digital bank (First Digital Bank) on the Internet. Using that account, people can withdraw and deposit e-cash. When an e-cash withdrawal is made, the PC of the e-cash user calculates how many digital coins of what denominations are needed to withdraw the requested amount. Next, random serial numbers for those coins will be generated and the blinding (random number) factor will be included. The result of these calculations will be sent to the digital bank. The bank will encode the blinded numbers with its secret key (digital signature) and at the same time debit the account of the client for the same amount. The authenticated coins are sent back to the user and finally the user will take out the blinding factor that he or she introduced earlier. The serial numbers-plus their signatures are now digital coins;

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301/390	SUBMITTED TEXT	138 WORDS	91%	MATCHING TEXT	138 WORDS

value is guaranteed by the bank. Electronic cash can be completely anonymous. Anonymity allows freedom of usage—to buy illegal products such as drugs or pornographic material or to buy legal product and services. This is accomplished in the following manner. When the e-cash software generates a note, it masks the original number or "blinds" the note using a random number and transmits it to a bank. The "blinding" carried out by the customer's software makes it impossible for anyone to link payment to payer. Even the bank can't connect the signing with the payment, since the customer's original note number was blinded when it was signed. In other words, it is a way of creating anonymous, untraceable currency. What makes it even more interesting is that users can prove unequivocally that they did or did not make

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302/390 **SUBMITTED TEXT** 22 WORDS **92%** **MATCHING TEXT** 22 WORDS

particular payment. This allows the bank to sign the "note" without ever actually knowing how the issued currency will be used.

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303/390 **SUBMITTED TEXT** 17 WORDS **100%** **MATCHING TEXT** 17 WORDS

E-CASH Operational risk associated with e-cash can be mitigated by imposing constraints, such as limits on:

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304/390 **SUBMITTED TEXT** 11 WORDS **100%** **MATCHING TEXT** 11 WORDS

The time over which a given electronic money is valid,

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305/390 **SUBMITTED TEXT** 20 WORDS **92%** **MATCHING TEXT** 20 WORDS

can be stored on and transferred by electronic money, z The number of exchanges that can take place before

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306/390 **SUBMITTED TEXT** 56 WORDS **87%** **MATCHING TEXT** 56 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success. 117

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Elias. M. Awad, Electronic Commerce, Prentice Hall of India Pvt. Ltd. 2002. Efraim Turban, Jae Lee, David King, H. Michael Chung, Electronic Commerce – A Managerial Perspective, Addison-Wesley, 2001. Elias M Award, Electronic

Elias. M. Awad, Electronic Commerce, Prentice Hali of India pvt. Ltd.,2oo2. Efraim Turban, Jae Lee, David King, H. Michael Chung, Electronic Commerce - A Managerial perspectioe, Addison-1Vesley, 200 1. Elias M Award, Electronic

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309/390	SUBMITTED TEXT	33 WORDS	75%	MATCHING TEXT	33 WORDS

the Internet 8.5 Let us Sum up 8.6 Keyword 8.7 Questions for Discussion 8.8 Suggested Readings 8.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to: z Explain

the Consumer 7.6 Let us Sum up 7.7 Ke1'Questions for Discussion 7.9 Suggested Readings 7.0 AIMS AND OBJECTTVES After studying this lesson, you will be able to: o Explain

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310/390	SUBMITTED TEXT	133 WORDS	96%	MATCHING TEXT	133 WORDS

People put lot of pages on their first website, which may have many pages and it is very common mistake people do of dumping all the web pages into a single directory. It is learned quickly that one need to organize the site both logically and with multiple directories, one for each section. Here's a typical small-site structure: Figure 8.1: Structure of a Website However, this site layout is only suggestive and not prescriptive. Get a blank piece of paper and begin to lay out what the website should look like, with similar functions grouped together. Don't be afraid to create multiple subdirectories to keep your site organized. When you're setting up newsletter archives, for example, create a directory for each year of issues so a single directory doesn't get too

People put lot of pages on their first website, which may have many pages and it is very common mistake people do of dumping all the web pages into a single directory. It is learned quickly that one need to organize the site both logically and with multiple directories, one for each section. Here's a typical small-site structure : Ro{ffiSLrds F,S Figure 10.1: Structure of a lVebsite However, this site layout is only suggestive and not prescriptive. Get a blank piece of paper and begin to lay out what the website should look like, with similar functions grouped together. Don't be afraid to create multiple subdirectories to keep your site organized. \(hen you're setting up newsletter archives, for example, create a directory for each year of issues so a single directory doesn't get too

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311/390	SUBMITTED TEXT	34 WORDS	100%	MATCHING TEXT	34 WORDS

cluttered. Remember, you're not designing for just the present moment, but for the growth your site may undergo over the next two or three years. 122 122

cluttered. Remember, you're not designing for just the present moment, but for the growth your site may undergo over the next two or three years.

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312/390	SUBMITTED TEXT	72 WORDS	87%	MATCHING TEXT	72 WORDS

Home page should provide a statement of exactly what company or organization does. Preparing a Unique Selling Proposition (USP) for your company is a great way to begin. You may be amazed at how many websites don't really tell us what they really do. We have to nose around trying to figure it out. That's stupid! State precisely what you do, and then provide links to the rest of your site

Home page should provide a statement of exactly what r company or organization does. Preparing a Unique Selling Proposition (IJSP) for your company is a great way to begin. You may b, ^i^rr{ ^t how many websites don't really tell us what they really do. \7e have to ,roi. around trying to figure it out. That's stupid! State precisely what you do, and then provide links to the rest of your"site ,

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313/390	SUBMITTED TEXT	62 WORDS	95%	MATCHING TEXT	62 WORDS

visitor to learn more. The site structure diagram should include product pages, landing pages, and an ordering system. The focused content and reciprocal linking pages must be designed to boost your search engine ranking. In the section "About the Company" is sure to tell your organization's story. Big companies spend millions to build confidence through brand name familiarity. Small businesses

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314/390	SUBMITTED TEXT	37 WORDS	95%	MATCHING TEXT	37 WORDS

their story, often illustrated with photos, to help visitors understand and trust them. If you have a passion about what you do, tell your visitors about it in this section! Here's where a local business or

their story, often illustrated with photos, to help visitors understand and trust them. If you have a passion abour what you do, tell your visitors about it in this section! Here's where a local business or

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315/390	SUBMITTED TEXT	15 WORDS	100%	MATCHING TEXT	15 WORDS

will include a map and driving directions to help people find them. 8.2.5

will include a map and driving directions to help people find them.

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316/390	SUBMITTED TEXT	50 WORDS	87%	MATCHING TEXT	50 WORDS

After laying out the design of the website, you can see how important a good navigation system is. One of the chief complaints that visitors have is that they can't find the content they're looking for. The larger your site, the more important redundant navigation systems are more systems

After laying out the design of the website, you can see how imponant a good navigation sysrem is. One of the chief complaints that visitors have is that they can't find the .ort.rrt they're looiling for. The larger your site,_the more important redundant navigation systems are - more systems

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317/390	SUBMITTED TEXT	20 WORDS	92%	MATCHING TEXT	20 WORDS

think you might need. Here are some of the basic systems and a few you might not have thought

think you might need. Here are some of the basic systems and a few you might nor have thought

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318/390	SUBMITTED TEXT	117 WORDS	74%	MATCHING TEXT	117 WORDS

Left-side menu lists the various sections of your site, and perhaps some of the subsections, too. z Tabs near the top of the webpage help the visitor quickly see the most important sections of your site. This facilitates browsing. z Search the site or the product database. Larger sites need a search feature so visitors don't get lost. z 10 most common gifts, etc. z View today's specials or recent news releases. z Bottom links provide hypertext links to all the sectional pages. z Site map shows the structure and has links to every page (or sectional page). Except for the very smallest five- or six-page sites, we encourage you

Left-side menu lists the various sections of your site, and perhaps some of the subsections, too. T{s 1ea1 the top of the webpage help the visitor quickly see the most imporranr secrions of your site. This facilitates browsing Search the site or the product database. Larger sites need a search feature so visitors don't get lost. 10 most common gifts, etc. View today's specials or recent news releases. Bottom links provide hypertext links to all the sectional pages. site map shows the srrucrure and has links to every page (or secrional page). Except for the very smallest fiye- or six-page sites, we encourage you

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319/390	SUBMITTED TEXT	28 WORDS	83%	MATCHING TEXT	28 WORDS

money needs to be redeposit with a bank or financial institution, z The number of such transactions that can be made during a given period of time.

SA CMP513-Ecommerce technology-R.pdf (D164968100)

320/390	SUBMITTED TEXT	97 WORDS	85%	MATCHING TEXT	97 WORDS

implement two or more of these systems. Over-kill, that's the ticket. What may be obvious to you and your designer after looking at the site for weeks may not be obvious at all to your visitor. Each separate navigation system gives her another opportunity to find what she's looking for. If you're a do-it-yourselfer, consider using a free search engine for your search function. It is essential to mention that certain websites are "button happy." They have graphic buttons down the left side of the page and across the top. They may look nice, but there's

implement two or more of these systems. Over-kill, that's the ticket. 'What may be obvious to you and yo.rr designer after looking at the site for weeks may not be obvious at all to your visitor. Each separare navigatiln system gives her another opponunity to find what she's looking for. If you're a do-it-yourr"lf.r, consider using a free search engine for your search function. It is essential to mention that certain websites are "burron hrppy." They have graphic buftons down the left side of the page and across the top. They may look nice, but tirere's "1

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321/390	SUBMITTED TEXT	128 WORDS	92%	MATCHING TEXT	128 WORDS

in download time. There's a strong trend on high traffic sites toward text menus made with HTML characters, not GIF images. Look at a text menu you admire and study the HTML by viewing the source. Text is good; buttons are bad – especially when overdone. Got it. Finally, we would like to say a word about "frames," a kind of HTML menu that lists page names in a window on the left side that scrolls up and down independently of the content window on the right. Website designers used to love them, until they discovered that they cripple a website's marketing potential. Insist that your site developer not use frames! Instead of using frames, set up your navigation system with Server Side Includes (SSIs).

in download time. There's a strong trend on high traffic sites toward text menus made with Hfllf characters, not GIF images' Look at a text menu you admire and study the HTML by viewing the source. Text is good; buttons are bad - especially when overdone. Got it? Finally, we would like to say a word about "frames," a kind of HTML menu that lists page names in a window on the left side that scrolls up and down independently of the contenr window-oi the right. \flebsite designers used to love them, until they discovered that they cripple a websire's marketing Potential. Insist that your site developer not use frames! Instead of using frames, ser up your navigation system with Server Side Includes (SSIs).

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322/390	SUBMITTED TEXT	32 WORDS	95%	MATCHING TEXT	32 WORDS

If you have a complex site, we recommend that you employ a professional website designer to set up your navigation system – even if you do all the rest. Leverage professional

If you have a comPlex site, we recommend that you employ a professional website designer to ser up your navigation system - even if you do all the rest. Leverage professional

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323/390	SUBMITTED TEXT	107 WORDS	78%	MATCHING TEXT	107 WORDS

Every business site and many organization sites want Most Wanted Response (MWR). Your most wanted response is probably one of the chief purposes you listed under Point #1 (above). For many business sites, the purpose is: z To sell a product, z To have the visitor go through an affiliate link to buy a product on another site, or z To generate contact information for a future lead or follow-up. For organizations, success may be measured in memberships or subscriptions. Whatever your MWR, you must work to optimize responses. Good sales pages result in a high ratio of visitors to sales – called

Every business site and_-Ty organization sites wanr Most Wanted Response QvISfR). your Most 107anted Response is probably one of the chief purposes you listed under Point i (abo""). For many business sites, the purpose is 1. To sell a product, 2. To have the visitor go through an affiliate link to buy a produfi on another sire, or 3. To generate contacr information for a future lead or follow-up. For organizations, success may be measured in memberships or subscriptions. r$Tharever your M\rR, you must work to optimize responses. Gogd sales pages result in a high ratio of visitors to sales - called

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324/390	SUBMITTED TEXT	30 WORDS	77%	MATCHING TEXT	30 WORDS

conversion rate." A typical site might have a conversion rate of 3% to 5%, some higher and many lower. Over the past few years, marketers have developed the art

conversion rare." A typical site might have a conversion rate of 3o/o to 5olo, Sorl€ higher and many lower. Over the past f; years, marketers have developed the art

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325/390	SUBMITTED TEXT	61 WORDS	86%	MATCHING TEXT	61 WORDS

your site. Your profit is closely related to (a) the cost of the click and (b) the conversion rate of the "landing page," that is, the sales page to which you direct interested shoppers. To scientifically and systematically increase your conversion rate to the maximum, you must carefully track sales percentages for each product your sell. Then make incremental changes

your site. Your profit is ciosely related to (a) the cost of the click and (b) the conversion rate of the "ianding p2B€," that is, the sales page to which you direct interested shoppers. To scientifically and systematically increase your conversion rare to the maximum, you musr carefully track sales percentages for each product your sell. Then make incremental changes

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326/390	SUBMITTED TEXT	22 WORDS	90%	MATCHING TEXT	22 WORDS

the landing page or the order system and see if the conversion rate rises or falls. Over a period of careful

the landing page or the order system and see if the conversion rate rises or falls. Over a p.riod of careful

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327/390	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS

Larger sites need a search feature so visitors don't get lost.

Larger sites need a search feature so visitors don't get lost. 10

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328/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

Bottom links provide hypertext links to all the sectional pages.

Bottom links provide hypertext links to all the sectional pages.

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329/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

sales pages result in a high ratio of visitors to sales - called

sales pages result in a high ratio of visitors to sales - called

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330/390	SUBMITTED TEXT	22 WORDS	92%	MATCHING TEXT	22 WORDS

Efraim Turban, Jae Lee, David King, H. Michael Chung, Electronic Commerce – A Managerial Perspective, Addison-Wesley, 2001. Elias M Award, Electronic

Efraim Turban, Jae Lee, David King, H. Michael Chung, Electronic Commerce - A Managerial perspectioe, Addison-1Vesley, 200 1. Elias M Award, Electronic

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331/390	SUBMITTED TEXT	20 WORDS	100%	MATCHING TEXT	20 WORDS

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003.

vision to Fulfilment, 3rd Edition, pHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing,3rd Edition, Pearson Education, 2003.

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332/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 9.12 Keywords 9.13 Questions for Discussion 9.14 Suggested Readings 9.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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333/390	SUBMITTED TEXT	30 WORDS	40%	MATCHING TEXT	30 WORDS

Web-based technologies. Web based business methods enable companies to link their internal and external data processing systems more efficiently and flexibly, to work more closely with suppliers and partners,

web technologies. E-Business allows companies to link their internal and external processes more efficiently and effectively, and work more closely with suppliers and partners

W https://www.grin.com/document/280494

334/390	SUBMITTED TEXT	52 WORDS	87%	MATCHING TEXT	52 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce P.T.Joseph , E:cotttfixerce- A Managerinl Perspectioe G.Winfield Treese & Lawrence C.Stewart, Designing Systems for lnternet Commerce Kamelesh K Bajaj Debjani Nag, E commerce The Cutting Edge of Business Dr.Ravi Kalakota, Marcia Robinson, E Business Road Map for Success

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335/390	SUBMITTED TEXT	24 WORDS	100%	MATCHING TEXT	24 WORDS

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 149

vision to Fulfilment, 3rd Edition, pHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing,3rd Edition, Pearson Education, 2003.

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336/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 10.10 Keywords 10.11 Questions for Discussion 10.12 Suggested Readings 10.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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337/390	SUBMITTED TEXT	106 WORDS	86%	MATCHING TEXT	106 WORDS

e-Commerce 10.12 SUGGESTED READINGS Kienam, Managing Your E-Commerce Business, Prentice Hall of India, New Delhi. Kosiur, Understanding E-commerce, Prentice Hall of India, New Delhi. Kalakota, Whinston, Frontiers of Electronic Commerce, Addison Wesley. Schneider P. Grey, Perry T. James, E-Commerce, Thomson Learning, Bombay. Shurety, E-business with Net Commerce (with CD), Addison Wesley. Napier, Creating a winning E-business, Vikas Publishing House, New Delhi. Didar Singh, E-Commerce for Manager, Vikas Publishing House, New Delhi. Whitely David, Electronic Commerce, TMH, New Delhi. Efraim Turban, Jay Lee, David King & h. Michael Chang, Electronic Commerce; A Managerial Perspective, Pearson Education, New Delhi. 159

E-Commerce 13 1.12 SUGGESTED READINGS Kienam, ManagingYour E-commerce Business, prentice Hall of India, New Delhi. Kosirir, Understanding E-commerce, Prentice Hall of India, New Delhi. Kalakota, \(hinston, Frontiers of Electronic commerce, Addison wesley. Schneider P. Grey, Perry T. James, E-commerce, Thomson Learning, Bombay. Shurety, E-business uitb Net Commerce (with CD), Addison Sflesley. Napier, creating a uinning E-business,yikas publishing House, New Delhi. Didar Singh, E commerce for Manager, vikas publishing House, New Delhi. Vhitely David, Electronic Commerce,TMH, New Delhi. Efraim Turban, Jay Lee, David King & H. Michael Chang, Electronic Commerce; A Managerial perspective, Pearson Education, New Delhi.

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338/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 11.9 Keywords 11.10 Questions for Discussion 11.11 Suggested Readings 11.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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339/390	SUBMITTED TEXT	69 WORDS	90%	MATCHING TEXT	69 WORDS

Information security is provided on computers and over the Internet by a variety of methods. A simple but straightforward security method is to only keep sensitive information on removable storage media like floppy disks. But the most popular forms of security all rely on encryption, the process of encoding information in such a way that only the person (or computer) with the key can decode it. 11.4.1

Information security is provided on computers and over the Internet by a variety of methods. A simple but straightforward security method is to only keep sensitive information on removable storage media like portable flash memory drives or external hard But the most popular forms of security all rely on encryption, the process of encoding information in such a way that only the person (or computer) with the key can decode it. 5.3

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340/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

ensure privacy by keeping information hidden from anyone for whom it is not

ensure privacy by keeping information hidden from anyone for whom it is not

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341/390	SUBMITTED TEXT	58 WORDS	94%	MATCHING TEXT	58 WORDS

Decryption is the reverse of encryption; it is the transformation of encrypted data back into an intelligible form. Encryption and decryption generally require the use of some secret information, referred to as a key. For some encryption mechanisms, the same key is used for both encryption and decryption; for other mechanisms, the keys used for encryption

Decryption is the reverse of encryption; it is the rransformation of encrypted data back into an intelligible form. Encryption and decryption generally require the use of some secret information, referred to as a key. For some encryPtion mechanisms, the same key is used for both encryption and i..for other mechanisms, the keys used for encryption ,

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342/390	SUBMITTED TEXT	44 WORDS	82%	MATCHING TEXT	44 WORDS

different. Today's cryptography is more than encryption and decryption. Authentication is as fundamentally a part of our lives as privacy. We use authentication throughout our everyday lives – when we sign our name to some document for instance – and, as we

different. Today's cryptography is more than encryption and decryption. Authentication is as fundamentally a part of our lives as privacy. \7e use authenticatio, th.orrihout our everyd,ay lives - when we sign our name to some document for instance - and, as we

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343/390	SUBMITTED TEXT	87 WORDS	79%	MATCHING TEXT	87 WORDS

a world where our decisions and agreements are communicated electronically, we need to have electronic techniques for providing authentication. Cryptography provides mechanisms for such procedures. A digital signature binds a document to the possessor of a particular key, while a digital timestamp binds a document to its creation at a particular time. These cryptographic mechanisms can be used to control access to a shared disk drive, a high security installation, or a pay-per-view TV channel. 164 164

a world where our decisions and T:::T_:T, are communicated electronically, we need to have electronic techniques for prorridirg authentrcatlon. Cryptography provides mechanisms for such procedures. A digiral signature binds a documenr to the possessor of a particular. key, while a digital timestamp binds a do..r-".rrt to its creation ar a particular time'. These cryptographic mechanisms can be used to .orrtrol access to a shared disk drive, " frigf, security installation, or a pay-per-view TV channel.

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344/390	SUBMITTED TEXT	27 WORDS	88%	MATCHING TEXT	27 WORDS

of cryptography encompasses other uses as well. With just a few basic cryptographic tools, it is possible to build elaborate schemes and protocols that allow us

of cryptography encompasses other uses as well. \with;'ust a few basic cryptographic tools, it is possible to build elaborate schemes and protocols thar allow us

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345/390	SUBMITTED TEXT	52 WORDS	87%	MATCHING TEXT	52 WORDS

prove we know certain information without revealing the information itself and to share a secret quantity in such a way that a subset of the shares can reconstruct the secret. While modern cryptography is growing increasingly diverse, cryptography is fundamentally based on problems that are difficult to solve. A problem

Prove we know certain information without revealing the information itself"and to share a secret quantity in such a way that a subset of the shares .rr, ,.Jorr,*ct the secrer. \rryl" modern cryptographv is growing increasingly diverse, cryptography is fundamentally based on problems that are difficult to solve. A problem -

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346/390	SUBMITTED TEXT	23 WORDS	86%	MATCHING TEXT	23 WORDS

secret knowledge, such as decrypting an encrypted message or signing some digital document. The problem may also be hard because it is

secret knowledge, such as.decrypting ^i "rrrypted message or signing some digital document. The problem may also be hard because it is

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347/390	SUBMITTED TEXT	32 WORDS	95%	MATCHING TEXT	32 WORDS

a message that produces a given hash value. Computer encryption is based on the science of cryptography, which has been used throughout history. Before the digital age, the biggest users of

a message rhat produces a given hash value. Computer encryPtion is based on the science of cryptography, which has been used throughout history' Before the digital age, the- biggest users of_..

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348/390	SUBMITTED TEXT	58 WORDS	78%	MATCHING TEXT	58 WORDS

military purposes. The existence of coded messages has been verified as far back as the Roman Empire. But most forms of cryptography in use these days rely on computers, simply because a human-based code is too easy for a computer to crack. Most computer encryption systems belong in one of two categories. Broadly speaking, there are

military PurPoses. The existen." of coJed messages hm 6""i rr"riii"d as fJ back as the Roman Empire. But most forms of cryptography in use these days rely on compurers, simply because a human-based code is too easy for a computer to crack. Most computer encryPtion systems belong in one of two caregories. Broadly speaking, there are

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349/390	SUBMITTED TEXT	122 WORDS	98%	MATCHING TEXT	122 WORDS

Firewall If you have been using the Internet for any length of time, and especially if you work at a larger company and browse the Web while you are at work, you have probably heard the term firewall used. For example, you often hear people in companies say things like, “I can’t use that site because they won’t let it through the firewall.” If you have a fast Internet connection into your home (either a DSL connection or a cable modem), you may have found yourself hearing about firewalls for your home network as well. It turns out that a small home network has many of the same security issues that a large corporate network does. You can use a firewall

Firewall If you have been using the Internet for any length of time, and especially if you work at a larger company and browse the \(eb while you are at work, you have probably heard the term firewall used. For example, you often hear people in companies say things like, "I can't use that site because they won't let it through the firewall." If you have a fast Internet connection into your home (either a DSL connection or a cable modem), you may have found yourself hearing about firewalls for your home network as well. It turns out that a small home network has many of the same security issues that a large corporate network does. You can use a firewall

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350/390	SUBMITTED TEXT	23 WORDS	93%	MATCHING TEXT	23 WORDS

sites and potential hackers. Basically, a firewall is a barrier to keep destructive forces away from your property. In fact, that’s why

sites and potential hackers. Basically, a firewall is a barrier to keep destructive forces away from your propeny. In fact, that's why

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351/390	SUBMITTED TEXT	12 WORDS	95%	MATCHING TEXT	12 WORDS

and to better satisfy the needs and expectations of their customers.

and partners to better satisfy the needs and expectations of their customers,

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352/390	SUBMITTED TEXT	302 WORDS	96%	MATCHING TEXT	302 WORDS

called a firewall. Its job is similar to a physical firewall that keeps a fire from spreading from one area to the next. As you read through this article, you will learn more about firewalls, how they work and what kinds of threats they can protect you from. A firewall is simply a program or hardware device that filters the information coming through the Internet connection into your private network or computer system. If an incoming packet of information is flagged by the filters, it is not allowed through. Let's say that you work at a company with 500 employees. The company will therefore have hundreds of computers that all have network cards connecting them together. In addition, the company will have one or more connections to the Internet through something like T1 or T3 lines. Without a firewall in place, all of those hundreds of computers are directly accessible to anyone on the Internet. A person who knows what he or she is doing can probe those computers, try to make FTP connections to them, try to make telnet connections to them and so on. If one employee makes a mistake and leaves a security hole, hackers can get to the machine and exploit the hole. With a firewall in place, the landscape is much different. A company will place a firewall at every connection to the Internet (for example, at every T1 line coming into the company). The firewall can implement security rules. For example, one of the security rules inside the company might be: Out of the 500 computers inside this company, only one of them is permitted to receive public FTP traffic. Allow FTP connections only to that one computer and prevent them on all others. A company can set up rules like this for FTP servers,

called a firewall. Its job is similar to a physical firewall that keeps a fire from spreading from one area to the next. As you read through this article) you will learn more about firewalls, how they work and what kinds of threats they can protect you from. A firewall is simply a programme or hardware device that filters the information coming through the Internet connection into your private network or computer system. If an incoming packet of information is flagged by the filters, it is not allowed through. Let's say that you work at a company with 500 employees. The company will therefore have hundreds of computers that all have network cards connecting them together. In addition, the company will have one or more connections to the Internet through something like T1 or T3 lines. Vithout a firewall in place, all of those hundreds of computers are directly accessible to anyone on the Internet. A person who knows what he or she is doing can probe thi-,se computers, try to make FTP connections to them, try to make telnet connections to them and so on. If one employee makes a misrake and leaves a security hole, hackers can get to the machine and exploit the hole. \X/ith a firewall in place, the landscape is much different. A company will place a firewall at eyery connecrion to the Internet (for example, at every T1 line coming into the company). The firewall can implement security rules. For example, one of the security rules inside the company might be: Out of the 500 computers inside this company, only one of them is permitted to receive public FTP traffic. Allow FTP connections only to that one computer and prevent them on all others. A company can set up rules like this for FTP servers,'

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353/390	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

servers, Telnet servers and so on. In addition, the company can control how

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354/390	SUBMITTED TEXT	51 WORDS	92%	MATCHING TEXT	51 WORDS

connect to Web sites, whether files are allowed to leave the company over the network and so on. A firewall gives a company tremendous control over how people use the network. Firewalls use one or more of three methods to control traffic flowing in and out of the network:

connect to \Web sites, whether files are allon'ed to leave the company orrer the network and so on. A firewall gives a company tremendous control over how people use the network. Firewalls use one or more of three methods to control traffic flowing in and out of the network: .

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355/390	SUBMITTED TEXT	32 WORDS	100%	MATCHING TEXT	32 WORDS

filtering: Packets (small chunks of data) are analyzed against a set of filters. Packets that make it through the filters are sent to the requesting system and all others are discarded.

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356/390	SUBMITTED TEXT	84 WORDS	98%	MATCHING TEXT	84 WORDS

Information from the Internet is retrieved by the firewall and then sent to the requesting system and vice versa. z Stateful inspection: A newer method that doesn't examine the contents of each packet but instead compares certain key parts of the packet to a database of trusted information. Information traveling from inside the firewall to the outside is monitored for specific defining characteristics, then incoming information is compared to these characteristics. If the comparison yields a reasonable match, the information is allowed through.

Information from the Internet is retrieved by the firewall and then sent to the requesting system and vice versa. o Stateful inspection: A newer method that doesn't examine the contents of each packet but instead compares certain key parts of the packet to a database of trusted information. Information traveling from inside the firewall to the outside is monitored for specific defining characteristics, then incoming information is compared to these characteristics. If the comparison yields a reasonable match, the information is allowed through.

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357/390	SUBMITTED TEXT	15 WORDS	78%	MATCHING TEXT	15 WORDS

Otherwise it is discarded "What It Protects You From". There are many creative ways

otherwise it is discarcied what it protects you from there are many crearive ways

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358/390	SUBMITTED TEXT	129 WORDS	86%	MATCHING TEXT	129 WORDS

someone is able to connect to your computer and control it in some form. This can range from being able to view or access your files to actually running programs on your computer. z Application backdoors: Some programs have special features that allow for remote access. Others contain bugs that provide a backdoor, or hidden access that provides some level of control of the program. z SMTP session hijacking: SMTP is the most common method of sending e-mail over the Internet. By gaining access to a list of e-mail addresses, a person can send unsolicited junk e-mail (spam) to thousands of users. This is done quite often by redirecting the e-mail through the SMTP server of an unsuspecting host, making the actual sender of the spam difficult to

someone is able to connect to your computer and control it in some form. This can range from being able to view or access your files to actually running prografirmes on your compurer. ' Applimtian batkdaorc: Some programmes have special features that allow for remote access. Others contain bugs that provide a backdoor, or hidden access that provides some level of control of the programme. ' SMTP session hiiacking: SMTP is the most common method of sending e-mail over the Inrerner. By gaining access to a list of e-mail addresses, a person can send unsolicited junk e-mail (spam) to thousands of users. This is done quite often by redirecting the e-mail througl the SMTp'r.*", of an unsuspecting host, making the actual sender of the spam difficult to

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359/390	SUBMITTED TEXT	22 WORDS	92%	MATCHING TEXT	22 WORDS

applications, some operating systems have backdoors. Others provide remote access with insufficient security controls or have bugs that an experienced hacker

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360/390	SUBMITTED TEXT	15 WORDS	78%	MATCHING TEXT	15 WORDS

Denial of service: You have probably heard this phrase used in news reports on

Denial of sentice: You have probably heard this phrase used in news reporrs on

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361/390	SUBMITTED TEXT	98 WORDS	87%	MATCHING TEXT	98 WORDS

happens is that the hacker sends a request to the server to connect to it. When the server responds with an acknowledgement and tries to establish a session, it cannot find the system that made the request. By inundating a server with these unanswerable session requests, a hacker causes the server to slow to a crawl or eventually crash. z E-mail bombs: An e-mail bomb is usually a personal attack. Someone sends you the same e-mail hundreds or thousands of times until your e-mail system cannot accept any more messages. z Macros: To simplify complicated procedures, many

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362/390	SUBMITTED TEXT	28 WORDS	100%	MATCHING TEXT	28 WORDS

as a macro. Hackers have taken advantage of this to create their own macros that, depending on the application, can destroy your data or crash your computer.

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363/390	SUBMITTED TEXT	26 WORDS	94%	MATCHING TEXT	26 WORDS

Viruses: Probably the most well-known threat is computer viruses. A virus is a small program that can copy itself to other computers. This way it

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364/390	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

the next. Viruses range from harmless messages to erasing all

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365/390	SUBMITTED TEXT	45 WORDS	77%	MATCHING TEXT	45 WORDS

Spam: Typically harmless but always annoying, spam is the electronic equivalent of junk mail. Spam can be dangerous though. Quite often it contains links to Web sites. Be careful of clicking on these because you may accidentally accept a cookie that provides a backdoor

Spam: Typicallv harmless but always annoying, spam is the electronic equivalent of junk mail. Spam can be dangerous though. Quite often it containi links to \7eb sites. Be careful of .li.kirrg o, ,'h"r" because you may accidentally accept a cookie that provides a backdoor

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366/390	SUBMITTED TEXT	44 WORDS	95%	MATCHING TEXT	44 WORDS

Redirect bombs: Hackers can use ICMP to change (redirect) the path information takes by sending it to a different router. This is one of the ways that a denial of service attack is set up. 166 166

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367/390	SUBMITTED TEXT	179 WORDS	88%	MATCHING TEXT	179 WORDS

Source routing: In most cases, the path a packet travels over the Internet (or any other network) is determined by the routers along that path. But the source providing the packet can arbitrarily specify the route that the packet should travel. Hackers sometimes take advantage of this to make information appear to come from a trusted source or even from inside the network! Most firewall products disable source routing by default. Some of the items in the list above are hard, if not impossible, to filter using a firewall. While some firewalls offer virus protection, it is worth the investment to install anti-virus software on each computer. And, even though it is annoying, some spam is going to get through your firewall as long as you accept e-mail. The level of security you establish will determine how many of these threats can be stopped by your firewall. The highest level of security would be to simply block everything. Obviously that defeats the purpose of having an Internet connection. But a common rule of thumb is to block everything,

Source routing: In most cases, the path a packet travels over the Internet (or any other network) is determined by the routers along that path. But the source providing ,ir. p".k", can arbhrarily specify the route that the packet should travel. Hackers ,o-"ii*., trkl ,drrantage of this to make information aPPear to come from a trusted source or even from inside the network! Most firewall products disable source rouring by default. Some of the items in the list above are hard, if not impossible, to filter using a firewall. \7hile some firewalls offer virus protection, it is worth the inveitmenr to install anti-virus sofrware on each comPuter. And, even though it is annoying, some spam is going to get through your firewall as long as you accept e-mail. 144 E-Commerce Applications M.S. University - D.D.C.E. The level of security you establish will determine how many of these threats can be stopped by your firewall. The highest level of security would be to simply block everything. Obviously that defeats the purpose of having an Internet connection. But a common rule of thumb is to block eyerything,

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368/390	SUBMITTED TEXT	198 WORDS	96%	MATCHING TEXT	198 WORDS

then begin to select what types of traffic you will allow. You can also restrict traffic that travels through the firewall so that only certain types of information, such as e-mail, can get through. This is a good rule for businesses that have an experienced network administrator that understands what the needs are and knows exactly what traffic to allow through. For most of us, it is probably better to work with the defaults provided by the firewall developer unless there is a specific reason to change it. One of the best things about a firewall from a security standpoint is that it stops anyone on the outside from logging onto a computer in your private network. While this is a big deal for businesses, most home networks will probably not be threatened in this manner. Still, putting a firewall in place provides some peace of mind. 11.4.3 Application Gateway An application gateway is an application program that runs on a firewall system between two networks. It is also known as application proxy or application-level proxy. When a client program establishes a connection to a destination service, it connects to an application gateway, or proxy.

then begin to select what types of traffic you will allow. You can also restrict traffic that travels through the firewall so that only certain types of information, such as e-mail, can get through. This is a good rule for businesses that have an experienced network administrator that understands what the needs are and knows exactly what traffic to allow through. For most of us, it is probably better to work with the defaults provided by the firewall developer unless there is a specific reason to change it. One of the best things about a firewall from a security standpoint is that it stops anyone on the outside from logging onto a computer in your private network. Vhile this is a big deal for businesses, most home networks will probably not be threatened in this manner. Still, putting a firewall in place provides some peace of mind. 10.3.3 Application Gateway An application gateway is an application programme that runs on a firewall system between tro.-i networks. It is also known as application proxy or application-level proxy. \When a client programme establishes a connection to a destination service, it connects to an application gateway, or proxy.

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369/390	SUBMITTED TEXT	125 WORDS	98%	MATCHING TEXT	125 WORDS

client then negotiates with the proxy server in order to communicate with the destination service. In effect, the proxy establishes the connection with the destination behind the firewall and acts on behalf of the client, hiding and protecting individual computers on the network behind the firewall. This creates two connections: one between the client and the proxy server and one between the proxy server and the destination. Once connected, the proxy makes all packet-forwarding decisions. Since all communication is conducted through the proxy server, computers behind the firewall are protected. While this is considered a highly secure method of firewall protection, application gateways require great memory and processor resources compared to other firewall technologies, such as stateful inspection. 11.4.4 Antivirus Software Antivirus software

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370/390	SUBMITTED TEXT	65 WORDS	95%	MATCHING TEXT	65 WORDS

computer programs that attempt to identify, neutralize or eliminate malicious software. Antivirus is so named because the earliest examples were designed exclusively to combat computer viruses; however most modern antivirus software is now designed to combat a wide range of threats, including worms, phishing attacks, rootkits, trojan horses and other malware. Antivirus software typically uses two different techniques to accomplish this: z Examining (scanning)

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371/390	SUBMITTED TEXT	49 WORDS	90%	MATCHING TEXT	49 WORDS

to look for known viruses matching definitions in a virus dictionary. z Identifying suspicious behavior from any computer program which might indicate infection. This technique is called heuristic analysis. Such analysis may include data captures, port monitoring and other methods. Most commercial antivirus software uses both

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372/390	SUBMITTED TEXT	15 WORDS	100%	MATCHING TEXT	15 WORDS

these approaches, with an emphasis on the virus dictionary approach. 167

these approaches, with an emphasis on the virus dictionary approach. 10.3.5

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373/390	SUBMITTED TEXT	48 WORDS	100%	MATCHING TEXT	48 WORDS

Regular Backups Each computer user has their responsibility to make regular backups to protect their computer data. The task of backing up the data found on your computer is often the most overlooked and “hardly ever done until its too late” action within the computer end-user community.

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374/390	SUBMITTED TEXT	22 WORDS	100%	MATCHING TEXT	22 WORDS

the software tools now available, it no longer is the arduous task that is once was a few years ago.

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375/390	SUBMITTED TEXT	98 WORDS	98%	MATCHING TEXT	98 WORDS

Once your system is in use, your next consideration should be to back up the file systems, directories, and files. Files and directories represent a significant investment of time and effort. At the same time, all computer files are potentially easy to change or erase, either intentionally or by accident. If you take a careful and methodical approach to backing up your file systems, you should always be able to restore recent versions of files or file systems with little difficulty. When a hard disk crashes, the information contained on that disk is destroyed. The only way

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376/390	SUBMITTED TEXT	116 WORDS	100%	MATCHING TEXT	116 WORDS

recover the destroyed data is to retrieve the information from your backup copy. There are several different methods of backing up. The most frequently used method is a regular backup, which is a copy of a file system, directory, or file that is kept for file transfer or in case the original data is unintentionally changed or destroyed. Another form of backing up is the archive backup; this method is used for a copy of one or more files, or an entire database that is saved for future reference, historical purposes, or for recovery if the original data is damaged or lost. Usually an archive is used when that specific data is removed from the

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377/390	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

Information security is provided on computers and over the Internet by a variety of methods.

Information security is provided on computers and over the Internet by a variety of methods.

W http://assets.vmou.ac.in/MCA23.pdf

378/390	SUBMITTED TEXT	26 WORDS	94%	MATCHING TEXT	26 WORDS

A firewall is simply a program or hardware device that filters the information coming through the Internet connection into your private network or computer system.

A firewall is simply a programme or hardware device that filters the information coming through the Internet connection into your private network or computer system.

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379/390	SUBMITTED TEXT	17 WORDS	100%	MATCHING TEXT	17 WORDS

The company will therefore have hundreds of computers that all have network cards connecting them together.

The company will therefore have hundreds of computers that all have network cards connecting them together.

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380/390	SUBMITTED TEXT	14 WORDS	88%	MATCHING TEXT	14 WORDS

A virus is a small program that can copy itself to other computers.

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381/390	SUBMITTED TEXT	27 WORDS	88%	MATCHING TEXT	27 WORDS

An application gateway is an application program that runs on a firewall system between two networks. It is also known as application proxy or application-level proxy.

An application gateway is an application programme that runs on a firewall system between tro.-i networks. It is also known as application proxy or application-level proxy. \

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382/390	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

Since all communication is conducted through the proxy server, computers behind the firewall are protected.

Since all communication is conducted through the proxy server, computers behind the firewall are protected. \

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383/390	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

Each computer user has their responsibility to make regular backups to protect their computer data.

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384/390	SUBMITTED TEXT	21 WORDS	100%	MATCHING TEXT	21 WORDS

Once your system is in use, your next consideration should be to back up the file systems, directories, and files.

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385/390	SUBMITTED TEXT	14 WORDS	76%	MATCHING TEXT	14 WORDS

is an application program that runs on a firewall system between two networks.

is an application programme that runs on a firewall system between tro.-i networks.

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386/390	SUBMITTED TEXT	52 WORDS	87%	MATCHING TEXT	52 WORDS

SUGGESTED READINGS Ravi Kalakota, Andrew Winston, Frontiers of Electronic Commerce. P.T. Joseph, E-Commerce–A Managerial Perspective. G. Winfield Treese & Lawrence C. Stewart, Designing Systems for Internet Commerce. Kamelesh K Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business. Dr. Ravi Kalakota, Marcia Robinson, E-Business Road Map for Success.

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387/390	SUBMITTED TEXT	29 WORDS	100%	MATCHING TEXT	29 WORDS

Vision to Fulfilment, 3rd Edition, PHI, 2006. Judy Strauss, Adel El-Ansary, Raymond Frost, E-Marketing, 3rd Edition, Pearson Education, 2003. 176 176

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388/390	SUBMITTED TEXT	28 WORDS	90%	MATCHING TEXT	28 WORDS

Let us Sum up 12.12 Keywords 12.13 Questions for Discussion 12.14 Suggested Readings 12.0 AIMS AND OBJECTIVES After studying this lesson, you will be able to:

Let us Sum up Keywords Questions for Discussion Suggested Readings 9.3 9.4 9.5 9.6 9.7 9.0 AIMS AND ECTIVES After studying this lesson, you will be able to:

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390/390	SUBMITTED TEXT	19 WORDS	100%	MATCHING TEXT	19 WORDS

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