Subject: E-COMMERCE **Credits: 4**

SYLLABUS

E-commerce and its Technological Aspects
Overview of developments in Information Technology and Defining E-Commerce: The scope of E commerce, Electronic Market, Electronic Data Interchange, Internet Commerce, Benefits and limitations of E-Commerce, Produce a generic framework for E-Commerce, Architectural framework of Electronic Commerce, Web based E Commerce Architecture.

Consumer Oriented E Commerce
E-Retailing: Traditional retailing and e retailing, Benefits of e retailing, Key success factors, Models of e retailing, Features of e retailing. E services: Categories of e-services, Web-enabled services, matchmaking services, Information-selling on the web, e entertainment, Auctions and other specialized services. Business to Business Electronic Commerce

Electronic Data Interchange: Benefits of EDI, EDI technology, EDI standards, EDI communications, EDI Implementation, EDI Agreements, EDI Security. Electronic Payment Systems, Need of Electronic Payment System: Study and examine the use of Electronic Payment system and the protocols used, Study Electronic Fund Transfer and secure electronic transaction protocol for credit card payment. Digital economy: Identify the methods of payments on the net – Electronic Cash, cheques and credit cards on the Internet.

Security in E Commerce
Threats in Computer Systems: Virus, Cyber Crime Network Security: Encryption, Protecting Web server with a Firewall, Firewall and the Security Policy, Network Firewalls and Application Firewalls, Proxy Server.

Issues in E Commerce
Understanding Ethical, Social and Political issues in E-Commerce: A model for Organizing the issues, Basic Ethical Concepts, Analyzing Ethical Dilemmas, Candidate Ethical principles Privacy and Information Rights: Information collected at E-Commerce Websites, The Concept of Privacy, Legal protections Intellectual Property Rights: Types of Intellectual Property protection, Governance.

Suggested Reading:

1. Elias. M. Awad, " Electronic Commerce", Prentice-Hall of India Pvt Ltd.

2. RaviKalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley.

3. Efraim Turban, Jae Lee, David King, H.Michael Chung, “Electronic Commerce–A ManagerialPerspective", Addison-Wesley.

4. Elias M Award, “Electronic Commerce from Vision to Fulfilment”, 3rd Edition, PHI,
Judy Strauss, Adel El-Ansary, Raymond Frost, “E-Marketing”, 3RDEdition, Pearson Education.

COURSE OVERVIEW

Introduction to E-commerce

Define E commerce

Brief history of E commerce

Forces fueling E-com

E-Com Vs E-Business

Challenges to traditional methods

E-business communities

Model for E-business

E-com industry framework

Information superhighway

Types of E-com

Road map for moving a business to E-business

E-business Trident

- E-SCM
- E-CRM
- E-RP

Transaction Security

Firewalls & N/W security

Type of firewall, security policies

Emerging firewall management issue

Transaction security

Types of online transactions

Requirement for online transactions

Encryption & transaction security

Secret –key Encryption

Public key Encryption

Implementation & management issues

WWW& security

Secure socket layers

Security & online web based banking

Electronic Payment System

Overview of E-payment system

Digital cash, properties

Electronic check & benefits

Online credit card system

Types of credit card payments

Secure electronic transactions(SET)

Other emerging financial instruments

Debit card & Point of scale(POS)

Debit card & E-benefit transfer

Smart cards

Electronic fund transfer

Intelligent agents

Different E-Transactions

E-com & Retailing

E-com & Online publishing

E Business Issues & Internet Marketing

Organizational issues

Implementation issues

Marketing issues

Internet marketing

Different stages of Internet marketing

Critical success factors for Internet marketing

E-COMMERCE

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LESSON 1:
INTRODUCTION TO E-COMMERCE

Welcome to the E-Commerce Tutorial. Would you like to be able to accept secure, real time credit card transactions on your web site? Well, here's how! This tutorial will show you how to get started in the complex and exciting world of Electronic Commerce

What is E-commerce?

E-commerce is abbreviated for Electronic Commerce. Its function is the transference of financial and other commerce related information using Information Technology and Telecommunications..

How Can My Company Benefit from E-commerce?

The key drivers for businesses to establish E-commerce are

- Access new markets and extend service offerings to customers
- Broaden current geographical parameters to operate globally
- Reduce the cost of marketing and promotion
- Improve customer service
- Strengthen relationships with customers and suppliers
- Streamline business processes and administrative functions

E-commerce is not Free

There are several costs associated with having a successful E-commerce site including:

Merchant Facility costs from the Bank

Gateway Fees – Bank or 3rd party

Transaction Fees – Bank or 3rd party

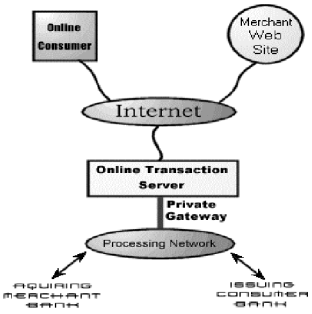
Software and security fees (not a requirement for everyone)

How Safe is E-commerce

Responsible credit card transactions happen under secure socket layer (SSL) that provides an encrypted channel between the website and the payment gateway. It is important to note Shopping cart and order forms need to operate under SSL Ask your provider to set this up for you. Most Internet credit card fraud has been caused by use of card numbers stored on machines accessible on the public Internet

It is extremely difficult to intercept and decrypt a credit card number in transit

You are more likely to have your number copied at a restaurant, café or retail outlet.



How E-commerce Works

The consumer moves through the internet to the merchant's web site. From there, he decides that he wants to purchase something, so he is moved to the online transaction server, where all of the information he gives is encrypted. Once he has placed his order, the information moves through a private gateway to a Processing Network, where the issuing and acquiring banks complete or deny the transaction. This generally takes place in no more than 5-7 seconds.

There are many different payment systems available to accommodate the varied processing needs of merchants, from those who have a few orders a day to those who process thousands of transactions daily. With the addition of Secure Socket Layer technology, E-Commerce is also a very safe way to complete transactions.

There are several basic steps involved in becoming Commerce Enabled.

Getting an Internet Merchant Bank Account

Web Hosting

Obtaining a Digital Certificate

Finding a Provider of Online Transactions

Creating or Purchasing a Shopping Cart Software

I am considering implementing E-commerce, what points should I take on board?

Research your market and its receptivity to E-Commerce

Know what your competitors are doing and learn from them

- Align business processes to support your online operation
- Establish resources to meet increased demand
- Commit to maintaining your site - the face of your business
- Have realistic expectations, it takes a while to get going

What do I need to get my E-commerce business going?

There are a few key things that need to be set up in order to operate an effective e-commerce business. These are

Product or service suitable for selling over the web

A dynamic website

Merchant account with your bank for Internet transactions

Online payment facility

Order fulfillment and dispatch systems

Where do I start to set up a merchant account with my bank?

You will need to contact your bank about your intentions to trade online. This will require them to generate a Merchant ID Number and/or Terminal ID number for you to use when registering with our Transaction Gateway and Logic Commerce. Before this will happen the bank will require you to fill out the relevant forms in regards to your business (ABN etc). There is usually a wait of two to three weeks before the Merchant ID/

Terminal ID will be sent to you by your bank. The Merchant ID/Terminal ID will cover the three main credit cards: Bank Card, MasterCard and Visa. To be able to offer a facility for other cards, such as American Express and Diners, you will have to contact these organisations direct.

Do I need a Merchant Identifier number as well as a Terminal Identifier number from my bank?
Yes. In most cases the Merchant ID and Terminal ID are the same number. But you will need to provide Logic Commerce with both numbers. It varies depending on your merchant bank, that is, the bank that will supply you with the account for internet based transactions.

Is the Merchant ID/Terminal ID different to the EFTPOS Merchant ID/Terminal ID that I currently have?
Yes. You will need to specify clearly to your bank that you will be using their Merchant ID/Terminal ID numbers for credit payments over the internet. The EFTPOS ID numbers are different and will not work.

What if my bank does not have the Online Merchant ID number/ Terminal ID number facility?
You can still remain with your bank and apply for the Merchant ID/Terminal ID with a different bank on the approval or guidance of your existing bank.

How do we apply for a Logic Commerce service?
Logic Commerce will send you a Merchant Bank Details Form after you express interest that you want to register with us. The form will request information such as your Merchant ID/ Terminal ID numbers, the account details with your acquiring bank (ie. where your Merchant ID/Terminal ID numbers are attached to), your ABN and your company address. When you fill out the form you either email it or fax it back to us. You will then be invoiced for the registration of the Payment Gateway. Once the payment has been received by Logic Commerce, we then register you with the Transaction Gateway. The time taken for this to occur is 24-48hrs. When the Transaction Gateway for your company is registered the development of your online payment facility using our software will be able to commence using the registered gateway for testing purposes. This will involve us forwarding you the relevant software. When we complete the development and testing of the website and you are happy with it, we then set it live. This process will also take 24-48 hours.

What happens after we register?
Members of Logic Commerce's support team will contact you and notify that your account has been established and testing can begin. A URL will be given for you to download the software and the instructions for you to implement the software on your website.

What do I do when I receive the Merchant and Terminal ID's from my bank?
On initial contact with the Logic Commerce sales team you will receive a Merchant Establishment Form. This form contains fields for you to enter in your Company Details, Contact Details, Bank Details and your Merchant and Terminal ID's. Once you fill out this document and forward it back to Logic Commerce our technical team will proceed to register your details for the testing phase to begin.

On the Merchant Establishment Form what does it mean by "Name to appear on Card"?
The "Name to appear on Card" is typically the trading name that a client will see on their bank statement after making a purchase from your website.

When filling out the Merchant Establishment Form I get to "CARD ACCEPTOR NAME/LOCATION" and I'm not sure what that means?
The Card Acceptor Name/Location is required for Westpac Merchants only. It is a description of your organization to inform the client on their bank statement after purchase from your website. It is the name of your Company, the Location (eg. Brisbane) and Country (eg. AU for Australia). This is an extension of "Name to Appear on Card" but for Westpac Clients only.

What's the difference between the Merchant Settlement Account and the Billing Account when I'm filling out the Merchant Establishment Form?
The Merchant Settlement Account is the account the funds will be deposited after a purchase has been made from your website. The Billing Account is the account where the Merchant Bank will bill you for nominal fees. In most cases the Merchant Settlement Account and Billing account details are the same.

Does it matter where our website is hosted?
Your website can be hosted with any ISP. The application software that we provide to you is hosted on our secure server. Our application software is executed by you by remotely calling our server. This is possible using JavaScript code that we provide to you and you embed into your website. A "Submit" button can be used to launch our software from your site. The software is in the form of a Popup Window that will appear above your site and will ask for the Credit Card details of your client.

How long does it take before we can trade online?
It depends on the work you want Logic Commerce to do in regards to your website. We have several applications and services that we can provide for you and the length of time will depend on the level of work that we undertake. One of the larger applications that we develop is Small e-Trader, which is a shopping cart facility. Small e-Trader allows people to access your site and select products that they wish to buy. They can then put the items into a virtual shopping basket to be paid for using the Credit Card facility, which we also provide. This ebusiness solution will take longer to develop than a standard credit card facility and we provide you with all the required information in the form of a quote. The level of customization is also a factor in the length of time and cost to a project.. If you want a standard credit card facility the whole registration and development process can take from one to two weeks maximum.

When will I receive the money from online purchases?
The transactions are all in real time. That is, the money is debited from the Cardholders card instantaneously. When a client goes to your website and purchases a product through Logic Commerce's Popup Credit Facility, their credit card details (card number, expiry date etc) is sent instantaneously through the Transaction Gateway to your Merchant Bank which will reply with a response and summary code. This code will tell our

application software if the transaction is valid or not and it will return a message accordingly. The valid/failed transaction is recorded in our database. The dispersal of money is then the responsibility of the cardholder's bank and your Merchant Bank. It will depend on the bank but generally the transfer of funds occurs within a few hours.

Do I receive reports on the transactions?
Logic Commerce has a Client Administration Zone that will suit your every need in regards to transaction reporting. When you register with us, we provide you with the URL to access the Administration Zone as well as the Username and Password. Detailed approved and failed transaction reports, along with other administration tools, are available there.

I'm worried about security, what security measures do you take?
The Logic Commerce Transaction Server, Credit Card Facility, Shopping Cart Facility and Administration Zone is protected. The data sent along the transaction gateway to the Merchant Bank and Payment Gateways are encrypted using public and private key technology.

The credit card number, that the Cardholder inputs when purchasing a product, is encrypted on Logic Commerce's databases using Java's Data Encryption Standard which offers 56 bit encryption within the database. Our Credit Card facility records the Name, email address and IP address of the person making a purchase for tracking of transactions and quick reference if the need arises.

When do we get our invoice?
Logic Commerce will invoice on the receipt of the Merchant Establishment Form from you.

How long will it take for my site to go live?
This will depend on the work of your developer. Once we receive the Merchant Establishment Form we will issue a test certificate to enable the testing phase. The issuing stage is approximately one hour. At this time your developer should have downloaded the software from website and the Logic Commerce support team will provide you or your developer with Usernames, Passwords and Account Code Information to begin testing. Once your developer is finished with the implementation of the software and is in the final stages of testing they contact us and we will test the system and register for a "Live Certificate" that will enable online payments. The live registering phase takes between 24 – 48 hours.

History of E-commerce

The history of e commerce is a history of how Information Technology has transformed business processes. Some authors will track back the history of e commerce to the invention of the telephone at the end of last century. EDI (Electronic Data Interchange) is widely viewed as the beginning of ecommerce if we consider ecommerce as the networking of business communities and digitalization of business information.

Large organizations have been investing in development of EDI since sixties. It has not gained reasonable acceptance until eighties. EDI has never reached the level of popularity of the web-based ecommerce for several reasons:

- high cost of EDI prohibited small businesses and medium-sized companies from participating in the electronic commerce;
- slow development of standards hindered the growth of EDI; and
- the complexity of developing EDI applications limited its adaptation to a narrow user base.

The Internet and the Web: The Internet was conceived in 1969, when the Advanced Research Projects Agency (a Department of Defense organization) funded research of computer networking. The Internet could end up like EDI without the emergence of the World Wide Web in 1990s. The Web became a popular mainstream medium (perceived as the fourth mainstream medium in addition to print, radio and TV) in a speed which had never been seen before. The Web users and content were almost doubled every a couple of months in 1995 and 1996. The web and telecommunication technology had fueled the stock bubble in the roaring 90s and eventually pushed NASDAQ over 5,000 in 2000 before it crashed down to 1,200 in 2002.

XML and Web Services Besides the availability of technical infrastructures, the popularity of the Web is largely attributed to the low cost of access and simplicity of HTML authoring, which are the obstacles of EDI development. The Internet and the Web have overcome the technical difficulty of EDI, but it has not solved the problem of slow development of e commerce standards.

XML, as a meta markup language, provides a development tool for defining format of data interchange in a wide variety of business communities. Web Services offers a flexible and effective architecture for the implementation. There is no doubt that XML and the Web Services will shape the course of e commerce in years to come

Concepts of Electronic Commerce

Electronic commerce is narrowly defined as buying and selling products/services over the Internet. The concept has been broadened to include all business activities of a sales cycle. The distinction between E-commerce and E-business has become blurred. Ecommerce and Electronic Commerce has been used interchangeably, Electronic Business, however, has not been a widely accepted terminology.

David Kosiur described the Components of Electronic Commerce in three dimensions (Processes, Institutions and Networks) in his 1997 book Understanding Electronic Commerce. We expand Institutions as Ecommerce Players, Networks as Technologies and add Markets as the fourth dimension of Ecommerce.

LESSON 2:
FORCES FUELING E-COME-COM VS E-BUSINESS

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

Economic forces: One of the most evident benefits of e-commerce is economic efficiency resulting from the reduction in communications costs, low-cost technological infrastructure, speedier and more economic electronic transactions with suppliers, lower global information sharing and advertising costs, and cheaper customer service alternatives.

Economic integration is either external or internal. External integration refers to the electronic networking of corporations, suppliers, customers/clients, and independent contractors into one community communicating in a virtual environment (with the Internet as medium). Internal integration, on the other hand, is the networking of the various departments within a corporation, and of business operations and processes. This allows critical business information to be stored in a digital form that can be retrieved instantly and transmitted electronically. Internal integration is best exemplified by corporate intranets. Among the companies with efficient corporate intranets are Procter and Gamble, IBM, Nestle and Intel.
EG. SESAMi.NET.: Linking Asian Markets through B2B Hubs

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

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

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

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

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

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

In e-business, on the other hand, ICT is used to enhance one's business. It includes any process that a business organization (either a for-profit, governmental or non-profit entity) conducts over a computer-mediated network. A more comprehensive definition of e-business is: "The transformation of an organization's processes to deliver additional customer value through the application of technologies, philosophies and computing paradigm of the new economy."

Three primary processes are enhanced in e-business:

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

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

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

The Internet economy pertains to all economic activities using electronic networks as a medium for commerce or those activities involved in both building the networks linked to the Internet and the purchase of application services such as the provision of enabling hardware and software and network equipment for Web-based/online retail and shopping malls (or "e-malls"). It is made up of three major segments: physical (ICT) infrastructure, business infrastructure, and commerce

Notes -

LESSON 3:
TUTORIAL 1

Discussion about the technological aspects of E-commerce.

Find out the various companies engaged in online business and discuss about their strategies.

LESSON 4: CHALLENGES IN ELECTRONICOMMERCE

What is EC?

For more than two decades, organizations have conducted business electronically by employing a variety of electronic commerce solutions. In the traditional scenario, an organization enters the electronic market by establishing trading partner agreements with retailers or wholesalers of their choosing. These agreements may include any items that cannot be reconciled electronically, such as terms of transfer, payment mechanisms, or implementation conventions. After establishing the proper business relationships, an organization must choose the components of their electronic commerce system. Although these systems differ substantially in terms of features and complexity, the core components typically include:

- Workflow application - a forms interface that aids the user in creating outgoing requests or viewing incoming requests. Information that appears in these forms may also be stored in a local database.
- Electronic Data Interchange (EDI) translator - a mapping between the local format and a globally understood format.
- Communications - a mechanism for transmitting the data; typically asynchronous or bisynchronous
- Value-Added Network (VAN) - a store and forward mechanism for exchanging business messages

Using an electronic commerce system, a retailer may maintain an electronic merchandise inventory and update the inventory database when items are received from suppliers or sold to customers. When the inventory of a particular item is low, the retailer may create a purchase order to replenish his inventory. As the purchase order passes through the system, it will be translated into its EDI equivalent, transmitted to a VAN, and forwarded to the supplier's mailbox. The supplier will check his mailbox, obtain the EDI purchase order, translate it into his own local form, process the request, and ship the item.

These technologies have primarily been used to support business transactions between organizations that have established relationships (i.e. retailer and the wholesaler). More recently, due largely to the popularity of the Internet and the World Wide Web, vendors are bringing the product directly to the consumer via electronic shopping malls. These electronic malls provide the consumer with powerful browsing and searching capabilities, somewhat duplicating the traditional shopping experience. In this emerging business-to- consumer model, where consumers and businesses are meeting electronically, business relationships will have to be automatically negotiated.

The Challenge

As the information technology industry moves towards the creation of an open, competitive Electronic Marketplace, it must provide an infrastructure that supports the seamless location, transfer, and integration of business information in a secure and reliable manner. This Marketplace will be used by all application domains to procure commodities and order supplies. As such, electronic commerce applications will require easy-to-use, robust, security services, a full suite of middleware services, and data and protocol conversion services. Using this Electronic Marketplace, a purchasing agent will competitively procure supplies, a manufacturer will obtain product or parts information, and a consumer will procure goods and services.

Building Blocks

In the heterogeneous, distributed environment that makes up this Electronic Marketplace, information and services will be accessible via methods that are as wide and as varied as the vendors and consumers that populate and use them. No longer will interoperability be achieved by using a single set of standards. Competing technologies will always be available, and quite often there will be no clear winner. Instead, emerging middleware technologies will complement the suite of standards and standards to provide seamless location, transfer, and integration of business information.

One can imagine, that over time, the Electronic Marketplace will be populated with a myriad of products and services. To aid the consumer in finding useful and necessary information from amongst the vast sea of resources that will ultimately be available, advances in resource discovery technologies will be critical. Key components that will be necessary to advance resource discovery techniques are distributed naming and directory services. Distributed naming services provide an environment that allows functions to move transparently among computing platforms. Coupling this feature with directory services provides a method for organizations to dynamically register business capabilities as they move on and off the information highway.

As the amount of information that can be exchanged grows, traditional communications protocols will give way to a set of faster and more reliable protocols. Middleware communications will be used to hide the complexity of the underlying communications protocols. Applications will require programmable interfaces to message queuing, database access, remote procedure calls, and object request brokers. It is imperative that the communications infrastructure be able to support these and future services in a flexible and efficient manner.

The seamless location and transfer of information will allow consumers and providers to exchange business information, but will not provide for the integration of that information into their business processes. Current data translation practices allow for a syntactic translation of information, which works well when semantic differences can be settled out of band. In the Electronic Marketplace, where entire business paradigms must be established electronically, it will be necessary to carry both the semantics and syntax of data elements through the data translation process.

Security services will be imperative in the daily operation of the Electronic Marketplace. Applications will require a full suite of end-to-end security services, including authentication, integrity, confidentiality, non-repudiation, and access control. The first three services can be achieved through public-key cryptosystems that employ digital signature, encryption, and key exchange technologies. Non-repudiation can be added through the use of a certification authority. Upon user authentication, traditional access control or role-based access control methods can be employed to define access rights. Perhaps the biggest challenge in creating this Electronic Marketplace will be to overcome current interoperability problems caused by competing security algorithms, message formats, and certificate management systems. Security is a prime example of a situation where competing solutions exist and there is no clear winner in sight. Recent work in the area of cryptographic API's promises to provide a well-defined, high-level interface to security services, regardless of the complexity of the underlying algorithms. Differences in message formats and certificate management systems must similarly be overcome, either through standards, or through the use of mediators and facilitators.

Solutions

To directly address the issues of building an information infrastructure that will support an Electronic Marketplace, the National Institute of Standards and Technology has established two cooperative, complementary programs. The CAIT, under the guidance of industry participants, identifies, develops, and demonstrates critical new technologies and applications. The ECIF provides a laboratory environment that supports technology transfer through rapid prototypes, pilots, the integration of key infrastructure components and services, and the demonstration of existing and emerging Electronic Commerce technologies. Through on-going projects in the areas of database access, facilitators and mediators, resource discovery, secure messaging, and integration technologies, the CAIT and ECIF focus on the following:

- Where enabling services and technology are not yet commercially available, NIST fosters joint research projects aimed at bringing together the research community and the vendor community. This joint fellowship provides vendors with the tools they need to quickly implement emerging technologies while researchers remain focused in their development of new technologies.
- Where components are commercially available, NIST creates test beds and pilots aimed at achieving interoperable solutions. These solutions are achieved by demonstrating interoperability among middleware technologies, standards and defect standards.
- Promotes technical awareness via presentations, publications, demonstrations, and consulting

E Commerce Communities

What it is that will drive e-commerce in the future? — in a word, it's community. We certainly have the technology to build great business-to-consumer and business-to-business e-commerce applications into our business models. And, yes, attributes such as viable application design, integration with business processes, and overall performance matter.

But I predict that those who invest in community will see a large increase in repeat business, improved support functions, and the opportunity to go after new forms of e-commerce revenue.

So what is community and how do you form one? A successful community strategy must embrace the idea of moving the one-on-one communication that occurs offline into the virtual world of e-commerce. Such a strategy currently requires multiple technical approaches. However, I believe community solutions will soon become more integrated and far-reaching.

Imagine if I transferred my cat food interaction into the virtual world. If I were a consumer doing my marketing online or a business inquiring about brand availability from a supplier, that same type of interaction could easily be supported within an e-commerce setting using one of several options.

The tools that form online communities include discussion or forum software, chat functions, instant messaging, two-way mailing lists, online collaboration tools, audio, video, and more. You may choose to invest slowly at first and increase your community commitment over time.

For example, the online version of my cat food brand inquiry might be fulfilled simply via a pop-up notification window on my return visit, assuming your e-commerce application was enabled to take my feedback. Or, in a more sophisticated version, you might make a customer service representative available via video and audio. The same type of solutions can be enabled for business-to-business transactions.

Online business is much more exacting, and those participating usually have a darn good idea of what they want. Better to let me contact you and supply my long-distance requirements; then you provide me a one-on-one analysis of how I could save money by switching companies. The feedback should be supplied without a long or scripted marketing pitch, too.

Community is also a wise strategic investment in other ways. Suppose you set up a moderated discussion group or a two-way mailing list to get people talking about your products. Consumers will often have good ideas about product improvements or good or bad experiences with the product. By implementing these types of open communication, a company may gather ideas about new product offerings, improvement of existing products, or methods of bolstering support, all of which will likely yield repeat business.

Online conversation with business partners will also give net positive results. A private discussion area or secured online meetings can go a long way toward building stronger relationships between companies. This will also serve to potentially drive new business opportunities for both parties.

Building community has to be at the heart of any successful e-commerce strategy. Certainly I do not think we can totally mimic offline human interaction in an online setting. However, e-commerce settings today are very inhuman in nature; we need to factor in the human part of the equation if e-commerce is to be successful.

Have you formed your community strategy?

LESSON 5:
MODEL FOR E-COMMERCE

There are basically seven types of models for E-business. The E- Business model would be closely tied to the mission of the organization. Once the organization has decided what it aims to do one of the models that have been explained below may be adopted.

Category killer

A category killer would use the Internet to define a new market by identifying a value proposition for the customer or create a new value proposition. The organization which des so, would have the first mover advantage in the market and would stay ahead of the competition by continuously innovating. . Example: Amazon.com.

Channel Reconfiguration

This model would use the Internet as means of reaching the customers and suppliers and to conduct, transactions on them. This model supplements the legacy distribution and communication channels. The advantage of such a model is decreased time to market. Such a model would invest in end-to end process integration. This would require a major application overhaul to develop an integrated infrastructure that allows the processes to flow seamlessly, which in turn should lead to reduction of costs of products by eliminating, redundancies of operations and enhancing the scope of each operation. The advantage of such a model is decreased time to market, and minimizing the total product cost. Examples: Cisco.

Transaction Aggregation

This type of organization would create an electronic commerce and payment infrastructure that integrates their existing transaction processing capabilities with e -business capabilities. This would facilitate a client in carrying out all the steps of purchases - searching, comparing, and selecting and paying online. These intermediaries may fulfill the following roles -

- Support buyers in identifying their needs and finding an appropriate seller.
- Provide an efficient means of exchanging information between both parties.
- Execute the business transaction.

For example: Microsoft Expedia and eBay.

Infomediary

An infomediary provides specialized information on behalf of producers of goods and services and their potential customers. That is, it serves to bring together the customer and the supplier of goods.

An example of an Infomediary is priceline.com.

Event Aggregation

This model would serve to simplify a major purchasing event such as buying a house, by offering the customer a unified front-end for purchasing related goods and services from multiple providers. It provides convenience to the customer and hence enhances the relationship between the customer and the company. E.g. RealtoLcom.

Market Segment Aggregation

The organization defines a customer base and builds a comprehensive suite of services tailored to that customer type. Say for instance in our country the MNC's which have to set up their offices would have to go through a lot of procedures before they get the final clearances. A Market segment aggregator, who could get all the clearances that are required, could possibly handle this work.

E.g. American Express's, small business exchange, catering to the needs of small-scale companies.

Value Chain Integration

Value Chain Integration (VO) connects the organization's systems with its supplier's systems using the Internet, and this integration would lead to a joint manufacturing execution plan, keeping the customers needs in the center. Such an arrangement provides seamless integration within and between enterprises, tying together large islands of information systems. The advantage is that, when the customer keys in his requirement over the net, it would be transmitted to every process center in the value chain without much loss of time. This way the organization can rapidly react to events. E.g. Dell Online.

Strategic model for e Business/CMS/CRM-software development

1. Stage of orientation

   Define your short, medium and long term targets to discuss your individual requirements
2. Stage of analysis

   Analyses of special requirements for your application
3. Stage of design and layout

   Visual displays based on your ideas
4. Stage of transformation

   Realizing requirements and ideas in the software solutions
5. Stage of implementation

   Full implementation of your e Business solutions

Using Value Chains to Model An e-Commerce Business

A value chain for a product is the chain of actions that are performed by the business to add value in creating and delivering the product. For example, when you buy a product in a store or from the web, the value chain includes the business selecting products to be sold, purchasing the components or tools necessary to build them from a wholesaler or manufacturer, arranging the display, marketing and advertising the product, and delivering the product to the client.

In the book **Designing Systems for Internet Commerce** by G. Winfield Treese and Lawrence C. Stewart, the authors suggest breaking down the aspects of your business into four general value-chain areas:

Attract — in which you get and keep customer interest, and includes advertising and marketing

Interact — in which you turn interest into orders, and includes sales and catalogs

Act — in which you manage orders, and includes order capture, payment, and fulfillment

React — in which you service customers, and includes technical support, customer service, and order tracking.

According to Treese and Stewart, looking at the value chain for your business helps you to define areas of focus — what your company is good at, or where you should concentrate your efforts to gain competitive advantage.-

Within System Architect, the **Process Decomposition diagram** is a handy vehicle for establishing what business processes are performed within each of these value-chain areas.

The Process Decomposition diagram enables you to model three model elements — Primary Process Groups, Process Threads, and Elementary Business Processes. Each of the value-chain areas listed above can represent a Primary Process Group. Each group contains one or more process threads (a process thread is a grouping of process flows that deal with a central process — for example, ordering). Each process thread contains the elementary business processes that make up the thread (these are modeled on one or more Process Chart diagrams for each Process Thread).

Let's Take a Look at an Example

Suppose we've already modeled a number of Process Chart diagrams for the various process flows that occur within our on-line retail business. Each of these Process Chart diagrams represents all or part of a Process Thread. We can create a Process Decomposition diagram to model the hierarchy of our process threads to elementary business processes, and the value-chain areas that they are contained within.

Create a Process Decomposition diagram.

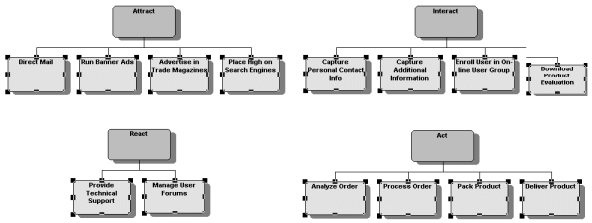
Draw four Primary Process Groups on

The diagram — named **Attract, Interact, Act**, and **React**.

Browse all of the Process Threads that you've modeled for your business in System Architect's browser.

Drag-and-drop them onto the diagram workspace, and assign them to the value-chain Primary Process Groups according to the guidelines above.

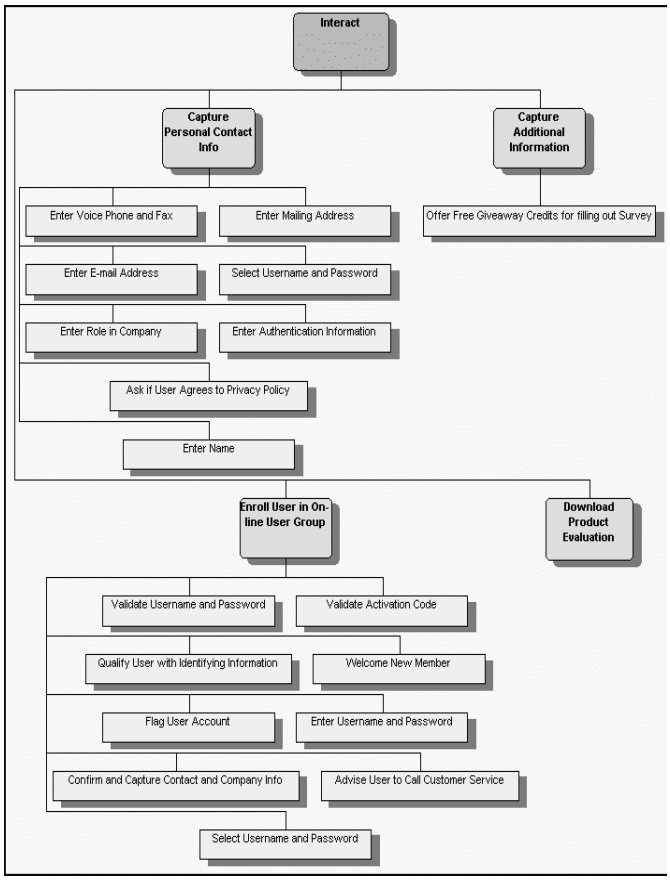
Select all of the Process Threads on the diagram, and from System Architect's **Dictionary** menu, select **Update Selected Process Threads EBPs**.



System Architect reviews all of the Process Chart diagrams you have built, and automatically draws appropriate elementary business processes on the diagram, under the Process Threads that they belong to (remember, every Process Thread is represented by one or more Process Chart diagrams).

Take a look at one of the Primary Process Groups, for example, Interact. Note that you can now view this value chain category, and see the various processes that are performed by your company to satisfy this value chain. As Treese and Stewart state, in developing systems for Internet commerce, you should focus on parts of the value chain

related to that of the underlying business (ie, the product you are selling), and from looking at the value chain required to doing business online. Understanding these two pieces and how they fit together is an important part of creating a successful business in Internet commerce.



Electronic Commerce Industry Framework

Electronic commerce not only affects transactions between parties, it also influences the way markets will be structured. Traditionally, market ties were led through the exchange of goods, services, and money. Electronic commerce adds a new element: information. Market ties, such as those forming around online payments, are now based on information goods, in-lation services, and electronic money. Although banks have traditionally -dominated payment processing, new organizations, such as Intuit and 'Osoft, have begun to process payment transactions online. Technology enabled the creation

of new market opportunity that enables new play-ers to step in, creating a whole new set of market dynamics.

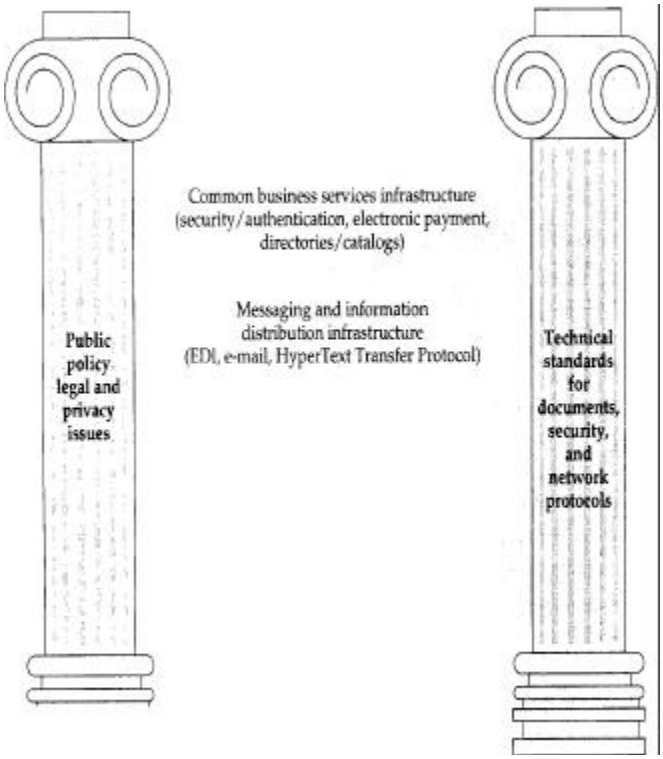
Electronic Commerce Applications

Supply chain management

Video on demand.

Remote banking

Procurement and purchasing



Generic framework for E-Commerce

To better understand the market structure that is developing around electronic commerce, we have developed a simple framework (see Fig.) that succinctly captures the developments in this area. Even those aware of the importance of electronic commerce have little under-standing of online jargon, or how the industry is structured. Such confusion is further entrenched by the media's use of different names to refer to the same phenomenon or its various elements: the Information Superhighway, the Internet, Cyberspace, Interactive Multimedia, and so on. It is important for businesses to understand the overall industry in order to develop busi-ness strategies that employ electronic commerce.

The next section will explain each aspect of the electronic commerce in-frastructure in detail, beginning with the most broadly based term: the Information Superhighway Infrastructure.

Notes -

LESSON 6:
THE INFORMATION SUPERHIGHWAY

The Information Superhighway has many different types of transport sys-tems and does not function as a monolithic entity; there is no single inter-state highway that connects the digital equivalent of Los Angeles to Miami. Instead, the architecture is a mixture of many forms of high-speed network transport, whether it be land-based telephone, air-based wireless, modem -based PC, or satellite-based. For instance, mail sent from a portable PC in the French Riviera to a computer in Los Angeles might travel across several different types of transport networks interconnected with each other before it reaches its destination.

The players in this industry segment can be called information transport providers. They include: telecommunication companies that provide phone lines; cable TV systems that provide coaxial cables and direct broadcast satellite (DBS) networks; wireless companies that provide mobile radio and satellite networks; and computer networks, including private net-works like CompuServe or America Online, and public data networks like the Internet.

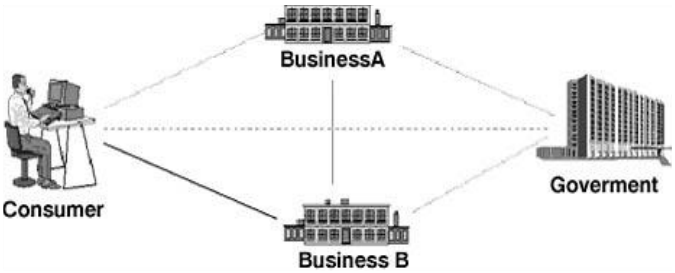
This industry segment also includes hardware and software tools that provide an interface with the various network options, and to the customer premises equipment (CPE), or terminal equipment, which is a generic term for privately owned communications equipment that is attached to the net-work. This category of subscriber terminal equipment can be divided into three parts: cable TV set-top boxes, computer-based telephony, and net-working hardware (hubs, wiring closets, and routers or digital switches). The terminal equipment is in fact the gateway to information services, com-mercial transactions, and 500 digitally compressed channels.

The biggest area of growth over the last five years has been in the router business. Routers and digital switches help to connect large net-works (or internet works). Routers are devices that can connect the local area networks (LANs) inside various organizations with the wide area networks (WANs) of various network providers. This interconnection enables easy communication between separate networks across geo-graphical distances and provides access to distributed computing re-sources. The router industry is a multibillion dollar industry that is dominated by players such as Cisco, Bay Networks, and 3COM, all three of which supply equipment that links data communications net-works through the Internet. In a recent valuation by BusinessWeek, Cisco was rated as the fortieth largest company in America, with a market value of $26 billion. Not bad for a company with an extremely special-ized product.

Notes -

LESSON 7:
DISCUSSION

LESSON 8:
TYPES OF E-COMMERCE



There are a number of different types of E-Commerce:

B2B - Business to Business

B2C - Business to Consumer

C2B - Consumer to Business

B2E - Business to Employee

C2C - Consumer to Consumer

B2B - Business to Business

Business to Business

e-commerce has been in use for quit a few years and is more commonly known as EDI (electronic data interchange). In the past EDI was conducted on a direct link of some form between the two businesses where as today the most popular connection is the internet. The two businesses pass information electronically to each other. B2B e-commerce currently makes up about 94% of all e-commerce transactions.

Typically in the B2B environment, E-Commerce can be used in the following processes:

- procurement;
- order fulfillment;
- managing trading-partner relationships.

For many Welsh SMEs B2B E-Commerce is synonymous with the vision of integrated supply chains. This might be the ultimate objective, but, in the short term, B2B E-Commerce could be used as a significant enabler in their move towards greater trading partner collaboration.

E-Commerce technologies have allowed even the smallest businesses to improve the processes for interfacing with customers. They are now able to develop services for individual clients rather than provide a standard service. Pentwyn Splicers based in Pontypool manufacture pneumatic splicers for the UK and world textile market. They evaluated all aspects of their business process to determine where the greatest return could be obtained. Using the Web to sell more products was an initial consideration, but it was in the provision of customer service and support to their overseas distributors that the greatest benefits have been achieved.

An alternative way of thinking of B2B eCommerce is to think of it as being used to:

Attract, develop, retain, and cultivate relationships with customers;

Streamline the supply chain, manufacturing, and procurement processes, and automate corporate processes to deliver the right products and services to customers quickly and cost-effectively;

Capture, analyze, and share, information about customers and company operations, in order to make better decisions.

B2C - Business to Consumer

Business to Consumer e-commerce is relatively new to Australia. This is where the consumer accesses the system of the supplier. It is still a two way function but is usually done solely through the Internet.

B2C can also relate to receiving information such as share prices, insurance quotes, on-line newspapers, or weather forecasts. The supplier may be an existing retail outlet such as a high street store; it has been this type of business that has been successful in using eCommerce to deliver services to customers. These businesses may have been slow in gearing-up for eCommerce compared to the innovative dot.com start ups, but they usually have a sound commercial structure as well as in-depth experience of running a business - something which many dot.coms lacked, causing many to fail

Example: A home user wishes to purchase some good quality wine. The user accesses the Internet site http://www.craigs.com.au and follows the links to read a report on the recommended wines. After reading the tasting notes the user follows the links to place an order along with delivery and payment details directly into the merchants inventory system. The wine is then dispatched from the suppliers warehouse and in theory is delivered to the consumer without delay.

C2B - Consumer to Business

Consumer to Business is a growing arena where the consumer requests a specific service from the business.

Example: Harry is planning a holiday in Darwin. He requires a flight in the first week of December and is only willing to pay $250. Harry places a submission with in a web based C2B facility. Dodgy Brothers Airways accesses the facility and sees Harry's submission. Due to it being a slow period, the airline offers Harry a return fare for $250.

B2E - Business to Employee

Business to Employee e-commerce is growing in use. This form of e-commerce is more commonly known as an 'Intranet'. An intranet is a web site developed to provide employees of an organisation with information. The intranet is usually access through the organisations network, it can and is often extended to an Entrant which uses the Internet but restricts uses by signon and password.

C2C - Consumer to Consumer

These sites are usually some form of an auction site. The consumer lists items for sale with a commercial auction site. Other consumers access the site and place bids on the items. The site then provides a connection between the seller and buyer to complete the transaction. The site provider usually charges a transaction cost. In reality this site should be call C2B2C.

B2A is the least developed area of e-Commerce and it relates to the way that public sector organisations, at both a central and local level, are providing their services on-line. Also known as e-Government, it has the potential to increase the domestic and business use of e-Commerce as traditional services are increasingly being delivered over the Internet.

The UK government is committed to ensuring this country is at the forefront of e-Commerce and it is essential that e-Government plays a significant part in achieving this objective.

Notes -

LESSON 9:
E-BUSINESS TRIDENT

The three prongs of the E-business initiative, which would set apart a successful, firm from the also-rans are:

a. E-SCM - Electronic Supply Chain Management.

b. E-CRM - Electronic Customer Relationship Management

c. ERP - Enterprise Resource Planning

E-SCM

What is supply chain management?

In the simplest sense, the supply chain is a series of processes starting from ones suppliers up to the stage when the final product reaches the hands of the' customer. These processes are defined as a part of the relationship between the various business partners. Changing market realities are forcing companies to restructure their businesses in dramatic ways. This need to change has come from such forces as competitive threats, stockholder expectations, or internal business requirements. For this the firms are re-evaluating their relationships with their business partners so that they may be converted to value adding relationships. And as a part of this exercise the companies are trying reduce the total cost of acquisition, possession, and disposal of goods and at the same time adding more value to each of the processes. For this reason the supply chain today has come to be termed as value chain.

One of the prime movers for bringing supply chain management from a conceptual stage to a real time application stage has been information technology. This would become clear from the example of Wisconsin Electric Power Company (WEPCO). Before IT enabled Supply Chain Management, the company had to follow the processes enumerated below in order to purchase an item:

1. Determination of goods and process needs.
2. Needs determination for delivery.
3. Entering the order into the. computer.
4. Checking on information that the correct product is being bought.
5. Phone time to receive three bids and a buy.
6. Evaluation of bids.
7. Physical receipt of goods.
8. Matching freight bill, packing list with order.
9. Processing receipt.
10. Sending paperwork to accounts payable.
11. Entering paperwork into computer.
12. Matching for payment.
13. Receipt of invoice.
14. Matching invoice to receipt.
15. Receiving payment authorization.
16. Cutti ng the check.
17. Mailing the check.

Having learned the costs involved in these processes, WEPCO used IT to eliminate lots of non-value adding processes, and the result was that a typical purchase operation would involve the following processes:

1. EDI for ordering and invoicing.
2. Bar coding for tracking the items being ordered.
3. Automated Clearing House for payment.
4. Electronic Fund Transfer for payment.

In the paragraphs that follow we shall discuss this IT enabled SCM or eSCM

Electronic Supply Chain Management

The Electronic Supply Chain Management is a business framework consisting of many applications such as EDI, EFT etc. These applications have been divided into two categories -

a. Applications concerning planning.

b. Applications concerning execution.

The planning application focuses on demand forecasting, inventory simulation, distribution, transportation, and manufacturing planning and scheduling. Planning software is designed to improve forecast accuracy, optimize production scheduling, reduce inventory costs, decrease order cycle times, reduce transportation costs, and improve customer costs, decrease order cycle times, reduce transportation costs, and improve customer service.

The execution process addresses procuring, manufacturing and distributing products throughout the value chain. Supply chain execution applications are designed to manage the flow of products through distribution centers and warehouses and help ensure that products are delivered to the right location using the best transportation alternative available.

Descriptions of each of the categories of supply chain management applications are given below.

Elements of Supply Chain Planning

The various applications that come under Supply Chain Planning are:

Advanced Scheduling

This provides a detailed coordination of all manufacturing and supply efforts based on individual customer orders. Scheduling is based on real-time analysis of changing constraints throughout the process, from equipment outages to supply interruptions. Scheduling is much more execution oriented and creates job schedules for managing the manufacturing process as well as the supplier logistics.

Demand Planning

This would generate and consolidate demand forecasts from all business units in large corporations. The demand-planning

module supports a range of statistical tools and business forecasting techniques.

Distribution planning

This would create operating plans for the logistic managers. Distribution planning is integrated with demand planning and advanced scheduling modules and hence gives the operating plan for fulfilling orders.

Transportation planning

This facilitates resource allocation and execution to ensure that materials and finished goods are delivered at the right time and to the right place, according to the planning schedule, at minimal cost. This includes inbound and outbound, intra- and inter- company movement of materials and products. It considers such variables such as loading dock space, trailer availability, load consolidation, and the best mix of available transportation modes.[l]

Elements of Supply chain execution

The supply chain execution module would have the following applications:

Order Planning

This application would select the plan that best meets the desired customer service levels with respect to the transportation and manufacturing constraints. Increasingly, the firms have to plan backward from customer priorities and fulfillment deadlines.

Production

This application would start with the master production schedule for the finished product, and then generates an MRP (Material Requisition Planning) to determine when, where and in what quantities various sub-assemblies and components are required to make each product.

Replenishment

This application would help in minimizing the amount of inventory in the pipeline and coordinate product handoffs between the various parties that are involved. [1]

E-CRM

What is Customer Relationship Management

Increased competition, globalization, the growing cost of customer acquisition, and high customer turnover are major issues in organizations today. CRM is a combination of business process and technology that seeks understand a company's customers from a multi faceted perspective: who are they, what they do and what they like?

Research shows that effective management of customer relationships is an important source of competitive differentiation. In today's world, the only way for an organization to succeed is to focus diligently focus on the needs of the customer. To keep the best customers, management must concentrate its energies on quickly and efficiently creating new delivery channels, capturing massive amounts of customer data, and tying it all together to create an unique experience.

Customer life cycle: The three phases of CRM

There are three phases of CRM: Acquisition, Enhancement and Retention. Each has a different impact on the customer relationship and each can more closely tie a firm to its customers. The three phases of CRM have been explained below:

1. Acquiring New Customers

You acquire new customers by promoting product/service leadership that pushes performance boundaries with respect to convenience and innovation. The value proposition to the customer is the offer of a superior product backed by excellent service.

2. Enhancing the Profitability of Existing Customers

You enhance the relationship by encouraging excellence in cross-selling and up-selling. This deepens the relationship. The value proposition to the customer is an offer of greater convenience at lower cost.

3. Retaining profitable customers for life

Retention focuses on service adaptability - delivering not what the market wants, but what the customer wants. The value proposition to the customer is an offer of a proactive relationship that works in his or her best interest. Today, leading companies focus on retention much more than on attracting new customers This because the cost of attracting a new customer is higher than the cost of retaining an existing customer.

CRM Architecture

This architecture consists of a group of applications that are organized around the customer, rather than marketing sales or any other internal function. Measurements and feedback from the customer drive the drive improvements in the CRM process. The customer's viewpoint becomes an integral part of the process, allowing it change with the customers needs.

However, before aggressively deploying CRM applications, managers might have to restructure customer-interaction processes. Functional and organizational structures tend to compartmentalize the various activities that go into serving the customer. Such fragmentation prevents customer information from being dispersed far enough within the organization to be useful. In fact it often stands in the way of efforts to build a relationship. As a result, customized service is difficult and consequently organizations tend to treat all customers the same.

To counter fragmentation, leading edge companies strive to take a more customer centered approach to CRM. There is a growing trend towards managing all the activities that identify, attract, and retain customers in an integrated fashion, that is, managing them as a process that cuts across functional departments. By addressing these activities as a set of CRM processes, organizations can create end-to-end communications and performance accountability for entire sets of activities.

Portfolio of CRM process competencies

The core CRM process competencies are cross selling and up selling, direct marketing and fulfillment, customer service and support, store front and field service and retention management.

Identifying these process competencies is important because one must understand that a company cannot manage and develop its CRM infrastructure if its managers don't share the

same view of what the core CRM competencies are. An brief description of each of these modules are given below:

Cross-selling and Up-selling

This application has the capability to qualify prospects, track contact or the "moments of truth "(explained in chapter 2), and refer them to sales persons when appropriate. By implementing a cross-sell strategy, complete with the applications necessary to track customer contacts, triggers can be established to identify prospects for additional sales. For example, in a bank an event would be a large deposit, which would then trigger a sales person to call the customer and ask if she or he would be interested in investment options. Cross-sell and up-sell application may be used to schedule sales calls, keep detailed records of sales activities, and check on the status of the customer orders.

Cross-selling and up-selling depend on identifying life-path needs. For instance, in the finance industry, banks are attempting to build lasting relationships with customers by matching their life-path needs to complementary products and services. As customers approach retirement, banks could recommend assets such as money markets, bonds and annuities. **If** customers with young children can be identified, then banks could cross-sell education savings plans or even loan consolidation plans.

Direct Marketing and Fulfillment

This includes pre-sale interaction such as advertising that either influences or provides potential customers with the necessary information to make a purchase decision. Marketing automation is critical, as organizations grow larger. This is because, it become more difficult to manage multiple simultaneous programs and track costs across multiple channels. Campaign management, a direct marketing process, allows companies to manage, integrate and leverage marketing programs by automating such tasks as managing responses, qualifying leads, and arranging logistical aspects of events.

Another critical core competency is fulfillment. Marketing departments today are being deluged with requests for information via the Web and other channels. He goal of effective fulfillment is to provide a myriad of information to customers and prospects quickly, easily and efficiently. Whether it is product or service inquiries, direct mail responses, pricing or billing issues, or requests for literature, responding to requests in a timely manner is critical. This creates a need for fulfillment capabilities that can get product information, literature, collateral packages, or other correspondence into the hands of the customers and prospects when they are most receptive. Effective fulfillment is not trivial; it requires a sophisticated interface with campaign management, sales force automation, and posting systems.

Customer service and support

Customer support provides customer care and other services. The applications include support for service request management, account management, contact and activity management, customer surveys, return material authorizations, and detailed service agreements. These discrete applications work together to ensure that customer service representatives can quickly assign, create and manage service requests, as well as look up detailed information about customer service contracts, contacts and activities.

Customer support capabilities are used to manage customers who are having problems with a product or service and to resolve those problems. Help-desk software automates the management and resolution of support calls and improves efficiency and effectiveness. These applications typically include capabilities to verify customer status (e.g., what level of support they are entitled to) track specific tasks needed to resolve problems across multiple workgroups, monitor service-level agreements, maintain permanent incident histories, and capture support costs for charge backs. Armed with this complete customer and product information, service professional can resolve customer issues efficiently and effectively.

Field Service Operations

There is nothing like the hands-on approach to instill faith in your customers about your company. Field service is the hands-on extension of external customer support, activated when a problem can be solved over the phone and requires sending a repair person to the customer site to perform maintenance or repair. Field service and dispatch applications have become mission critical tools that affect a company's ability to deliver effective customer service and contain costs. The field service application provides the organization with features for scheduling and dispatching repair personnel, managing inventory and logistics, and handling contracts and accounting.

Retention Management

Effective CRM must be based on differentiating customers based on account and transaction histories. Today, very few organizations are able to make these distinctions. The ability to effectively segment customers depends on the decision support technology, which most executives see as a powerful enabler of CRM.

Effective decision support depends on the ability to gather customer information at great levels of detail. Detailed knowledge about customers allows companies to treat all customers individually and, in many cases, disengage from customers are high maintenance, low-margin prospects. [1]

Enterprise Resource Planning (ERP)

ERP system integrates processes across all the departments and divisions of your company. As information is changed within one business application, other related functions and applications are automatically updated, streamlining the entire business process. ERP systems have helped firms reduce inventories, shorten cycle times, lower costs, and improve overall supply chain management practices

Once the sole domain of manufacturing industries, ERP implementations have branched out to non-traditional areas such as healthcare, the coffee industry, and even higher education. In fact, many e-businesses are discovering the value of having consistent, up-to-date data across the enterprise

ERP also supports companies operating multiple sites around the world, global sourcing for parts and services, international distribution and different metrics for measuring performance around the globe. For instance, a company's U.S. sales office

may be responsible for marketing, selling and servicing a product assembled in the U.K. using parts manufactured in Germany and Singapore. ERP enables the company to understand and manage the demand placed on the plant in Germany. It allows the company to determine which metrics are best suited to measuring efficiency in a global economy with localized distribution, production and service operations.

ERP system can be seen as an automated record keeper or spreadsheet that can tally up company resources-such as raw materials and production capacity-and commitments, such as orders, regardless of whether the data is inputted through an accounting, manufacturing, or materials management system. ERP software accomplishes this task by digitally recording every business transaction a company makes, from the issuance of a purchase order to the consumption of inventory, and continually updating all connected systems to reflect each transaction.

This integrated approach provides all users, from company CEO to buyer at a remote plant, with a single, real-time view of their company's available resources and commitments to customers. For example, if a salesman logs a new order into his laptop computer on the road, the transaction flows through the company, alerting the procurement system that parts need to be ordered and telling the manufacturing system to reserve a spot in the production queue for the newly ordered product.

ERP application suite

Service delivery excellence requires placing the entire organization into a unified transaction environment. This strategy implies having one common platform instead of many platforms that may not be compatible with each other. ERP packages integrate logistics, manufacturing, financial and human resource/payroll management functions within a company to enable enterprise-wide management of resources. Such functions include the following:

ERP packages integrate logistics, manufacturing, financial and human resource/payroll management functions within a company to enable enterprise-wide management of resources. Such functions include (but are not limited to) the following:

Financial: general ledger, account receivable/payable, cost management;

Manufacturing: sales order entry, invoicing, capacity planning; and

Human Resources/Payroll: payroll, personnel management.

Case Study –I

E Pharmacy

The Business

Located in the northern Brisbane suburb of Virginia, E-Pharmacy is a marketing and information technology company that competes in the online mail order market and superstore pharmacy business.

The Motivation for Change

E Pharmacy's founder, Brett Clark started the business because he believed the online environment was ideal for selling pharmacy products, particularly to people who were not well serviced by local pharmacy providers. Brett also saw the opportunity for e Pharmacy to provide an alternate distribution channel for small manufactures of pharmaceutical products.

"We already owned retail pharmacies" he said "online retailing seemed to be a natural extension of our business which would allow us to more efficiently service more customers, in addition to providing a low cost outlet for some of the lesser known brands. We now have over 7000 products online."

And there were other motivations. "Being one of the first online in this market, gave us a chance to build a brand", commented Brett, "this enabled us to differentiate ourselves in the marketplace and establish a position as the leading IT player in the pharmacy market."

The Challenge

The challenge for e Pharmacy was considerable. "Basically we had to build a business model from the ground up and I took twelve months off to do this" said Brett.

E Pharmacy commenced with three clear goals:

- to brand e Pharmacy as the leading distributor of pharmaceuticals and products to an online marketplace for small manufactures and distributors;
- to facilitate specialist advice and support to ensure the corporate structure behind e Pharmacy will maximize the potential of future development; and
- development of a virtual private network to empower suppliers via collaboration to manage their own products improving efficiencies and sales.

Establishing these goals upfront was important to e-Pharmacy's success as they were clearly able to define what they wanted which in turn meant the business was able to define the sort of technology solution it needed.

The Hurdles

Brett identifies three basic hurdles in building e Pharmacy.

The first was the need to outsource the building of e Pharmacy. By understanding e Pharmacy's core competencies, it was apparent that through a collaborative approach, e Pharmacy could achieve its goals by outsourcing technology development. However, it was important to drive the development project from e Pharmacy's perspective, and not that of the programmers, as past e-commerce developers had lacked experience in the retail sector resulting in operating platforms that did not address the fundamentals of business.

The second was maintaining the financial viability of the businesses whilst it was established and through the early growth phase. Being self funded, it enabled the company to concentrate on business fundamentals to generate profits. E Pharmacy always wanted to operate the site as they had operated traditional pharmacies, and in doing so, understood what realistic revenue streams could be generated.

Whilst the third challenge was gaining the acceptance of industry. Being a highly regulated industry, it was always going to be hard to win support from within. E Pharmacy has operated from day one with the highest level of transparency and probity to limit any negative industry comments. By creating an extremely high level of professional and ethical

behavior that has been associated with the pharmacy industry, e Pharmacy has gained support from the leading suppliers and industry players.

The Results

E Pharmacy is a Queens land success story and demonstrates the power of e-commerce in transforming businesses. Beginning with one employee just three years ago, it now employs over seventy people and just opened its third fulfillment center in Townsville. This growth has been fuelled by online sales, which have consistently increased by over 300% per year, as customers have discovered the ease and convenience of shopping online.

"When I started this process I had three clear goals" Brett recently stated. "Each of these goals has been achieved". "We are an industry leader with a strong brand name, our internal processes have been able to cope with our extremely rapid growth and our retail pharmacies use the system as a virtual private network. In addition, we have outsourced our backend system to other e-commerce companies for e-fulfillment , online dispensing, and sample distributions via a B2B model creating new revenue streams.

But implementing the system that created this success was not always easy.

The Implementation

The main strategy was to ensure there was a sustainable cash flow in the early days. This was achieved by using an existing retail pharmacy operating in a different market to base the operations from. In doing so, it ensured that the business had a revenue stream from another source other than just its own. After 18 months, and turning around $500,000 on two staff and three square meters of office space, e Pharmacy decided it was time to take the next step. The key to building the Virginia site was to make sure nothing was set in concrete. "In doing so, we knew that we could change what we were doing when we got it wrong" said Brett. The key to implementation is having a series of "stop-go" gates in the model. It allowed the process to be continually reviewed, valued to see whether e Pharmacy was on the right track, and if necessary stopped, or changed. In reality, it provided a mechanism for incremental adjustment, which is a necessity in innovative environments.

The Investment

The investment was funded by the three founding owners, using a mixture of existing cash flows, personal capital, and favorable trading terms with suppliers.

The Future

There are a range of future challenges for e Pharmacy. These include:

- establishing e-pharmacy as a brand name Australia wide;
- building an Australia wide distribution network;
- providing services to customers in regional and remote areas such as advice, self managed health programs , patient compliance programs, and medication reviews ;
- marketing the system overseas, particularly in Asia and New Zealand
- Opening channels for small local suppliers to distribute their healthcare products domestically and internationally
- Become a leader in healthcare e-fulfillment

The Advice

Brett's advice to any company looking to implement a major e-commerce solution in their business is simple. To be successful a business must commit to the process 100%. This means fully evaluating the idea, including the financial requirements and developing a comprehensive business case that defines the required time, resources and financial return. He also advocates constructing the business case to ensure a quick profit, as long term return on investment scenarios often don't work, particularly in the e-commerce area.

Ultimately through, Brett believes the key to a successful e-commerce process is commitment. You have to commit to seeing the project through and be prepared to continually work with your suppliers, customers and staff to make the project successful.

"As e Pharmacy demonstrates" he said "e-commerce technology can completely change the shape of your business". "In our case, it fundamentally changed the way we communicated with our suppliers, the way we serviced our customers and the jobs that our staff did". "To cope with this fundamental change to my business", Brett continued, "I had to be fully committed to the process and focused much of my energy on ensuring that my staff, customers and suppliers understood the changes we were making and why we were making them". "Without my full commitment I couldn't have asked for a commitment from my staff or suppliers" he concluded.

Notes -

LESSON 10:
TRANSACTION SECURITY

Firewalls and Transaction Security

While corporate presence on the Internet has soared, many companies are simply providing information about themselves-annual reports, product documentation, service information-and have not yet begun to provide full- scale transactions for buying and selling online. This restraint is primarily the result of concern about network and transaction security. Panic-raising arti-cles in the popular press about such security issues as the attack on Netcom, an online access provider, in which hackers bypassed various protections and misappropriated subscriber credit card information, further heighten concern about security, and prevent companies from providing full-scale transactions on public networks.

Likewise, concern over transaction security has made many consumers averse to making payments over the Internet. There is not yet a reliable method of preventing third parties from accessing sensitive financial and personal information (such as credit card numbers or health records) as the information traverses across the Internet. A third-party threat occurs when a hacker, situation, or event has the potential to disrupt data or network re-sources and incur economic loss. This loss can be in the form of destruction, disclosure, modification of data, denial of service, fraud, waste, or abuse.

In general, security concerns in electronic commerce can be divided into concerns about user authorization, and concerns about data and transaction security. Authorization schemes such as password protection, encrypted smart cards, biometrics (fingerprinting), and firewalls ensure that only valid users and programs have access to information resources such as user accounts, files, and databases. Data and transaction security schemes such as secret-key encryption and public/private-key encryption are used to ensure the privacy, integrity, and confidentiality of business transactions and messages, and are the basis for several online payment systems such as electronic cash and electronic checks.

Network security and data/transaction security must be addressed si-multaneously. In much the same way as it is pointless to use an armored truck to transport cash from one bank to another bank and then leave the cash in the middle of the bank lobby, online business/personal information that is protected en route needs to be securely protected en route needs to be securely "put in the vault" once it reaches its destination. In order to ensure the safe arrival and storage of in-formation, and to protect it from both internal and external threats, crypto-graphic methods must be supported by perimeter guards (such as firewal1,)

Internet Security Terms

Term	Definition of Concept
Authentication	A way to verify that message senders are who they say they are
Integrity	Ensuring that information will not be accidentally or maliciously altered or de-stroyed.
Reliability	Ensuring that systems will perform consis tently and at an acceptable level of quality
Encryption	A process of making information indecipher-able except to those with a decoding key.
Firewall	A filter between a corporate network and the Internet that keeps the corporate network secure from intruders, but allows authenti cated corporate users uninhibited ac-cess to the Internet.
Spoofing	A way of creating counterfeit packets with private IP (Intranet) addresses in order to gain access to private networks and steal information
Denial of service	An attack on the information and communi cations ser-vices by a third party that prevents legitimate users from using the infrastruc-ture.

Which secure internal computers from Internet access. Managers often as-sume that encryption is enough to protect a business from possible danger. However, encryption provides transac-tion security, but does not do much to prevent unauthorized access to computers, information, and databases.

The remainder of this chapter 'rill discuss the managerial and security implications of firewalls, as well as the data encryption techniques that form the cornerstone of electronic commerce.

Firewalls and Network Security

A firewall is defined as software or hardware that allows only those exter-nal users with specific characteristics to access a protected network (or site). Typically, a firewall allows insiders to have full access to services on the outside while granting access from the outside on a selective basis, based on user names and passwords, Internet IP address, or domain name. For exam-ple, a vendor could permit entry to its Web site on the firewall only to those users with specific domain names belonging to companies that are in long- term contracts to buy its products.

A firewall works by establishing a barrier between the corporate net-work (secure network) and the external Internet (untrusted network). This barrier shields vulnerable corporate networks from prying eyes in the pub-lic network. A firewall is not simply hardware or software, it is an approach to implementing a security policy that defines the services and access to be permit-ted to various users. In other words, a firewall implements an access policy by forcing connections to pass through the firewall, where they can be examined and audited.

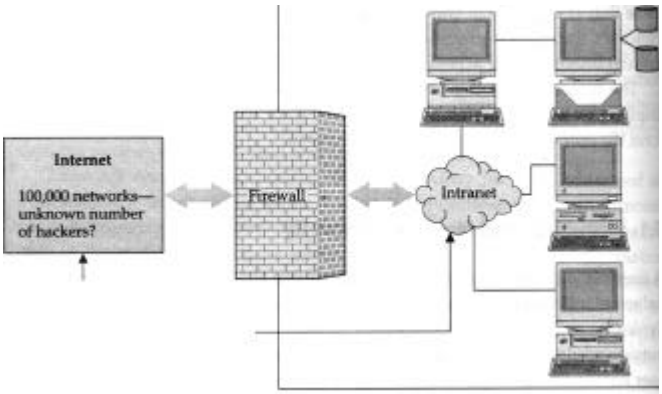
Firewalls are an important consideration for corporations using the Internet, particularly for those in the financial services

industry. In the mid-dle of 1994, Wells Fargo & Co., a bank with an over $50 billion asset base, connected a World Wide Web server to the Internet in order to provide po-tential customers with new account, credit card, and loan information. To insulate its networks against outside intruders, Wells Fargo installed a fire-wall called screening external access link (SEAL) [IWA95]. The bank con-nected to the Internet only after it felt that its firewall was sufficiently impenetrable, thereby providing sufficient protection for its internal busi-ness networks, assets, and client confidentiality. As most corporate internal networks operate on the principle of ease of use, firewalls are a necessary shield from possible mischief from external Internet users.

The given figure illustrates how a firewall controls traffic between internal and external networks by providing a single check point for access control and auditing. As a result, unau-thorized Internet hosts cannot directly access computers inside the network, but authorized internal users can still use Internet services outside of the network. A firewall system is usually lo-cated at a gateway point, such as the place where a site connects to the Internet, but can be located at internal gateways in order to provide protec-tion for a smaller collection of hosts or subnets.

Types of Firewalls

There are several types of firewalls, which offer various levels of security. The most widely used method of firewalling is to place a computer or a router be-tween the network and the Internet, which will then control and monitor all traffic between the outside world and the local network. Numerous varia-tions of firewalls include simple traffic logging systems, IP packet screening routers, hardened firewall hosts, and proxy application gateways.



Firewall Security Policies

Firewall protection methods cover a continuum of security concerns from ease of use to paranoia. Administrators with the responsibility of designing, specifying, and implementing or overseeing the installation of a firewall must address a number of management issues before actual installment [IWA94].

Managers must be clear about the security policies of their organiza-tions. For example, managers have to determine whether their company's firewall is in place to deny all services except Internet connection, or to pro-vide a metered and audited method of regulating access to the Internet in a no threatening manner .There are various degrees of concern between these positions, and the final firewall decision may be more the result of po-litical and/or financial reasoning than technical or engineering finesse. In short, many corporations and data centers have computing security policies and practices that dictate how data must be protected, and a firewall should be an embodiment of this security policy.

Managers must also be aware of the level of monitoring, redundancy, and control in the functioning of firewalls. Having set a risk level in sync with their security policy, managers must make a checklist of what firewalls should monitor, permit, and deny. For instance, the firewall can control ac-cess based on time of day. Organizations might allow employees to run e-mail or FTP at any time, but to read USENET news groups only between 7:00 P.M. and 8:00 A.M. Administrators must determine objectives, combine a needs analysis with a risk assessment, and then sort the requirements into a list to guide firewall implementation.

Firewall policies must be realistic reflections of the level of security in the entire network. For example, if a company restricts access with a fire-wall, it should require passwords on its internal servers as well. It should also provide regular monitoring for unauthorized modems. For example, if unrestricted modem access is still permitted into a site protected by a fire-wall, attackers could effectively circumvent the firewall. Further, a site with classified data should not be connected to the Internet in the first place, and/ or systems with private data should be isolated from the rest of the corporate network.

Finally, managers need to keep in mind that firewalls are not always im-penetrable. During Thanksgiving week 1994, unidentified computer hack-ers broke through General Electric (GE) Internet security firewalls and accessed proprietary information on GE systems (IWA94]. Major damage was reported, and, as a precaution, GE shut down Internet access for sev-enty-two hours. This incident sent a shudder through U.S. corporations rushing to implement firewalls and embrace the Internet as a major conduit for electronic commerce. Since then, firewall technology has improved con-siderably, but thorny management problems concerning security policies have yet to be resolved.

Notes -

LESSON : 11
TUTORIAL - 2

Discussion Questions

How does security of the internet affect how much you shop online?

Will companies who do not offer online shopping be able to compete with those who do in the long run?

Does online shopping exclude certain age groups?

What particular items would you choose to buy online rather than in the actual store?

LESSON 12:
EMERGING FIREWALL MANAGEMENT ISSUES

Firewalls introduce problems of their own. Internet security involves constraints, and users don't like this. It reminds them that Bad Things can and do happen. Firewalls restrict access to certain services. The vendors of information technology are constantly telling us "anything, anywhere, any time", and we believe them naively. Of course they forget to tell us we need to log in and out, to memorize our 27 different passwords, not to write them down on a sticky note on our computer screen and so on.

Firewalls can also constitute a traffic bottleneck. They concentrate security in one spot, aggravating the single point of failure phenomenon. The alternatives, however are either no Internet access, or no security, neither of which are acceptable in most organizations

Firewalls protect private local area networks (LANs) from hostile intrusion from the Internet. Consequently, firewall protection allows many LANs to be connected to the Internet where Internet connectivity would otherwise have been too great a risk.

Firewalls allow network administrators to offer access to specific types of Internet services to selected LAN users. This selectivity is an essential part of any information management program, and involves not only protecting private information assets, but also knowing who has access to what. Privileges can be granted according to job description and need rather than on an all-or-nothing basis.

The issue that most firms grapple with is the make-or-buy decision. Until recently, few vendors have offered off-the-shelf firewall systems. Hence, in the past, construction of firewalls required a significant amount of corpo-rate time and effort, and most firewalls were handcrafted by site adminis-trators. With more choice in the marketplace, managers need to be careful in selecting a firewall solution and need to evaluate the trade-off between ease of use, ease of administration, and data security.

Frequently, technical design of the firewall is dictated by financial con-cerns about the costs of buying or implementing a firewall. For example, a complete firewall product may cost anywhere between $0 and $200,000. At the low end, configuring a router will cost staff time. Implementing a high- end firewall with specialized proxy servers might cost several months of programming effort. Managers must also consider the costs of systems management and evaluate firewalls not only in terms of immediate costs, but also in terms of continuing mainte-nance costs such as support and soft-ware upgrades.

Firewalls also present capacity management problems. For instance, in companies that use the Internet a lot, firewalls represent a potential bottle-neck, since all connections must pass through the firewall and, in some cases, be examined by the firewall.

Finally, firewalls present content management and control problems. Who manages the information on a firewall? Is it the function of the MIS department, marketing communications, or should it be left to the func-tional units? This is a tricky problem because for large firms, content man-agement is a function of the marketing communications department, which zealously guards against any effort that may affect the corporate image. In such a scenario, functional units would have to approach marketing com-munications for clearance and approval before placing anything online. The approval process is bottlenecked and could result in delays of several weeks. In the meantime, the functional units are getting worried because the content is getting dated and would have to. be updated the minute it is approved: a classic "Catch 22" situation. Addressing control issues will re-quire serious thinking about delegation of authority, organizational struc-ture, and content management.

Notes -

LESSON 13:
TRANSACTION SECURITY

Transaction security has become a high-profile concern because of the in-creasing number of merchants trying to spur com-merce online. Consumer confidence in the reliability and protection of business transactions against third-party threats must be enhanced before electronic commerce can succeed.

Unsure of security, consumers are unwilling to provide credit card pay-ment information over the Internet. Given the threat of lawsuits and other liability, the mere thought of "sniffer" programs that collect credit card numbers *en masse* is enough to keep merchants from providing online shop-ping. In order to allay consumer fear and protect the confidential data on public networks, companies are starting to pay greater attention to transac-tion privacy, authentication, and anonymity.

Table below lists five "security requirements" that encompass the security needs of electronic commerce [SK95]. Of these, transaction privacy, confi-dentiality, and integrity are the main barriers to the widespread acceptance of electronic commerce.

Five Internet Security Requirements

Term	**Definition of Concept**
Privacy	The ability to control who sees (or cannot see) information and under what terms
Authenticity	The ability to know the identities of communicating parties
Integrity	The assurance that stored or transmitted information is, unaltered
Availability	The ability to know when information and communication devices will (or will not be) available
Blocking	The ability to block unwanted information or intrusions

Types of Online Transactions

The type of transaction depends on the type of data (or content) being sent across the network The different categories. of data are:

- **Public data:** This type of data has no security restrictions and may be read by anyone. Such data should, however, be protected from unautho-rized tampering or modification.
- **Copyright data:** This type of data is copyrighted but not secret. The owner of the data is willing to provide it, but wishes to be paid for it. In order to maximize revenue, security must be tight.
- **Confidential data:** This type of data contains content that is secret, but the existence of the data is not a secret. Such data include bank account statements and personal files.
- **Secret data:** The very existence of this type of data is a secret and must be kept confidential at all times. It is necessary to monitor and log all access, and attempted access to secret data.

Notes -

LESSON 14:
REQUIREMENTS FOR TRANSACTION SECURITY

There are three basic requirements for transaction security:

Privacy
Transactions must be kept private and inviolable 'in the sense that eavesdroppers cannot understand the message content.

Confidentiality
Traces of the transactions must be expunged from the public network. No intermediary should be allowed to hold copies of the transaction unless authorized to do so.

Integrity
Transactions must not be tampered or interfered with.

Transaction Privacy
Up to now, there have been no real safeguards to en-sure that the messages Internet users send and receive are not intercepted, read, or even altered by some unknown interloper. This threat is technically called **unauthorized network monitoring, or packet sniffing.**

Sniffer attacks begin when a hacker breaks into a computer and installs a packet sniffing program that monitors the network traffic. The sniffer pro-gram watches for certain kinds pf network traffic, typically for the first part of sessions that legitimate user-s initiate to gain access to another system, such as Telnet or FTP sessions. The first part of such sessions contains all the necessary information a sniffer needs to log into other machines, includ-ing the log-in ID, password, and user name of the person logging in. In the course of several days, a sniffer can gather information on local users log-ging into remote machines. Note that one insecure system on a network can expose to intrusion not only other local machines, but also any remote sys-tems to which the users connect.

In one of the most famous' sniffing cases to date, two hackers were sen-tenced for defrauding MCI and other telephone carriers of more than $28 million (U.S.). The hackers had used sniffers to record 50,000 credit card and phone card numbers, and then sold the data to European users who made free long-distance calls using these accounts.

The illegitimate extraction of information from network traffic is noth-ing new. The problem has been magnified because of the Internet. If the compromised system is on a backbone network, intruders can monitor any transit traffic traversing between nodes on that network. Network monitor-ing can rapidly expand the number of systems intruders are able to access, with only minimal impact on the systems on which the sniffers are in-stalled, and with no visible impact on the systems being monitored. Users whose accounts and passwords are collected will not be aware that their sessions are being moni-tored, and subsequent intrusions will happen via le-gitimate accounts on the compromised machines.

Transaction Confidentiality
The electronic commerce environment must ensure that all message traffic is confidential. After successful delivery to their destination gateways, messages must be removed (expunged) from the public environment, leaving only the accounting record of entry and de-livery, including message length, authentication data, and perhaps the audit trail of message transfer agents. All message archiving must be performed in well-protected systems. Provision must be made for the irrevocable emergency destruction of stored, undelivered messages.

Confidentiality is important for transactions involving sensitive data such as credit card numbers, and will become even more important when data, such as employee records and social security numbers, begin travers-ing the network. Distributed networks and wireless links exacerbate the vulnerability of data communications to interception. Message confidential-ity is accomplished using encryption, which secures the communica-tions link between computers.

Transaction Integrity
In order for electronic commerce to succeed, the contents of electronic commerce transactions must remain unmodified dur-ing transport between the client and the server. Transmission must be tam-per-proof in the sense that no one can add, delete, or modify any part of the message during transit. Unauthorized combining of messages either by in-termixing or concatenating during submission, validation, processing, or delivery should not be allowed.

While confidentiality guards against the monitoring of data, mecha-nisms for integrity must prevent active attacks involving the modification of data while the transaction is in progress. Methods for ensuring informa-tion integrity include error detection codes or checksums, sequence num-bers, and encryption techniques. Error detection codes or checksums operate on the entire message or selected fields within a message. Sequence numbers prevent reordering, loss, or replaying of messages by an attacker. Encryption techniques can also detect modifications of a message.

Encryption and Transaction Security
Sensitive information that must travel over public channels (such as the Internet) can be defended by encryption, or secret codes. Although it may sound like the stuff of spy novels, electronic commerce relies heavily on en-cryption. The goal of encryption is to make it impossible for a hacker who obtains the cipher text (encrypted information) as it passes on the network to recover the original message. Encryption is the mutation of information in any form (text, video, graphics) into a forJ,11 readable only with a decryp-tion key. A "key" is a very large number, a string of zeros and ones. Figure shows what a key looks like.

There are two main kinds of encryption in common use today. The older and simpler one is called “single-key” or “secret-key” encryption. The more recent method is called “public-key” encryption. Figure shows what a key looks like.

Notes -

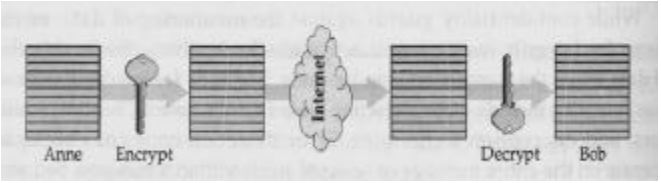
LESSON 15:
TUTORIAL - 3

Discuss about the various security measures in online transactions.

LESSON 16:
SECRET-KEY ENCRYPTION

Example of a key.

Secret-Key Encryption



Secret-key encryption, also known as symmetric encryption, involves the use of a shared key for both encryption by the transmitter and decryption by the receiver. Secret-key encryption works in the following way: Anne wishes to send a purchase order (PO) to Bob in such a way that only Bob can read it. Anne encrypts the PO (the plaintext) with an encryption key and sends the encrypted PO (the cipher text) to Bob. Encryption scrambles the message, rendering it unreadable to anyone but the intended recipient.

Bob decrypts the cipher text with the decryption key and reads the PO. Note that in secret-key encryption, the encryption key and decryption key are the same (see Fig.). The transmitter uses a cryptographic secret "key" to encrypt the message, and the recipient must use the same key to decipher or decrypt it. A widely adopted implementation of secret-key en-cryption is data encryption standard (DES).

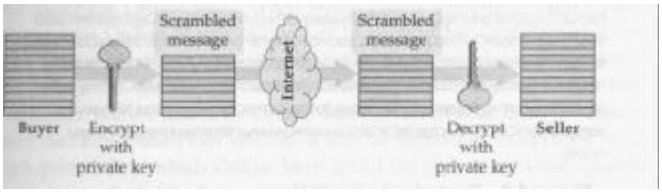
Although secret-key encryption is useful in many cases, it has signifi-cant limitations. All parties must know and trust each other completely, and have in their possession a protected copy of the key. If the transmitter and receiver are in separate sites, they must trust not being overheard during face-to-face meetings or over a public messaging system (a phone system, a postal service) when the secret key is being exchanged. Anyone who over-hears or intercepts the key in transit can later use that key to read all en-crypted messages.

Since shared keys must be securely distributed to each commu-nicating party, secret-key encryption suffers from the problem of key distribution-generation, transmission, and storage of keys. Secure key distribution is cumbersome in large networks and does not scale well to a business envi-ronment where a company deals with thousands of online customers. Further, secret-key encryption is impractical for exchanging messages with a large group of previously unknown parties over a public network. For in-stance, in order for a merchant to conduct transactions securely with Internet subscribers, each consumer would need a distinct secret key as-signed by the merchant and transmitted over a separate secure channel such as a telephone, adding to the overall cost. Hence, given the difficulty of providing secure key management, it is hard to see secret-key encryption becoming a dominant player in electronic commerce.

If secret encryption cannot ensure safe electronic commerce, what can? The solution to widespread open network security is a newer, more sophis-ticated form of encryption, first devel-oped in the 1970s, known as public-key encryption.

Public-Key Encryption

Public-key encryption, also known as asymmetric encryption, uses two keys: one key to encrypt the message and a different key to decrypt the message. The two keys are mathematically related so that data encrypted with one key only be decrypted using the other.



Unlike secret-key encryption, which uses a single key shared by two (or more) parties, public-key encryption uses a pair of keys for each party. One of the two keys is "public" and the other is "private." The public key can be made known to other parties; the private key must be kept confidential and must be known only to its owner. Both keys, however, need to be protected against modification.

The best known public-key encryption algorithm is RSA (named after its inventors Rivest, Shamir, and Adleman). In the RSA method, each participant creates two unique keys, a "public key," which is published in a sort of public directory, and a "private key," which is kept secret. The two keys work to-gether; whatever data one of the keys "locks," only the other can unlock.

For example, if an individual wants to send a snoop-proof e-mail mes-sage to a friend, she simply looks up his public key and uses that key to en-crypt her text. When the friend receives the e-mail, he uses his private key to convert the encrypted message on his computer screen back to the sender's original message in clear text. Since only the bona fide author of an encrypted message has knowledge of the private key, a success-ful decryp-tion using the corresponding public key verifies the identity of the author and ensures message integrity. Even if a would-be criminal intercepts the message on its way to the intended recipient, that criminal has no way of deciphering the message without the private key.

Figure illustrates what a public key looks like. This long string is ac-tually a number represented in hexadecimal. The computer handles the hard work of manipulating the large numbers used in the math of encrypt-ing and decrypting messages.

Table compares secret- and public key systems. Both types of sys-tems offer advantages and disadvantages. Often, the two are combined to form a hybrid system to exploit the strengths of

each method. To determine which type of encryption best meets its needs, an organization first has to identify its security requirements and operating environment. Public-key encryption is particularly useful when the parties wishing to communicate cannot rely on each other or do not share a common key. This is often the case in online commerce.

Another prominent public key method being used in online commerce today is called Digital Signatures.

Comparing Secret key And public key Encryption methods.

Features	**Secret key**	**Public Key**
Number of keys	Single key	Pair of keys
Types of keys	Key is secret	One key is private and one is public
Key Management	Simple but difficult	Need digital certificates & Trusted third parties.
Relative speeds	Very fast	Slower
Usage	Used for bulk data demanding	Used for less Applications such as small documents

Digital Signatures

Digital signatures are implemented using public key encryption. A digital signature is a cryptographic mechanism that performs a similar function to a written signature. It is used to verify the origin and content of a message. For eg, a recipient of data can verify who signed the data and that the data was not modified after being signed.

Digital signature are used for sending authentication. This also means that the originator cannot falsely deny having signed the data. In addition , a digital signature enables the computer to notarize the message , ensuring the recipient that the message has not been forged I transit.

Let us consider the following scenario of a customer, interacting with a merchant , Online mart. When the customer orders something from Online mart, he uses Online mart's public key to encrypt her confidential information. Online Mart then uses its private key to decrypt the message (only a private key can unlock a document deciphered with a public key); thus the customer knows that only Online Mart received that data. To ensure further security , the customer can enclose a digital signature , encrypted with her own private key, which Online Mart could decrypt with the customers public key and know that only the particular customer could have sent it. In the other direction Online mart would send confidential information to the customer using her public key, and only she can decrypt it using her private key . This shows how digital signature work in combination with public key encryption to ensure authentication and privacy.

Technically, How Do Digital Signatures Work? Data is electronically signed by applying the originator's private key to the data. To increase the speed of the process, the private key is applied to a shorter form of the data, called a "hash" or "message digest," rather than to the entire set of data. The resulting digital signature can be stored or transmitted along with the data. The signature can be verified by any party using the public key of the signer. This feature is very useful, for example, when distributing signed copies of virus-free .software. Any recipient can verify that the program re-mains virus-free. If the signature verifies properly, then the verifier has con-fidence that the data was not modified after 1:Jeing signed and that the owner of the public key was the signer.

Digital signatures ensure authentication in the following way. In order to digitally sign a document, a user combines her private key and the docu-ment and performs a computation on the composite (key+docurnent) in or-der to generate a unique number called the digital signature. For example, when an electronic document, such as an order form with a credit card number, is run through the digital signature process, the output is a unique "fingerprint" of the document. This "fingerprint" is attached to the original message and further encrypted with the signer's private key. If a user is communicating with her bank, she sends the result of the second encryp-tion to her bank. The bank then decrypts the document using her public key, and checks to see if the enclosed message has been tampered with by a third party. To verify the signature, the bank performs a computation in-volving the original document, the purported digital signature, and the cus-tomer's public key. If the results of the computation generate a matching "fingerprint" of the document, the digital signature is verified as genuine; otherwise, the signature may be fraudulent or the message altered.

Digital signatures, variations of which are being explored by several companies, are the basis for secure commerce. A digital signature provides a way to associate the message with the sender, and is the cyberspace equivalent of "signing" for purchases. In this way, consumers can use credit card accounts over the Internet. Interested readers can refer to [SCHN96] for a more detailed mathematical discussion of digital signatures.

Digital Certificates Authentication is further strengthened by the use of digital certificates. Before two parties, Bob and Alice, use public-key encryption to conduct business, each wants to be sure that the other party is authenticated. Before Bob accepts a message with Alice's digital signature, he wants to be sure that the public key belongs to Alice and not to someone masquerading as Alice on an open network. One way to be sure that the public key belongs to Alice is to receive it over a secure channel directly from Alice. However, in most circumstances this solution is not practical.

An alternative to the use of a secure channel is to use a trusted third party to authenticate that the public key belongs to Alice. Such a party is known as a certificate authority (CA). Once Alice has provided proof of her identity, the certificate authority creates a message containing Alice's name and her public key. This message, known as a certificate, is digitally signed by the certificate authority. It contains owner identification informa-

tion, as well as a copy of one of the owner's public keys. To get the most benefit, the public key of the certificate authority should be known to as many people as possible. Thus by using one public key (that of a CA) as a trusted third- party means of establishing authentication, disparate parties can engage in electronic commerce with a high degree of trust.

In many ways, digital certificates are the heart of secure electronic transactions. Through the use of a common third party, digital certificates provide an easy and convenient way to ensure that the participants in an electronic commerce transaction can trust each other. For example, in the credit card industry, Visa provides digital certificates to the card-issuing financial institution, and the institution then provides a digital certificate to the cardholder. A similar process takes place for the merchant. At the time of the transaction, each party's software validates both merchant and cardholder before any information is exchanged. The validation takes place by checking the digital certificates that

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LESSON 17: IMPLEMENTATION AND MANAGEMENT ISSUES

were both issued by an au-thorized and trusted third party. In short, digital certificates ensure that two computers talking to each other may successfully conduct electronic commerce.

This section explores important issues that should be considered when de-signing, implementing, and integrating encryption to engage in electronic commerce.

Hardware versus Software Implementations

Encryption can be imple-mented in either hardware or software. Each has its related costs and bene-fits. The trade-offs among security, cost, simplicity, efficiency, and ease of implementation need to be studied when acquiring security products.

In general, software is less expensive and slower than hardware, al-though for large applications, hardware may be less expensive. In addition, software is less secure, since it is more easily modified or bypassed than some hardware products.

In many cases, encryption is implemented in a hardware device (such as a card/key entry system), but is controlled by software. This software re-quires integrity protection to ensure that the hardware device is provided with correct information (controls, data) and is not bypassed. Thus, a hy-brid solution of software and hardware is generally provided. Effective se-curity requires the correct management of the entire hybrid solution.

Key Management

All keys need to be protected against modification, and secret keys and private keys need protection against unauthorized disclo-sure. The proper management of cryptographic keys is essential to the effec-tive use of encryption for security. Key management involves the procedures and protocols, both manual and automated, used throughout the entire life cycle of the keys. This includes the generation, distribution, storage, entry, use, destruction, and archiving of cryptographic keys. Ultimately, the security of information protected by encryption directly de-pends upon the protection afforded to keys.

With secret-key encryption, the secret key(s) must be securely distrib-uted (safeguarded against unauthorized replacement, modification, and disclosure) to the parties wishing to commu-nicate. Depending on the num-ber and location of users, this task may be difficult. Automated techniques for generating and distributing cryptographic keys can ease overhead costs of key management, but some resources have to be devoted to this task.

Public-key encryption users also have to satisfy certain key manage-ment requirements. For example, since a private/public-key pair is associ-ated with (generated or held by) a specific user, it is necessary to link the public part of the key pair to the user. In some cases, the key may be linked to a position or an organization, rather than to an individual user.

In a small community of users, public keys and their II owners II can be strongly bound by simply exchanging public keys. However, business con-ducted on a larger scale, involving geographically distributed users, neces-sitates a means for obtaining public keys online with a high degree of confidence in their integrity and binding to individuals. The support for the binding between a key and its owner is generally referred to as a public-key infrastructure. This involves support for users being able to enter the com-munity of key holders, generate keys (or have them generated on their be-half), disseminate public keys, revoke keys (in case, for example, of compromise of the private key), and change keys. In addition, it may be necessary to build in time/date stamping and to archive keys for verifica-tion of old signatures.

Complying with Export Rules

A number of governments have regula-tions regarding the import or export of encryption. The V.S. government controls the export of cryptographic implementations because it considers them part of munitions. As a general rule, the V.S. government allows en-cryption to be used when: the data being encrypted is of a financial nature and the transaction is between known banks; the content of the data is well- defined; the length of the data is limited; and the encryption cannot easily be used for other purposes. The rules governing export can be quite com-plex, since they consider multiple factors. In addition, encryption is a rapidly changing field, and rules may change from time to time. Questions concerning the export of a particular implementation should be addressed to appropriate legal counsel.

Other Business Issues

Three problems deter widespread acceptance of I encryption for public commerce. First, successful encryption requires that all participating parties use the same encryption scheme. Standards that make encryption feasible have to be established within an organization or a cooperating group (such as banks).

Second, the distribution of keys has prevented wider use of encryption, as there is no easy way to distribute the secret key to an unknown person on the network. The only safe way to communicate a key is in person, and even then the distributor must provide a different secret key for each per-son. Even public-key schemes require a method for key distribution.

The final deterrent to widespread acceptance of encryption is that it is difficult to use. For encryption to flourish, the encryption user interface must be simplified so that an average consumer can easily use the software. Currently, a consumer will not wait more than a few seconds for informa-tion access or retrieval. In the future, encryption will be done by fast hard-ware rather than software.

Legal Issues

As encryption becomes commonplace in the commercial world, employers will face the problem of producing documents that only certain employees can decrypt. Given labor force mobility, a

company may be confronted with the task of producing documents encrypted by ex- employees who may not wish to cooperate.

Encryption raises a plethora of legal problems for corporations includ-ing: Will courts tolerate the production of pivotal evidence in encrypted form? Will a party's counsel produce information or data without first hav-ing it decrypted, leaving the opposing counsel with the task of "cracking" the encryp-tion? On what basis could counsel claim such a data file was ir-relevant or privileged? Will the producer have the onus of contacting the ex-employee in the hope that the employee will remember the password necessary for decryption? Will the courts compel individuals to provide their passwords?

Imagine the operational problems if all employees routinely used en-cryption and changed their passwords regularly, both encouraged practices in security-minded organizations. It may not be unusual, in the years ahead, to find that 100 percent of all electronic mail messages, and perhaps 30 to 50 percent of computer-based documents, are stored in encrypted form [AJL94].

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LESSON 18: WWW AND SECURITY

WWW and Security

For the purposes of electronic commerce, it is important that clients authen-ticate themselves to servers and that servers authenticate themselves to clients. Whenever a message enters the public Internet for transfer, it must bear some unambigu-ous identification of the system from which it came. On the network this identification often takes the form of an IP address. Sender authentication is performed at the time a sender submits a message and/ or by a gateway system when a message has been delivered to it.

Several software companies and electronic marketplace providers are tackling the issue of secure Web information transfer by developing addi-tional data security measures that involve encryption or digital coding of sensitive data, such as credit card numbers, between the client (user) and server (merchant). The following sections discuss how data encryption is done on the Web using Netscape's Secure Sockets layer, as well as how au-thentication is ensured.

Netscape's Secure Sockets Layer

Netscape developed Secure Sockets Layer (SSL) to address security con-cerns about information transferred over the Web. Along with Netscape, other major players in the implementa-tion of SSL include IBM, Microsoft, and Spyglass, all of which are incorporating SSL into their client and server applications.

The Web itself does not encrypt the data sent across it, and anyone who intercepts a Web transmission has complete access to the information con-tained therein. Through the use of SSL, if a transmission falls into the wrong hands, the information it contains-a credit card number, for example- should be unread-able to anyone other than the sender and receiver.

SSL works in the following way. When a user surfs the Web with the Netscape browser, the browser communicates with Web servers using a lan-guage called hypertext transport protocol (HTTP). To download an HTML(hypertext markup language) file of a home page, for example, the browser sends an "HTTP GET" command to the server and the server responds by transmitting the file's contents to the browser. The text of the GET com-mand and the text of the HTML file are sent and received through connec-tions called sockets, which enable two remote computers to talk to each other via the Internet. The security problem arises because most of the transmission during the connection is done in the clear (or plaintext), which can be read by almost anyone with access. SSL solves this problem by en-crypting HTTP transmissions. Data is automatically encrypted before it is transmitted and then unencrypted on the receiving end. In between, the data is a meaningless jumble of zeros and ones to anyone without the de-cryption key.

The encryption key that the Netscape browser uses to encode SSL transmissions is generated automatically on a persession basis from information such as time of day that is gathered at runtime during the transaction. SSL security hinges on the difficulty of unlocking an encrypted message with-out the key. SSL relies on RC4, a well-known block-encryption algorithm in-vented by Ron Rivest. RC4 is generally believed to be secure, although the exact details of the algorithm are guarded and have not been subjected to independent scrutiny. For more on RC4 see [SCHN96].

Assuming that the underlying algorithm is mathematically secure, the difficulty of cracking an encrypted SSL message is a function of the key length. If the encryption key is only 8 bits long, for example, messages would be easily decipherable because 8 bits allows only 256 possible keys. A computer could arrive at a solution very quickly simply by trying all 256 keys in a sequential manner (also called brute force method of figuring out the solution). A key containing 512 bits, however, would present a formida-ble obstacle. With billions of different combinations, a supercomputer capa-ble of testing one million keys per second would require centuries to find the key to the encrypted message.

SSL is far from flawless. Experts have expressed concern about the en-cryption method. Netscape uses a 40-bit key in the international versions of its browser and servers, as required by the U.S. State Department. The RC4 regulations-named for the RC4 algorithm on which SSL is base delimit the export of products with encryption keys longer than 40 bits. These regulations make Netscape's 128-bit encryption key illegal outside US.

S-HTTP is another important security scheme for the Web that is based on public key encryption. But S-HTTP seems to have drawn less support from the web community because it is limited to dealing specifically with HTTP transactions. The other specifications discussed here are designed to work with a variety of internet server types.

SSL and S-HTTP web implementation on the market today provide for confidentiality, integrity and server authentication , but few offer digital signatures. Digital signatures are needed for customer authentication and to ensure that the company doing business on the internet knows who is at the other end. If a customer order a product and provides a credit card number , it is not always necessary to know who has placed the order and thus many internet shopping ventures have proceeded without digital signature, the credit card number is enough for some companies. Banks, however , will probably want to wait for robust digital signatures. A new protocol called secure electronic transactions (SET) has recently been developed to provide digital signature capability for financial transactions on the web.

Security and Online Web-based BankingSecurity

First Network Bank (SFNB) is an online bank that uses a combo of firewalls and encryption to keep consumer deposits and transactions se-cure.

Security is the primary concern in Web-based banking. Security from loss liability is the first level of consumer protection. Like other banks, de-posits at SFNB are FDIC insured, up to applicable limits (generally up to $100/000). Security from "hacker" threat is the second level of consumer protection. SFNB, after seeking the opinions of security experts and becom-ing convinced that the requisite security technologies currently exist, aligned themselves with Hewlett Packard's subsidiary SecureWare, to de-velop the security architecture upon which their bank would be built.

Elements of the Security

Secure Ware has designed a se-cure Web platform utilizing a three-tiered security architecture:

Encryption technologies to protect data and ensure privacy as infor-mation travels over open networks.

Firewalls and filtering routers to limit access to the system from external networks.

A trusted operating system (Trusted as running on HP-UX version 10.0), which provides strong access controls that create a virtual lockbox for each customer, protecting against unautho-rized tampering with pri-vate account information.

Data Encryption

Encryption is provided using Netscape's SSL protocol (Secure Sockets Layer)-a protocol for securing data communication across computer networks. SSL is used to provide privacy for the data flowing be-tween the browser and the bank server by providing a secure channel for data transmission. It allows transfer of certificates for authentication proce-dures and provides message integrity, insuring that the data cannot be al-tered en route. SFNB is also using public-key encryption to ensure client and server authentication. Under public key cryptography, the bank will is-sue its customers a public/private key pair. The public key is a widely dis-tributed number, and the private key is known only to its owner. Messages encrypted using the public key can only be decrypted with the private key. Key pairs are the perfect mechanism for mutual authentication, that is, each participant in a transaction can verify the identity of the other before pro-ceeding. Customers can be certain they are transmitting information to the bank and not to a malicious third party. At the same time, the bank is as-sured that the data it receives is from an authorized customer, not an in-truder looking for a way to break in.

Firewalls

Firewalls and filtering routers provide SFNB protection from in-truders. Each presents an additional barrier between the Internet and the in-ternal bank network. Filtering routers are used to verify the source and destination of each information packet sent to the bank, and filter out all packets not addressed to specific network services. In order to prevent out-side users from trying to masquerade as internal sources, the filtering router eliminates any outside packets with an inside source address. Only 5-HITP traffic is allowed to the Bank Server.

Firewalls work like filtering routers, examining each packet of informa-tion that is sent across the Internet to the customer service network. The purpose of the firewall is to protect the bank's internal network from out-side observation. All traffic to the firewall is filtered through an e-mail proxy, which verifies the source and destination of each information packet, and eliminates any with suspicious attachments or subject lines. The proxy then changes the IP address of the packet to deliver it to the ap-propriate site within the internal network. This protects inside addresses from outside access.

Trusted Operating System

The bank server runs a trusted operating sys-tem, called CMW+, which represents the first commercial implementation of this highly successful platform used for years by the Depart-ment of Defense and other high-security government agencies. The trusted operat-ing system acts as a "virtual vault," protect-ing customer information and funds inside the bank. It uses multilevel technology, and contains privilege and authorization mechanisms that control access to functions and com-mands. It also contains an audit mechanism that records log-ins and log-outs, use of privilege, access violations, and unsuccessful network connections. This allows quick identification of any suspicious activity.

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LESSON 19:
ELECTRONIC PAYMENT SYSTEMS

Electronic payment is an integral part of electronic commerce. Broadly de-fined, electronic payment is a financial exchange that takes place online be-tween buyers and sellers. The content of this exchange is usually some form of digital financial instrument (such as encrypted credit card numbers, elec-tronic checks, or digital cash) that is backed by a bank or an intermediary, or by legal tender. Three factors are stimulating interest among financial in-stitutions in electronic payments: decreasing technology costs, reduced op-erational and processing costs, and increasing online commerce.

The desire to reduce costs is one major reason for the increase in electronic payments. Cash and checks are very expensive to process, and banks are seeking less costly alternatives. It is estimated that approximately 56 percent of consumer transactions in the United States are cash and 29 per-cent are check. Credits, debits, and other electronic transactions account for about 15 percent of all consumer transactions, and are expected to increase rapidly. Electronic transactions numbered 33 billion in 1993 and are ex-pected to climb to 118 billion by the year 2000. For the same period, paper transactions are forecast to show very modest growth, from 117 billion in 1993 to 135 billion in the year 2000. Banks and retailers want to wean customers away from paper transactions because the processing overhead is both labor intensive and costly.

The crucial issue in electronic commerce revolves around how con-sumers will pay businesses online for various products and services. Currently, consumers can view an endless variety of products and services offered by vendors on the Internet, but a consistent and secure payment ca-pability does not exist. The solutions proposed to the online payment prob-lem have been ad hoc at best. For instance, in one method marketed by CyberCash, users install client software packages, sometimes known as

"electronic wallets," on their browsers. This software then communicates with "electronic cash registers" that run on merchants' Web servers. Each vendor's client works with only that vendor's own server software, a rather restrictive scenario. Currently, merchants face the unappealing option of ei-ther picking one standard and alienating consumers not subscribing to a standard or needing to support multiple standards, which entails extra time, effort, and money.

Today, the proliferation of incompatible electronic payment schemes has stifled electronic commerce in much the same way the split between Beta and VHS standards stifled the video industry's growth in the 1970s. Banks faced similar problems in off-line commerce in the early nineteenth century. Many banks issued their own notes, and a recurrent problem was the tendency of some institutions to issue more notes than they had gold as back-ing. Further, getting one bank to honor another's notes was a major problem. Innovations in payment methods involved the creation of new fi-nancial instruments that relied on backing from governments or central banks, and gradually came to be used as money. Banks are solving these problems all over again in an online environment.

The goal of online commerce is to develop a small set of payment meth-ods that are widely used by consumers and widely accepted by merchants and banks. This chapter offers a brief examination of the various types of electronic payment systems. It then provides an overview of the business, consumer, and legal implications of electronic payment systems.

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LESSON 20: OVERVIEW OF THE ELECTRONIC PAYMENT TECHNOLOGY

Electronic payments first emerged with the development of wire transfers. Early wire transfer services such as Western Union enabled an individual to deliver currency to a clerk at one location, who then instructed a clerk at an-other location to disburse funds to a party at that second location who was able to identify himself as the intended recipient. Cash was delivered to the customer only after identity was established. In this scenario, there was no banking environment; Western Union was a telegraph company. Assurance of payment relied on the financial stability of the firm. Security was pro-vided to the extent that Western Union was a privately controlled transmis-sion facility used to send messages about funds transfer; its lines were not shared with the public, and transactions were private. Authentication was provided only by a signature at the other end of the transmission that veri-fied that the intended party had indeed received the funds.

During the 1960s and early 1970s, private networking technol-ogy has enabled the development of alternative electronic funds transfer (EFT) sys-tems. Electronic funds transfer systems have shortened the time of payment instruction transfer between banks, and in the process have reduced float. However, EFT systems have not changed the fundamental structure of the payment system. Many of the so-called payment innovations over the past two decades have been aimed at minimizing banking costs such as reserve requirements, speeding up check clearing, and minimizing fraud. However, the consumer rarely interacted with the early EFT systems. Recent innova-tions in electronic commerce aim to affect the way consumers deal with payments and appear to be in the direction of a real-time electronic trans-mission, clearing, and settlement system.

Consumer electronic payment systems are growing rapidly, but the op-portunities are scarcely tapped. In the United States, it is estimated that only 3 percent of the $460 billion supermarket industry is transacted on credit or debit cards. Only 1 percent of the $300 billion professional services area is transacted electroni-cally. Less than 12 percent of business at gasoline service stations is electronic and less than 1 percent of fast food restaurants have magstripe readers. The educational market alone is more than $100 billion today, only 6 percent of which is transacted electronically. Even more important is the predicted growth ahead. Consumer payments at the point of sale were $3.6 trillion in 1994, 19 percent of which was on credit and debit cards [F09S].

Recently, several innovations helped to simplify consumer payments. These include:

- **Innovations affecting consumers**: credit and debit cards, automated teller machines (ATMs), stored-value cards, and electronic banking.
- **Innovations enabling online commerce**: digital cash, electronic checks, smart cards (also called electronic purses), and encrypted credit cards.
- **Innovations affecting companies**: the payment mechanisms that banks

provide to corporate customers, such as interbank transfers through au-tomated clearing houses (ACHs) that allow companies to pay workers by direct deposits.

Types of Electronic Tokens: An electronic token is a digital analog of var-ious forms of payment backed by a bank or financial institution. The two basic types of tokens are real-time (or pre-paid) tokens and postpaid tokens.

Real-time tokens are exchanged between buyer and seller. Here, users prepay for tokens that serve as currency. Transactions are settled with the exchange of electronic currency. Examples of prepaid payment mechanisms are digital cash, debit cards, and electronic purses that store electronic money (such as Mondex Electronic Money Card).

Settlement or postpaid tokens are used with funds transfer instructions being exchanged between buyer and seller. Ex-amples of postpaid mecha-nisms are electronic checks (such as NetCheck and NetBill), encrypted credit cards (Web form-based encryption), and third-party authorization mechanisms (such as First Virtual, which is an online intermediary).

Evaluating Various Electronic Token-based Methods
Before examining the specifics of each type of payment instrument, we will discuss the fol-lowing questions to help us to evaluate the various methods.

What is the nature of the transaction for which the instrument is designed? Some tokens are specifically designed to handle micro payments, or pay-ments for small snippets of informa-tion (such as five cents for a file). Some systems target specific niche transactions; others seek more general transac-tions. The key is to identify the parties involved, the average amounts, and the purchase interaction.

What is the means of settlement used? Tokens must be backed by cash, credit, electronic bill payments (prearranged and spontaneous), cashier's checks, letters of credit, or wire transfers. Each option incurs trade-offs among transaction speed, risk, and cost. Most transaction settlement meth-ods use credit cards, while others use other tokens for value, effectively cre-ating currencies of dubious liquidity and with interesting tax, risk, and float implications.

What is the payment system's approach to security, anonymity, and authen-tication? Electronic tokens vary in the protection of transaction privacy and confidentiality. Encryption can help with authentication, non reputability, and confidentiality of informa-tion.

Who assumes what kind of risk at what time? Tokens might suddenly be-come worthless because of bank failure leaving customers with currency that nobody will accept. If the system stores value in a smart card, consumers may be exposed to risk as they hold static assets. Further, electronic tokens might be subject to discounting or arbitrage. If the transaction has a long lag time between product delivery and payment to merchants, there is a risk to mer-chants that buyers will not pay, or to buyers that the vendor will not deliver.

Electronic or Digital Cash

Electronic or digital cash combines computerized convenience with security and privacy that improve on paper cash. The versatility of digital cash opens up a host of new markets and applications. Digital cash attempts to replace paper cash as the principal payment vehicle in online payments. Although it may be surprising to some, even after thirty years of develop-ments in electronic payment systems, cash is still the most prevalent con-sumer payment instrument. Cash remains the dominant form of payment for three reasons: lack of consumer trust in the banking system; inefficient clearing and settlement of non-cash transactions; and negative real interest rates on bank deposits.

These reasons behind the prevalent use of cash in business transactions indicate the need to re-engineer purchasing processes. In order to displace cash, electronic payment systems need to have some cash-like qualities that current credit and debit cards lack. For example, cash is negotiable, mean-ing that it can be given or traded to someone else. Cash is legal tender, meaning that the payee is obligated to take it. Cash is a bearer instrument, meaning that possession is proof of ownership. Cash can be held and used by anyone, even those without a bank account. Finally, cash places no risk on the part of the acceptor; the medium is always good.

In comparison to cash, debit and credit cards have a number of limita-tions. First, credit and debit cards cannot be given away because, techni-cally, 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 in-struments; their usage requires an account relationship and authorization system. Similarly, checks require either personal knowledge of the payer, or a check guarantee system. A really novel electronic payment method needs to do more than recreate the conve-nience that is offered by credit and debit cards; it needs to create a form of digital cash that has some of the proper-ties of cash.

Properties of Electronic Cash

Any digital cash system must incorporate a few common features. Specifically, digital cash must have the following four properties: monetary value, interop-erability, retrievability, and security (KALA96].

Digital cash must have a monetary value; it must be backed by cash (currency), bank-authorized credit, or a bank-certified cashier's check. When digital cash created by one bank is accepted by others, reconciliation must occur without any problems. Without proper bank certification, digi-tal cash carries the risk that when deposited, it might be returned for insuf-ficient funds.

Digital cash must be interoperable, or exchangeable as payment for other digital cash, paper cash, goods or services, lines of credit, deposits in banking accounts, bank notes or obligations, electronic benefits transfers, and the like. Most digital cash proposals use a single bank [MN93]. In prac-tice, not all customers are going to be using the same bank or even be in the same country, and thus multiple banks are necessary for the widespread use of digital cash.

Digital cash must be storable and retrievable. Remote storage and re-trieval (such as via a telephone or personal communica-tions device) would allow users to exchange digital cash (withdraw from and deposit into bank-ing accounts) from home or office or while traveling. The cash could be stored on a remote computer's memory, in smart cards, or on other easily transported standard or special-purpose devices. As it might be easy to cre-ate and store counterfeit cash in a computer, it is preferable to store cash on an unalterable dedicated device. This device should have a suitable inter-face to facilitate personal authentication using passwords or other means, and a display for viewing the card's contents.

Digital cash should not be easy to copy or tamper with while it is be-ing exchanged. It should be possible to prevent or detect duplication and double-spending of digital cash. Double spending, the electronic equiva-lent of bouncing a check, is a particularly tricky issue [DFN88]. For in-stance, a consumer could use the same digital cash simultaneously to buy items in Japan, India, and England. It is particularly difficult to prevent double-spending if multiple banks are involved in the transac-tions. For this reason, most systems rely on post-fact detection and punishment.

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LESSON 21: ELECTRONIC CHECKS

Electronic checks are designed to accommodate the many individuals and en-tities that might prefer to pay on credit or through some mechanism other than cash. Electronic checks are modeled on paper checks, except that they are initiated electronically, use digital signatures for signing and endorsing, and require the use of digital certificates to authenticate the payer, the payer's bank, and bank account. The security/authentication aspects of digital checks are supported via digital signatures using public-key cryptography.

Ideally, electronic checks will facilitate new online services by: allowing new payment flows (the payee can verify funds availability at the payer's bank); enhancing security at each step of the transaction through automatic validation of the electronic signature by each party (payee and banks); and facilitating payment integration with widely used EDI-based electronic or-dering and billing processes.

Electronic checks are delivered either by direct transmission using tele-phone lines, or by public networks such as the Internet. Electronic check payments (deposits) are gathered by banks and cleared through existing banking channels, such as automated clearing houses (ACH) networks. This integration of the existing banking infrastructure with public networks. This integration provides an implementation and acceptance path for banking, industry, and consumers to build on existing check processing facilities.

Benefits of Electronic Checks

Electronic checks have the following advantages:

Electronic checks work in the same way as traditional checks, thus simplifying customer education. By retaining the basic characteristics and flexibility of paper checks while enhancing the functionality, electronic checks can be easily understood and readily adopted.

Electronic checks are well suited for clearing micro payments; the con-ventional cryptography of electronic checks makes them easier to process than systems based on public-key cryptography (like digital cash). The payee and the payee's and payer's banks can authenticate checks through the use of public-key certificates. Digital signatures can also be validated automatically.

Electronic checks can serve corporate markets. Firms can use electronic checks to complete payments over the networks in a more cost-effective manner than present alternatives. Further, since the contents of a check can be attached to the trading partner's remittance information, the electronic check will easily integrate with EDI applications, such as ac-counts receivable.

Electronic checks create float, and the availability of float is an impor-tant requirement for commerce. The third-party account-ing server can earn revenue by charging the buyer or seller a transaction fee or a flat rate fee, or it can act as a bank and provide deposit accounts and make money from the deposit account pool.

Electronic check technology links public networks to the financial pay-ments and bank clearing networks, leveraging the access of public net-works with the existing financial payments infrastructure.

Online Credit Card-Based Systems

Credit card payment negotiation involves two steps: The merchant presents the customer with product/ service price, order confirmation and status, de-livery notifications, and payment options accepted by the merchant; and the buyer presents the merchant with payment choice and associated infor-mation in a secure manner. As of yet, there is no standard way of sending secure payment instructions over the Web. Currently, consumers can "shop"-look at content and read product descriptions-in the Web envi-ronment, but have to go off-line in order to use their credit cards to actually make their purchases.

Recently, several companies, including Cyber Cash, VISA, and First Virtual, have implemented payment systems. Different vendors have lined up behind different proposed security measures, each fighting to be the dominant standard. As vendors continue to wage security standards bat-tles, it is perfectly reasonable for consumers to be cautious about making online purchases. Until consumers feel as comfortable using their credit cards online as they do over the telephone, Web-based commerce will lan-guish rather than flourish.

The different payment schemes require customers to set up special ac-counts, and/or buy or download and install special software for their per-sonal computers. However, not all banks can handle different payment systems. In order to avoid losing customers by selecting one payment method over another, some merchants sidestep the confusion caused by multiple payment standards by verifying credit card transactions manu-ally. They take credit card numbers over the Internet, and then, at the end of the day, batch the verification process. If there is a problem, they send e-mail to the customers informing them of the problem.

Safe credit card-based commerce will not be possible until security stan-dards are in place. Security standards ensure the negotiation of payment schemes and protocols, and the safe transport of payment instructions. Microsoft/VISA and Netscape/Verifone contend that they can vastly sim-plify the payment process by developing software for both banks and mer-chants. The bank software would allow banks to use their existing computer systems to verify and process encrypted credit cards coming from the online world. The merchant software would allow merchants to buy one single package integrated with a Web server that serves as a storefront and payment system. The customer can simply continue to use his or her current browser to interact with the electronic storefront.

LESSON 22: TYPES OF CREDIT CARD PAYMENTS

Credit card-based payments can be divided into three categories:

Payments using plain credit card details: The easiest method of credit card payment is the exchange of unencrypted credit cards over a public network such as telephone lines or the Internet. The low level of security inherent in the design of the Internet makes this method problematic (any hacker can read a credit card number, and there are programs that scan the Internet traffic for credit card numbers and send the numbers to their programmers). Authentication is also a significant problem, and the vendor is usually responsible for ensuring that the person using the credit card is its owner.

Payments using encrypted credit card details: Even if credit card details are encrypted before they are sent over the Internet, there are still certain factors to consider before sending them out. One such factor is the cost of a credit card transaction itself, which might prohibit low-value payments (micro payments).

Payments using third-party verification: One solution to security and verification problems is the introduction of a third party to collect and approve payments from one client to another.

Payments Using Encrypted Credit Card Details

Encryption is initiated when credit card information is entered into a browser or other electronic commerce device and sent securely over the network from buyer to seller as an encrypted message. This practice, however, does not meet important requirements for an adequate financial system, such as nonrefutability, speed, safety, privacy, and security.

To make a credit card transaction truly secure and nonrefutable, the fol-lowing sequence of steps must occur before actual goods, services, or funds flow:

1. A customer presents his or her credit card information (along with an authentic signature or other information such as mother's maiden name) securely to the merchant.
2. The merchant validates the customer's identity as the owner of the credit card account.
3. The merchant relays the credit card charge information and digital signature to his or her bank or online credit card processor.
4. The bank or processing party relays the information to the customer's bank for authorization approval.
5. The customer's bank returns the credit card data, charge authentica-tion, and authorization to the merchant.

One company that has implemented the preceding process is CyberCash (www.cybercash.com). CyberCash transactions move between three separate software programs: one program that resides on the con-sumer's PC (called a wallet), one that operates as part of the merchant server, and one that operates within the CyberCash servers. The process works in the following manner: The consumer selects items for purchase and fills out the merchant's order form, complete with necessary shipping information. The merchant server presents an invoice to the consumer and requests payment. The consumer is given the option to launch the Cyber Cash Wallet, a software program that does the encryption, if they al-ready have it. When the consumer clicks on the "PAY" button, the Cyber Cash software on the merchant server sends a special message to the consumer's PC that awakens the Cyber Cash Wallet. The consumer simply chooses which credit card to pay with and clicks on it. The rest of the process is a series of encrypted automatic messages that travel between the three parties on the Internet and the conventional credit card networks that are connected directly to the Cyber Cash servers. Since the Cyber Cash Wallet is a separate piece of software, the consumer can use virtually any browser to shop at a merchant on the Web.

Cyber Cash can also be used for micro payments, that is, people pay small change-usually a nickel or a dime-as they click on icons, which could be information or files. The process is an offshoot of CyberCash's Wallet technology. Currently, users download free Wallet software to their PC and load it up electronically with a credit card cash advance. The plan for micro payments is to create a "small change" version, which would dip from a checking account as well as a credit card. After selecting a game to play or item to buy, an invoice comes on screen. The consumer clicks on a Pay button, and a transaction is encrypted that transfers money out of a coin purse icon and into the vendor's account, which is-set up on a CyberCash server. CyberCash will make its money by selling the technol-ogy as well as by offering payment authentication and aggregation services. The company believes it can process payments as low as ten cents.

Secure Electronic Transactions (SET)

Secure electronic transactions is a protocol for encrypted credit card payment transfers. Announced in February, 1996, by VISA and MasterCard, SET estab-lishes a single technical standard for protecting payment card purchases made over the Internet and other open networks. Participants in the SET con-sortium include Microsoft, Netscape, GTE, IBM, SAlC, Terisa Systems, and Verisign. SET is based on public-key encryption and authentication technol-ogy from RSA Data Security. The objectives of payment security are to: pro-vide authentication of cardholders, merchants, and acquirers; provide confidentiality of payment data; preserve the integrity of payment data; and define the algorithms and protocols necessary for these security services.

Why Do We Need SET?

One of the benefits of the Internet is that it enables users to tap into information around the clock, from just about anywhere in the world. However, it does pose some practical drawbacks. The potential for fraud and deception is far greater online. When the other "person" is merely a blip on a computer screen, it is difficult to determine whether or not they hold a

valid account. And how can a "real" merchant feel comfortable accept-ing a credit card account number without some form of identification? It is also difficult to trust a merchant you have never actually seen. After all, the merchant's "store" may exist only on a remote hard drive. In order to combat fraud there has been increasing focus on authentication on the Web. Web a11-thentication requires the user to prove his or her identity for each requested service. Various vendors in the e-commerce market are attempting to provide an authentication method that is easy to use, secure, reliable, and scalable. Third-party authentication services must exist within a distributed network environment in which a sender cannot be trusted to identify him- or herself correctly to a receiver. In short, authentication plays an important role in the implementation of business transaction security.

What Features Does SET Specify?

The following objectives are ad-dressed by SET specifications: confidentiality of information, integrity of data, consumer account authentication, merchant authentication, and inter-operability.

Confidentiality of information. To facilitate and encourage financial transac-tions, it will be necessary for merchants and banks to assure consumers that their payment information is safe and accessible only by the intended recip-ient. Therefore, credit card account and payment information must be se-cured as it travels across the network, preventing interception of account numbers and expiration dates by unauthorized individuals. SET provides confidentiality by the use of message encryption.

Integrity of information. SET ensures that message content is not altered during the transmission between originator and recipient. Payment infor-mation sent from consumers to merchants includes order information, per-sonal data, and payment instructions. If any component is altered in transit, the transaction will not be processed accurately. In order to eliminate this potential source of fraud and/or error, SET provides the means to ensure that the contents of all order and payment messages received match the contents of messages sent. Information integrity is ensured by the use of digital signatures.

Consumer account authentication. Merchants need a way to verify that a consumer is a legitimate user of a valid account number. Digital signatures and digital certificates ensure consumer account authentication by provid-ing a mechanism that links a consumer to a specific account number. SET designates a third party called a certificate authority to authenti-cate the sender and receiver.

Merchant authentication. The SET specifications provide a way for con-sumers to confirm that a merchant has a relationship with a financial insti-tution that allows that merchant to accept bank card payments. Merchant authentication is ensured by the use of digital signatures and merchant cer-tificates.

Interoperability. The SET specifications must be applicable on a variety of hardware and software platforms, and must not prefer one over another. Any consumer with compliant software must be able to communicate with any merchant software that also meets the defined standard. Interoperability. by the use of standard protocols and message formats.

For the technical underpinnings of the SET standard, please see the lat-est information published on VISA's Web site, http://www.visa.com/.

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LESSON 23:
OTHER EMERGING FINANCIAL INSTRUMENTS

Several other electronic payment systems are currently being prototyped and tested. These include debit cards, electronic benefit transfer cards, and smart cards.

Debit Cards at the Point of Sale (POS)

The fastest growing number of electronic transactions today are debit card point-of-sale transactions. Such a transaction occurs when a customer uses a debit card to make a purchase from a merchant (supermarket, gas station, convenience store, or some other store that accepts such cards instead of us-ing cash, check, or credit card).

The transaction works much like a credit card transaction. For example, a customer gives an ATM card to the merchant for the purchase. The mer-chant swipes the card through a transaction terminal, which reads the infor-mation; the customer enters his personal identification number (PIN); and the terminal routes the transaction through the ATM network back to the customer's bank for authorization against the customer's demand deposit account. The funds, once approved, are transferred from the customer's bank to the merchant's bank.

These transactions occur within the banking system, and safety of pay-ment is assured. The third-party processors who provide services for mer-chants are also examined by the federal regulators for system integrity. Both the consumer and the merchant maintain bank accounts, and the funds are transmit-ted inter-bank within the payment system. Authentication is pro-vided by the use of the digital signature or PIN numbers, just as it is at ATMs. Further, PINs are sent through the system in an encrypted form, and the PIN pads and terminals are tamper-proof. Dedicated lines are also often used for transmis-sion, particularly by larger merchants.

Debit Cards and Electronic Benefits Transfer

Debit cards are being used extensively for electronic benefits transfer (EBT). Electronic benefits transfer uses debit cards for the electronic delivery of benefits to individuals who otherwise may not have bank accounts. In an EBT system, recipients access their benefits in the same way that consumers use debit cards to access their bank accounts electronically: the card is inserted into or swiped through a card reader and the cardholder must enter a PIN associated with that card. The benefit recipient can then access his or her benefits to make a purchase or obtain cash. For example, food stamp purchases are charged against the participant's allotment, and other purchases or cash distributions are charged against the participant's cash assistance program allotment.

Benefits that can be delivered via EBT generally fall into three cate-gories: federally funded, but state administered benefits (such as food stamps, Aid to Families with Dependent Children programs); state-funded and state-administered benefits (such as general assistance, heating assis-tance, refugee assistance, and supplemental or emergency payments); and benefits that are both federally funded and federally adminis-tered (such as Social Security and Veterans benefits).

Through EBT, existing networks and technologies can provide benefit recipients with online access to their funds at pas devices and ATMs. In an EBT process, no paper changes hands, except for the receipt printed for the purchaser by the pas device or the ATM. Recipients can access cash through any number of establishments, including grocers, drugstores, and financial institutions, as well as ATMs. Certain cash payments can also be facilitated by installing pas devices in housing authority and utility com-pany offices to accept rent and bill payments.

Electronic benefits transfer has several advantages over paper-based, benefit distribution systems. First, EBT is less costly. Currently, many recipi-ents of federal and state benefits must pay significant fees (three or more dollars) to cash their checks. EBT systems are designed to provide no-cost or low-cost access methods.

Second, EBT is more convenient than paper methods. EBT eliminates the need to carry food stamp coupons, stand in long lines to cash checks, or accept the entire benefit amount at one time. EBT programs also provide re-cipients with toll-free customer service lines and multilingual support to handle questions or problems. EBT is safer than cash or coupons, which can be lost or stolen. In EBT, benefits are stored electronically, and can be used only when needed and in the amounts required. Recipients control all ac-cess to their benefits through their cards and PINs. They can also deactivate lost or stolen cards immediately and request a replacement card by a toll free phone call.

Third, EBT is convenient for retailers. It eliminates the time-consuming task of handling food stamp coupons, making grocery checkout procedures faster and easier. By eliminating checks and coupons, EBT reduces losses as-sociated with theft, forgery, and fraud.

Finally, EBT is convenient for the government. Its inherent audit and tracking advantages enhance investigations into suspicious conduct by re-tailers. EBT improves benefit program management by creating an audit trail and record of benefit usage, ensuring that programs are working prop-erly and effectively.

LESSON 24:
DISCUSSION

DISCUSSION

LESSON 25:
SMART CARDS

Smart cards, also called stored value cards, use magnetic stripe technology or integrated circuit chips to store customer-specific information, including electronic money. The cards can be used to purchase goods or services, store information, control access to accounts, and perform many other functions.

Smart cards offer clear benefits to both merchants and consumers. They reduce cash-handling expenses and losses caused by fraud, expedite cus-tomer transactions at the checkout counter, and enhance consumer conve-nience and safety. In addition, many state and federal governments are considering stored value cards as an efficient option for dispersing govern-ment entitlements. Other private sector institutions market stored value products to transit riders, university students, telephone customers, vend-ing customers, and retail customers.

One successful use of stored value cards is by New York's Metropolitan Transportation Authority (MTA). The MTA is the largest transportation agency in the United States and, through its subsidiaries and affiliates, op-erates the New York City subway and public bus system, the Long Island Railroad and Metro-North commuter rail systems, and nine tolled intrastate bridges and tunnels. These facilities serve four million customers each workday. In 1994, the MTA began the operation of an automated fare-collec-tion system based on a plastic card with a magnetic stripe. The MetroCard is either swiped through a card reader at subway stations or dipped into a farebox on buses where the fare is decremented. All 3,600 MTA buses became operational in 1996. The full complement of 467 subway stations is ex-pected to be operational by mid-1997. By 1999, the MTA anticipates more than 1.2 billion electronic fare collection transactions a year on subway and bus lines.

The management challenges created by smart card payment systems are formidable. Institutions such as the MTA have made a considerable invest-ment in the stored value card processing network, and to get a good return on investment must identify new and innovative ways to achieve addi-tional operating efficiencies and value. For example, many commuters in the New York area use two or three different mass transit systems to get to and from work. Each of these systems bears the expense of maintaining its own proprietary network. In addition, the customer ends up having to manage two or three different fare media, and make two or three times as many free purchase transactions. New regional initiatives will be necessary to integrate the multiple networks, and to make it cost – effective and possible to implement a region wide transporta-tion fare payment system that will link all of the transit providers in that region.

The Federal Reserve recently created a Payments System Research Group to define the key public policy issues related to the evolution of the smart card payments system. Some of the questions being studied include: When is an account deposit insured? Is the account still insured when the value has been loaded on a smart card? Is the value on a smart card consid-ered cash? Is a smart card more like a traveler's check or a credit card?

One reason for the success of stored value cards is that their application focus is narrow and they build upon existing infrastructure such as: credit, debit, and ATM cards; funds-clearing and settlement mechanisms; regional and national ATM/POS networks; and retail, corporate, and government customer relationships.

It remains to be seen how the integration between smart cards and online commerce will takes place.

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LESSON 26:
ELECTRONIC FUNDS TRANSFER

Electronic Funds Transfer is used to settle credit card transactions by transferring funds between the seller and the bank, which has issued the credit card to the customer. A Clearing House would settle the accounts of the sending bank and the receiving bank.

Online Catalogs

Online catalogs provide easy access to product information. Consumers are benefited because they are able to obtain detailed, up to the minute information about a wide range of products over the Internet, without having to endure the inconvenience of visiting a showroom.

For assisted selling, a valuable tool is a marketing encyclopedia, an intelligent electronic catalog that connects sales representatives and customers to a company's most current product and service information. It provides a single point of entry for harnessing and distributing all product information. Product managers can update information in the database and immediately broadcast the changes throughout the enterprise. Some critical requirements of any marketing encyclopedia are the ability to easily create and maintain a repository of product information; the ability to create multiple search mechanisms to assist in locating information; and the ability to alert sales representatives and customers to bundled products and services, promotions, and complementary products.

Electronic Data Interchange

EDI refers to the exchange of electronic business documents, i.e. purchase orders, invoices etc., between applications. The EDI documents are formatted using published standards. These standards were developed by businesses during the 1970s and are now under the control of the ANSI (American National Standards Institute) X12 committee, which sets the EDI standards in North America. EDI requires a network connection between the two companies, exchanging business documents exchanging business documents, called trading partners. Traditionally, this has required a dedicated leased line or a connection to a Value Added Network (VAN). In theory, EDI allows all vendors and their customers to link their computing infrastructures without worrying about the differences in their respective organizations and systems.

The most widely recognized benefits of EDI are:

1. Reduced lead-time from placing the order to receiving the goods for manufacturing and retail firms and reduced lead-time in processing claims for insurance and medical professions and other service organizations.
2. Reduced errors in producing manual documents and data entry.
3. Reduced processing costs.

The various standards that are being used are-

1. ANSI X12 - For North America.
2. EDIFACT - Electronic Data Interchange for Administrators, Commerce and

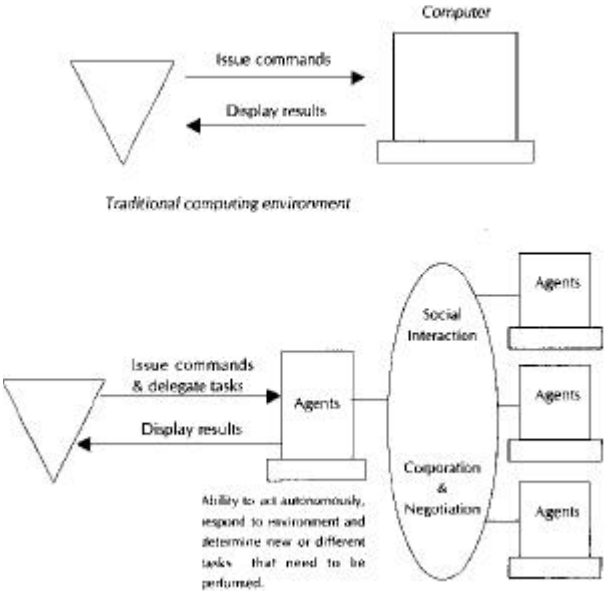
Transport. This standard is being used in the European community.

Intelligent Agents

The Intelligent agent is software that assists people and acts on their behalf. Intelligent agents work by allowing people to delegate work that they could have done, to the agent software. Agents can, just as assistants can, automate repetitive tasks, remember things the user might have forgotten, intelligently summarize complex data, learn from the user and even make recommendations to the user. In addition to making recommendations to the user, the agents can also make decisions and perform actions based on those decisions.

One typical use of the intelligent agent may be found in the exploration of data on the Internet. The Internet can be viewed as a large distributed Information resource, with connecting systems that are designed and implemented by many different organizations with various goals and agendas. The growth of the Internet and correspondingly the vast amount of Information it holds, presents a problem to the users-information overload. This causes a problem of locating the relevant information. As a result much of the information is discarded and processed in a sub optimal manner. The agent technology may help the user by helping the user get around this problem. In times to come it is hoped that agent technology can enhance the feature of electronic commerce by efficiently matching buyers and sellers.

Intelligent Agent Computing Agent



Three primary dimensions of the agents have been defined: agency, intelligence and mobility.

1. **Agency:** The degree of autonomous action that can me taken; that is actions performed without the need for direct human intervention or intervention by other agents. The agents should have control over the actions performed within its system, i.e., not have actions performed by other agents. Other agents can request actions, but the agent itself decides whether to approve and allow the action.
2. **Intelligence:** The extent to which an agent can understand its own internal state and its external environment. The level of intelligence is further classified according to its ability to respond, to adapt and to take initiative.
3. **Respond:** Agents should perceive and respond to their environments.

Notes -

LESSON 27:
TUTORIAL - 4

Discuss about the benefits of electronic payment system.

LESSON 28: ELECTRONIC COMMERCE AND BANKING

"Banking is vital to a healthy economy. Banks are not" [AS95]. This quote succinctly captures the structural and operational tumult occurring in the fi-nancial services industry. Banking as a business can be subdivided into five broad types: retail, domestic wholesale, international wholesale, invest-ment, and trust. Of all these types, retail and investment banking are most affected by online technological innovations and are the ones that stand to profit most from electronic commerce.

The role of electronic commerce in banking is multifaceted-impacted by changes in technology, rapid deregulation of many parts of finance, the emergence of new banking institutions, and basic economic restructuring. Given these environmental changes, banks are reassessing their cost and profit structures. Many banks feel that in order to be profitable they need to reduce operating expenses and maintain strict cost control. This philosophy is evident in the many mergers and acquisitions occurring in the banking industry. The challenge behind bank restructuring lies in adequately operationalzing the notion of cost control.

Technology is the predominant solution for controlling costs. Banks are Increasingly turning toward technology to help reduce operating costs and still provide adequate customer service. Innovation and technology are becoming the key differentiators in the financial services business. Advance in networking, processing, and decision analytics have allowed institutions to lower service costs. Technology has also accelerated the pace of product innovation. For example, sophisticated arbitrage instruments like deriva-tives are changing the nature of investment banking. The Securities and Exchange Commission's decision to allow Spring Street Brewery to trade its stock online may also fundamentally change investment banking by disinter mediating the traditional role of underwriting.

Technology is enabling the development of new products and services. For example, technology is capable of replacing or expediting tedious finan-cial exercises like check writing, filing taxes, and transferring funds. Although large businesses have automated these tasks, many small busi-nesses and most households still do them manually. This is not surprising; large businesses have been undergoing computerization for more than thirty years, whereas PCs have been entering households in significant numbers only in the last few years.

Technology is changing the interaction between banks and consumers. In particular, technological innovations have enabled the following capabil-ities: online delivery of bank brochures and marketing information; elec-tronic access to bank statements; ability to request the transfer of funds between accounts; electronic bill payment and presentment; ability to use multiple financial software products with "memory" (thus eliminating the need to re-enter the same data); online payments—encrypted credit cards for transferring payment instructions between merchant, bank, customer; and finally, micro payments (or nickel-and-dime transactions using electronic cash and electronic checks). These online capabilities increase the fa-cility and speed of retail banking.

However, new technology is a double-edged sword. While it enables banks to be more competitive through huge investments, it also enables new competition from fast-moving, nonbanking firms. This trend can be seen in the area of online payments, where recent innovations have pro-vided an opportunity for nonbanks to break into the banking business, threatening the banking stronghold on one of the last key services provided by banks. The present nature of online payments is a clear indication that if the banking industry fails to meet the demand for new products, there are many industries that are both willing and able to fill the void.

Technology also creates problems in the product development life-cy-cle. In the past banks had the luxury of long roll-out periods because suc-cessful investment in retail banking required a large monetary commitment for product development. This financial requirement pre-vented new participants from entering the market and was a key determi-nant of success. This is no longer the case. Instead of a single institution doing everything, technology allows the creation of a "virtual financial institution" made up of firms, each contributing the best-of-breed software or products to the overall product. In this new "virtual model," banks compete with the twelve-to-eighteen-month product development times of companies like Intuit or Netscape, which have product life-cycle times of only six to nine months.

Clearly, the impetus for drastic change in the banking industry does not come from forces within banking; it is from competitive pressure outside the industry. It is important to determine the origins of this competition as well as to ask three questions more relevant to managers: What are the di-mensions of nonbank financial services competition? What is the role of the Web, Internet, and electronic commerce in this competition? How can finan-cial institutions effectively leverage the "legacy" information infrastructure to thwart nonbank competition? This chapter addresses these questions and presents an overview of changing dynamics in the banking industry that, together with technological changes, are creating the need to rethink the ex-isting paradigm of financial services.

Changing Dynamics in Banking Industry

In recent years, there has been a major change in the way banks strive for increased profitability. In the past, the banking industry was chiefly con-cerned with asset quality and capitalization; if the bank was performing well along these two dimensions, then the bank would likely be profitable. Today, performing well on asset quality and capitalization is not

enough. Banks need to find new ways to increase revenues in a "mature market" for most traditional banking services, particularly consumer credit. A thorough understanding of this competitive environment is needed before banks can determine their online strategy.

Five distinct factors contribute to the new competitive environment:

- Changing consumer needs driven by online commerce
- Optimization of branch networks in order to reduce costs,
- Changing demographic trends and potential new consumer markets
- Cross-industry competition caused by deregulation, and
- New online financial products.

Changing Consumer Needs

Consumer requirements have changed substantially in the last decade. Customers want to access account-related information, download account data for use with personal finance software products, transfer funds between accounts, and pay bills electronically. Of course, along with these services, banks must be able to supply/guarantee the privacy and confidentiality that customers demand, which is not a trivial matter to implement on the part of the banks.

Many consumer requirements are based on a simple premise: customers and financial institutions both seek closer and more multifaceted relation-ships with one another. Customers want to be able to bank at their conve-nience, including over the weekend or late at night. Bankers want more stable and long-term relationships with their customers.

From the bank's perspective, developing and maintaining this relation-ship is difficult. Although financial products are essentially information products and financial institutions are highly automated, there is a gulf be-tween automated information and the bank's ability to reach the consumer in a unified way. This gulf is filled with established methods, such as branches, postage and mail, advertising, and people on telephones. These methods can be costly and impersonal. Electronic banking provides a method of communication that will enable the bank customer to be reached, served, and sold products and services in their homes and offices whenever it is convenient for them-twenty-four hours a day, seven days a week.

Technology-based Financial Services Products

The growing importance of computer technology is another factor compli-cating predictions about the future structure of banking. Some observers be-lieve that additional development of electronic cash, such as smart cards, could stimulate further banking consolidation. They point to the fact that the start-up costs associated with electronic payments technologies can be high, in part because electronic cash requires large investments in computer software and other resources to establish a network of secure electronic transactions. Such large fixed costs have led these observers to warn that a few financial services providers-those with the resources to absorb those costs-could come to dominate the payments system.

In contrast, the development of electronic banking might actually in-crease competition in banking markets and lower bank operating costs. Electronic banking offers an inexpensive alternative to branching to expand a bank's customer base, and many banks are using electronic banking to in-crease service to their customers. Many banks have started Web sites on the Internet, and many plan to offer banking services over the Internet. Some banks are already offering certain banking services over the telephone. Smart cards and other forms of electronic cash could be the key to con-sumer acceptance of home banking, eventually allowing banks to reduce the number of their physical branches.

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LESSON 29: HOME BANKING HISTORY

The recent hyperbole around home banking is not simply the latest Wall Street fad. Financial institutions were interested in turning the home bank-ing concept into a reality as early as 1970. Many banks invested millions of dollars in research and development, certain that home banking was going to take off. In October 1981, The American Banker had a set of articles promoting the virtues of home banking. In answer to the question: "Will home banking be a major force in the market by 1985?," an executive vice presi-dent of First Interstate Bank replied, "Absolutely! And I want to be there."

The most popular approach of the 1970s was home banking via a touch-tone telephone, which enabled customers to check account balances, trans-fer funds, and pay bills. With telephone banking, customers use a numeric password on a push-button telephone to access banking services. As most people have telephones, the telephone was believed to be the ideal home banking technology. Despite the initial optimism, results were very disap-pointing. The telephone was an awkward technology for home banking, since there is no visual verification, which is important to customers. Also, touch-tone phones were not common in the 1970s.

In the 1980s, cable television also was considered as a possible medium for home banking. Although this approach solved the graphic limitations dilemma of the telephone, it had other drawbacks. The primary obstacle was that the necessary two-way cable was virtually nonexistent, as only a small percentage of Americans had two-way cable TV. Since the PC has both visual display and two-way communication, it has been considered a leading contender for the home banking medium.

Home Banking Implementation Approaches

Pushed by growing consumer demand and the fear of losing market banks are investing heavily in home banking technology. Collaborating with hardware, software, telecommunications, and other companies, . are introducing new ways for consumers to access their account bal, transfer funds, pay bills, and buy goods and services without using mailing a check, or leaving home. The four major categories of home

banking (in historical order) are:

Proprietary bank dial-up services: A home banking service, in connection with a PC and modem, lets the bank become an electronic gateway to customers' accounts, enabling them to transfer funds or pay bills directly to creditors' accounts.

Off-the-shelf home finance software: This category is a key player in ce-menting relationships between current customers and helping banks gain new customers. Examples include Intuit's Quicken, Microsoft Money, and Bank of America's MECA software. This software market is attracting interest from banks as it has steady revenue streams by way of upgrades and the sale of related products and services.

Online services-based banking: This category allows banks to set up re-tail branches on subscriber-based online services such as Prodigy, CompuServe, and America Online.

World Wide Web-based banking: This category of home banking allows banks to bypass subscriber-based online services and reach the cus-tomer's browser directly through the World Wide Web. The advantages of this model are the flexibility at the back-end to adapt to new online transaction processing models facilitated by electronic commerce and the elimination of the constricting intermediary (or online service).

In contrast to packaged software, which offers a limited set of services, the online and WWW approach offers further opportunities. As consumers buy more and more in cyberspace using credit cards, debit cards, and newer financial instruments such as electronic cash or electronic checks, they need software products to manage these electronic transactions and reconcile them with other off-line transactions. In the future, an increasing number of paper-based, manual financial tasks may be performed electroni-cally on machines such as PCs, handheld digital computing devices, inter-active televisions, and interactive telephones, and the banking software must have the capabilities to facilitate these tasks.

Home Banking Using Bank's Proprietary Software

Online banking was first introduced in the early 1980s and New York was the hotbed of home banking. Four of the city's major banks (Citibank, Chase Manhattan, Chemical, and Manufacturers Hanover) offered home banking services. Chemical introduced its Pronto home banking services for individuals, and Pronto Business Banker for small businesses in 1983. Its in-dividual customers paid $12 a month for the dial-up service, which allowed them to maintain electronic checkbook registers and personal budgets, see account balances and activity (including cleared checks), transfer funds among checking and savings accounts, and-best of all-make electronic payments to some 17,000 merchants. In addition to home banking, users could obtain stock quotations for an additional per-minute charge. Two years later, Chemical teamed up with AT&T in a joint venture called Covidea. Despite the muscle of the two large home banking partners, pronto failed to attract enough customers to break even and was aban-doned in 1989.

Other banks had similar problems. Citicorp also had a difficult time selling its personal computer-based home banking system, Direct Access. Chase Manhattan had a PC banking service called Spectrum. Spectrum of-fered two tiers of service: one costing $10 a month for private customers, and another costing $50 a month for business users, plus dial-up charges in each case. According to their brochure, business users paid more because they received additional services such as the ability to make money trans-fers and higher levels of security.

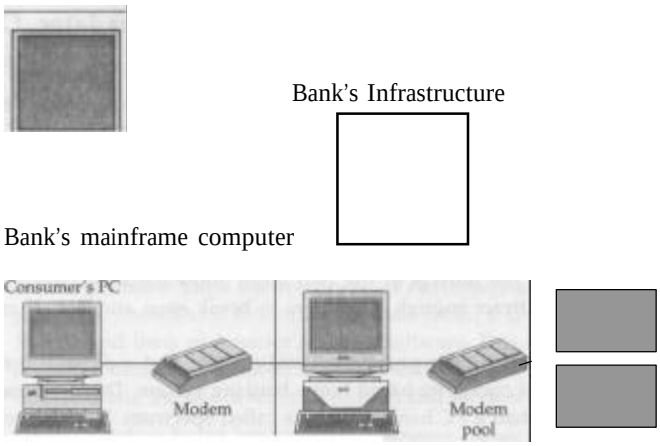
Similar to other bank offerings, Banc One offered two products: Channel 2000 and Applause. Channel 2000 was a trial personal computer-based home banking system available to about 200 customers that was well re-ceived. Applause, a personal computer-based home banking system mod-eled after Channel 2000, attracted fewer than 1,000 subscribers. The trial was abandoned before the end of the decade as the service could not attract the critical mass of about 5,000 users that would let the bank break even. Almost all of the banks discovered that it would be very difficult for any one bank to attract enough customers to make a home banking system pay for itself (in other words, to achieve economies of scale).

Online banking has been plagued by poor implementation since the early 1980s. In a scathing critique, the Yankee Group [YG87] cites Bank of America's Home Banking as an example of this poor implementation. That service, it says, "was designed initially to operate entirely online on their central processor, with difficult sign-on procedures, slowly drawing graph-ics at 300 baud for each single entry screen, and such slow response time has to be confusing and cause errors." This service later evolved into a menu-driven service with no graphics that operated at either 300 or 1,200 baud accessible from any personal computer via Tymnet. It took a few more years before users could use the Dollars & Sense financial management software to integrate personal finance with online banking activities. Given this gradual evolution, consumers who initially used the service and left could not be coaxed back into using it again.

Most home banking services were anything but easy to use. They worked at 300 baud and later 1200 baud, and had complex menus that re-flect more about the way the bank keeps its books than the way consumers spend their money (see Fig. 7.1). Typically, the services were designed to run on the most basic PC possible (Pronto, for instance, was geared to the Atari 400), so they turned even the most powerful PC into a dumb terminal. They nearly lobotomized the user with mind-numbing repetitions of menus

Proprietary bank's

software interface



Proprietary Software Method

and torturous verification procedures, which, combined with the crawl of remote communications to the bank's mainframes, made home banking seem extremely slow and even painful to use.

Banking via the PC Using Dial-Up Software

The main companies that are working to develop home banking software are Intuit, the maker of Quicken; Microsoft, the maker of Microsoft Money; Bank of America and NationsBank, who acquired Meca's Managing Your Money software from H&R Block; and ADP, which acquired Peachtree Software. In this section, we will examine Intuit in detail, as it is the leader among home banking software companies and exemplifies the overall strat-egy in this area.

Intuit: Intuit is the leading provider of home and small business financial software, supplies, and services for PC users. It pioneered computerized personal finance management with the introduction of the Quicken pro-gram in October 1984. Intuit has consistently been in the forefront of new online financial services, launching bill payment services in 1990, IntelliCharge credit card services in 1993, and Quicken Quotes, a portfolio price update service, in 1994. In recent years the company benefited from both the personal computer boom and its giving consumers a diverse prod-uct breadth and a software bundle (or suite) focus, including offerings on personal finance, small business finance, financial planning, tax prepara-tion, and bill payment and transactions.

Since its introduction, Quicken has been enhanced and up-graded sev-eral times. Quicken allows users to organize, understand, and manage their personal finances. Designed to look and work like a checkbook, Quicken provides users with a method for recording and categorizing their financial transac-tions. Once entered, the financial information can be analyzed and displayed using a set of reports and graphs. Quicken also allows users to reconcile their bank accounts, and track credit card purchases, investments, cash, and other assets and liabilities. It enables users to make payments by printing computer checks or by initiating electronic payments via modem. Several factors, including good design, affordable pricing, and the availabil-ity of new features and services, have contributed to Quicken's success.

As a complement to its personal financial software products, Intuit of-fers value-added services such as online banking, bill payment, and credit management that further automate users' financial transactions. Online banking is a new feature of Quicken 5 for Windows, which was released in the first quarter of fiscal 1996. Intuit's online banking services, in conjunc-tion with the services of Intuit's financial institution partners, allow users to download and automatically categorize savings and loan account activity, brokerage activity, and charge account activity, thereby reducing data entry and providing an easily accessible view of their financial portfolio.

How it works: Customers will sign up with a local bank, and then use the Quicken software to get the desired information. The software will dial a lo-cal number using AT&T's 950 access service. (The 950 service covers 90 to 95 percent of the country, and users simply dial 950-1ATT.) Online connec-tions between the financial institutions and Quicken users are the responsi-bility of Intuit's subsidiary, National Payment Clearinghouse,

Inc., a privately held provider of automated bill payment services, which changed its name to Intuit Services Corporation (ISC) in 1993. ISC gets Internet ac-cess from Concentric Network Corporation, which has over 200 local points. of presence (POPs). ISC also currently provides the online banking and bill payment services for users of Microsoft Money. ISC was recently sold by Intuit to CheckFree.

Intuit Services Corporation is basically an intermediary between Quicken software and financial services. Figure 7.2 illustrates the structure of this network. ISC's network design is what is known as "burst and dis-connect," which simply means that the user will get the requested informa-tion quickly and then log off of the system. This strategy allows for a maximum number of users in a s.l;1ort period of time. In contrast, services like America Online or CompuServe earn money by keeping the customer on line and billing for time spent. These traditional online services have a lot of menus and graphics that take time to traverse.

Intuit sells specific information and wants users on- and off-line quickly. ISC was also designed from the bottom up with security in mind; the net-work employs the RSA method of security. Intuit's banking partners down-load all the relevant banking information (such as bank balances and state-ments) to Intuit's servers (ISC). The banks send information for every cus-tomer signed up for the service. When a customer requests information, the Quicken software dials the ISC servers in Downers Grove, Illinois. Since the data has already been transmitted to ISC, the requested information is sim-ply downloaded to the local Quicken user. The total online time is about 15 seconds.

While the banks will transfer data in batch mode once a day, this is not practical for credit card processors like American Express. Users want to check on recent transactions and want real-time data. For instance, in the case of American Express, ISC will simply pass the customer request on to American Express. The requested statement information is then passed back to ISC and to the Quicken customer. Currently, American Express is Intuit's only partner set up to handle real-time data transmis-sions. The banks work in batch mode, but over time, many of the banking partners will have to move to real-time mode.

Online banking enables users to check current account balances, transfer funds between accounts, determine the clearance of given transactions, and reconcile accounts. Each financial institution sets its own fees for online bank-ing services charged to their customers. The compensation Intuit receives from the financial institutions is based on that institution's consumer usage.

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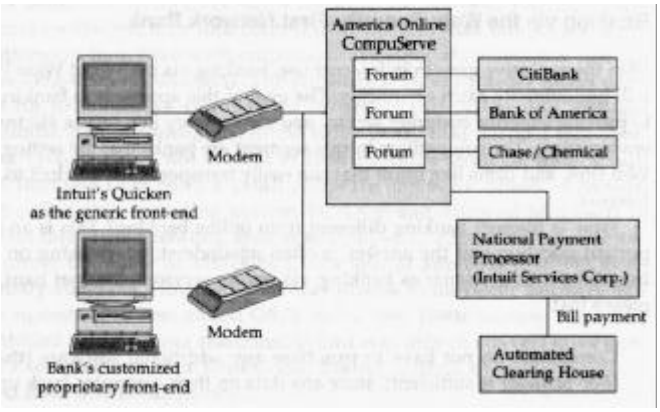
LESSON 30:
BANKING VIA ONLINE SERVICES

Although personal finance software allows people to manage their money, it only represents half of the information management equation. No matter which software package is used to manage accounts, information gets man-aged twice-once by the consumer and once by the bank. If the consumer uses personal finance software, then both the consumer and the bank are re-sponsible for maintaining systems; unfortunately, these systems do not communicate with one another, thus giving new meaning to double-entry bookkeeping. For example, a consumer enters data once into his system and transfers this information to paper in the form of a check, only to have the bank then transfer it from paper back into electronic form.

Unfortunately, off-the-shelf personal finance software cannot bridge the communications gap or reduce the duplication of effort described above. But a few "home banking" systems that can help are beginning to take hold. In combination with a PC and modem, these home banking services let the bank become an electronic gateway, reducing the monthly paper chase of bills and checks.



Online service Banking Architecture

Citibank and Prodigy: To understand the more contemporary online banking services, we look at CitiBank and Prodigy. Prodigy has been pro-viding home banking to consumers since 1988, and has relationships with more banks than any commercial online service.

To expand the attractiveness of its online banking services, in 1996 Citibank began offering Prodigy subscribers a free and direct link to its elec-tronic home banking service. Access to Citibank is available to Prodigy sub-scribers at no extra fee throughout the New York metropolitan area. The agreement represents the first time that CitiBank has expanded access to its proprietary PC Banking service through a commercial online service. To en-courage Citi Bank customers to try online banking through Prodigy, free Prodigy software will be made available at local Citi Bank branches. CitiBanking on Prodigy offers a full range of banking services. Customers can check their account balances, transfer money between accounts, pay bills electronically, review their Citi Bank credit card account, and buy and sell stock trough Citi Corp Investment Services. Citi Bank and Prodigy al-low customers to explore the wide array of services using an interactive, hands-on demonstration.

Intuit and America Online: On November 13, 1995, Intuit announced an agreement with America Online (AOL) in which AOL will offer Intuit's home banking services to its 4 million-member customer base. AOL users will not need to use off-the-shelf Quicken software to access the banking services. Rather, Intuit will build a Quicken-like application into America Online that will have the basic banking functionality of transferring funds, paying bills, downloading bank statements, and checking account balances. The banking service is provided through Intuit's banking subsidiary, Intuit Services Corporation, the same entity that links Quicken to Intuit's twenty- one banking partners. In order to use this service, AOL customers will have to have an account with one of Intuit's partner banks. The service was launched in the middle of 1996.

Customers of this service do not have to pay AOL any additional fees, and the payment to Intuit is structured the same as when the customer chooses to use Quicken without AOL. The financial institutions charge the customer a fee for the banking services (though some banks have opted to not charge customers); money is then paid back to Intuit. One can think of the AOL relationship as another access point to Intuit Services Corporation. A customer can walk into a bank and the bank can offer the customer three home banking choices: Quicken, Microsoft Money, or AOL. All three use the Intuit back-end payment service (Intuit Services Corporation).

In sum, this offering gives customers more choices for home banking. Clearly, Intuit wants to get the banking service into as many hands as possi-ble as quickly as possible. AOL customers are a pre selected group of potential early adopters; they already have moderns and are users of online services. The more customers that sign up for AOL, the more financial institutions will enter the home banking arena, bringing with them more potential customers.

Banking via the Web: Security First Network Bank

With the explosive growth in Internet use, banking via the World Wide Web will undoubtedly catch on quickly. The goal of this approach to banking is to provide superior customer service and convenience in a secure electronic environment. The competitors in this segment are banks that are setting up Web sites, and firms like Intuit that can easily transport their product to the Internet.

How is Internet banking different from online banking? This is an im-portant question and the answer is often misunderstood. Banking on the Internet is not the same as banking via online services. Internet banking means that:

Consumers do not have to purchase any additional software (the Web browser is sufficient), store any data on their com-puter, back up any information, or wait months for new versions and upgrades, since all transactions occur on a secure server over the Internet.

Consumers can conduct banking anywhere as long as they have a com-puter (not necessarily their own computer) and a modem-whether at home, at the office, or in a place outside the United States. Banking via online services is restrictive in that the consumer has to install a soft-ware package onto her computer. This limits the customer to banking only from that computer, making a call to access a separate network, working with a separate software company, and banking during limited hours of operation.

Consumers can download account information into their own choice of programs rather than following the dictates of the service provider.

Internet banking allows banks to break out of the hegemony of software developers. If bank customers (end users) install personal financial management software on their PCs, these customers become direct cus-tomers of software firms. By controlling the software interface, software firms such as Intuit can control the kinds of transactions end users make and with whom these transactions occur. By maintaining a direct rela-tionship with end users via the Web, banks can offer additional services and provide a personal feel to the interface, without seeking the cooper-ation of a software company.

If banks choose to offer home banking via personal financial man-agement software, they lose control over the end user interface and the relationship they have with customers. This loss of control has tremen-dous long-term implications. The software industry history offers com-pelling proof of the importance of organizations having a direct relationship with consumers. In the early 1980s, IBM decided that oper-ating systems were not central to IBM business strategy. As a result, IBM licensed DOS from a small software company called Microsoft. IBM called this operating system PC-DOS and allowed Microsoft to market this same operating system to competing computer manufactur-ers under the name of MS-DOS. IBM's seal of approval made DOS an industry standard. However, IBM was unable to move the industry to a new operating system called OS/2 in the late 1980s because Microsoft controlled the customer relationship and was able to convert most end -users to Windows. For banks, too, losing control over the interface could have dire consequences.

Open versus Closed Models

While it is clear that electronic commerce and electronic banking are in-evitable, the technology models for providing these services may not yet be fully understood by the banking industry at large. Two technology models of online banking are open and closed systems. Briefly, in an open system, content changes can occur easily because of the use of standard technol-ogy and components. For instance, a banking interface devel-oped around the Web is an open system that is easy to customize to a bank's changing needs. On the other hand, a closed system is one in which the changes are difficult since everything is proprietary. For example, a banking interface developed around a package such as Intuit's Quicken cannot be modified unless the vendor distributes a new version of its software.

Banks need to be familiar with both these models when offering prod-ucts and services online. With the high level of customer interest in PC banking and the emergence of the Internet as a vehicle for doing business, many banks have announced plans to offer Internet banking services. A handful of banks have already set up home pages on the Internet to provide existing and potential customers with information about upcoming ser-vices. However, with the exception of SFNB, few banks are offering any ac-tual banking transaction services, as they do not yet have the necessary technology or expertise.

Internet banking differs from traditional PC banking in several ways. Typically, the bank provides the customer with an application software pro-gram that operates on the customer's Pc. The customer then dials into the bank via modem, down-loads data, and operates the programs that are resident on his Pc. The customer is able to send the bank a batch of requests, such as transfers between accounts. Any software upgrade has to be incor-porated into new releases and redistributed to the customer, and as more functionality is added to the software, more and more space and speed are required from the customer's computer.

With Internet banking, on the other hand, there are potential customers who already have all the software they need. All that is required is a web browser since the actual banking software resides on the bank's server in the form of the bank's home page. The banking software can be updated at any moment with new information, such as new prices or products, with-out having to send anything to the customer; it can also continue to expand and become more sophisticated without becoming difficult for the customer to operate.

With traditional PC banking interactions, if the customer has more than one account or other financial products, the data is downloaded from multi-ple sources and then plugged into the appropriate places in the software. A bank server on the Internet, however, can perform this function for the cus-tomer and provide an integrated snapshot of the customer's financial portfo-lio. In the case of Internet banking, it becomes much easier for the bank to outsource a product such as a brokerage account and have that information appear on a customer's bank statement as if it were an internal bank product.

Another difference between the two models is that in the PC banking model, although the customer can work on his or her finances off-line and then make a quick call to download new data, this call would involve a long-distance or 1-800 call for customers outside a metro calling area. Banking with a browser, on the other hand, involves a continuous, interac-tive session, initiated by a local telephone call to a local access provider or online service.

An open system such as the Web offers two additional key benefits: con-trol of the user interface and intermediation. With an open system, such as the application designed for SFNB, the bank designs the user interface and is therefore able to incorporate its own "look and feel." This authority allows the bank to enhance its brand awareness and maintain direct access to its cus-tomers. The open system also allows banks to offer an expanded array of fi-nancial services and to choose their business partners when offering addi-tional services such as brokerage accounts and mutual funds-all of which lead to stronger customer relationships and increased revenue.

In a closed system using proprietary financial management software such as Quicken, the software firm acts as intermediary between the bank and its customers. In managing the customer relationship, the software provider controls the interface design, thus diminishing and even eliminat-ing any reference to the bank itself. The software provider also controls the selection of financial providers and determines the choice of services and the availability of those services:

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LESSON 31:
MANAGEMENT ISSUES IN ONLINE BANKING

The challenge facing the banking industry is whether management has the creativity and vision to harness the technology and provide customers with new financial products necessary to satisfy their continually changing fi-nancial needs. Banks must deliver high quality products at the customers' convenience with high-tech, high-touch personal and affordable service. In order to achieve this, management has to balance the five key values that increasingly drive customers' banking decisions: simplicity, customized ser-vice, convenience, quality, and price.

Online banking will realize its full potential when the following key ele-ments fall into place:

- The development of an interesting portfolio of products and services that are attractive to customers and sufficiently differentiated from competitors.
- The creation of online financial supply chains to manage the shift from banks as gatekeeper models to banks as gateways.
- The emergence of low-cost interactive access terminals for the home as well as affordable interactive home information services.
- The identification of new market segments with untapped needs such as the willingness to pay for the convenience of remote banking.
- The establishment of good customer service on the part of banks. The fact that technology increases the ease of switching from one bank to an-other means that banks that do not offer superior customer service may see low levels of customer loyalty.
- The development of effective back-office systems that can support so-phisticated retail interfaces.

Marketing Issues

Attracting Customers

The benefits of online banking are often not made clear to the potential user. Consumer question includes :

How is balancing the checking account online superior to doing it on paper? Is paying bills online superior to the familiar 5 of writing checks? Where is the consumer gaining value? Perhaps the answers to these questions are not clear to the bankers themselves. Regardless of how a bank chooses to answer these questions, it is clear that make a mistake trying to sell online banking services on the basis of convenience. While short term convenience is important, consumers want 19-term ability to control and organize their finances more than they want convenience.

Banks must also look beyond home consumers for online banking con-sumers. The rapidly growing use of personal computers by small business- provides a solid opportunity for banks to build a profitable base of small business until a broader consumer market evolves. There are mil-lions of small businesses with annual sales ranging from $250,000 to $5 million. Many of these firms have PCs and modems. New services like interactive cash management services could generate significant revenues for banks. Industry studies indicate that 20 percent of small businesses are immediate prospects for online banking and are willing to pay more than individual consumers for the service-up to $100 a "month. Thus, banks have opportunity to tap into this market segment.

Keeping Customers

Keeping customers (or customer loyalty) requires the following:

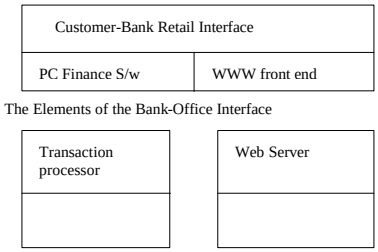
1. Banks must switch the costs of moving from one software platform to other to keep customers from moving. Customers are increasingly fami-liar with using technology to access bank accounts and to handle fi-nancial affairs, and this familiarity increases interest in additional vices and increases switching costs.
2. Banks must provide integrated services. The oft-cited time squeeze on consumers-long commutes, heavy workload, family obligations, household management is pushing consumers toward integrated services that can speed up financial procedures. These integrated services contribute to cementing the customer relationship.
3. Banks can realize the positive cost implications for the long-term value of building customer loyalty. In the online world, there is not a big cost dif-ference between serving one customer and serving 100,000 customers.

Clearly, marketers must also work on building a loyal customer base not only in order to maintain the existing base, but also in order to be attractive to potential customers. .

Back-Office Support for Online Banking

Although banks are making great strides in developing the front-end inter-face, there needs to be a great deal of thought put into the re-engineering of back-office operations and systems. Back-office operations technology is of-ten a crucial and misunderstood element of online banking.

Figure shows a model where a bank's system interfaces with the third party transaction processor Intuit Services, which provides a common interface for Microsoft Money and Intuit's Quicken transactions.



Bank's Back-office Systems Interface

Accounting	Financial Reporting	Transaction Management	Controlling	Risk Manageme	Other functions
1.general ledger 2. accounts payable 3.accounts receivable	1.Balance sheet reporting 2.Regulatory Reporting	* Bill payment *account management * Financial EDI	1.Internet transactions 2.Operting cost	Options Currencies Interest Rates	Moratages Loans securities

The inter-esting questions raised by this model are: If a customer pays a bill by Quicken in the morning, can the result of that transaction be seen that evening when he attempts to balance his checkbook? Or can a customer call a bank customer service representative to put a stop-request on a payment the same day it was initiated? Or can a customer who transfers money by PC see that transaction when she goes to the ATM later that day? The an-swer to these questions for many banks is "no" and the reason is that exist-ing back-office systems were not meant to work in real-time.

In addition to the real-time difficulties, online banking is further compli-cated because most existing back-office systems are batch-oriented. For in-stance, if $300 is withdrawn from an account at an ATM machine, the account balance will not be changed until the next day. The delay results from the fact that the third-party transaction processors post these transac-tions by automated clearinghouse in batches in order to accommo-date economies of scale. Until banks and other payment processor systems go real-time, there will be a timing disorienta-tion between PC service and the bank's pay-by-phone, telephone, branch, and ATM services, which are all posted in real-time to the bank's host computer. This problem is further ex-acerbated when banks try to integrate product lines.

Above figure illustrates the complex structure of back-office systems. The complexity arises from the fact that each of the modules (such as Accounting and Financial Reporting) in large banks may be on separate mainframe sys-tems. With electronic commerce, banks will have to find ways of integrating the information stored in these mainframe databases. This integration will require a fundamental change in the database design and architecture, with information integration as the goal.

Managers often think of back-office systems and operations as a subor-dinate function that should respond to their needs and desires and go qui-etly about handling all the boring details and back-office drudgeries that a manager should not have to worry about. This attitude may have its roots in the historic role of clerks, whose job was to support the manager. For too long, operations functions in banks have been viewed as cost centers with a vague customer linkage. This thinking will have to change to reflect the strategic nature of back-office systems and will need bank-wide commit-ment to keep up with new demands.

Notes -

LESSON 32:
TUTORIAL - 5

Find and discuss other online transactions with its advantages and disadvantages.

LESSON 33: ELECTRONIC COMMERCE AND RETAILING

Retailing is expected to change with the rapid develop-ment of new online sales and distribution channels that literally can be used from anywhere, anytime-from work, school, a hotel, car, or airplane. These developments should impact retailing as much as the advent of strip malls, catalog retailing, and TV-based home shopping.

Almost every retailer is reevaluating every aspect of its operation from customer service to advertising, merchandising to store design, and logis-tics to order fulfillment. Furthermore, reacting to the pressure of retailers, suppliers are assessing technology-based solutions to drive down costs (la-bor, delivery, and production) and become more efficient producers of goods.

Online channels such as online services and the Web are also impacting traditional retail business models. In the traditional model, the customer went to the store and located the product. In the online model, the retailer seeks out the customer. The success of catalog retailers demonstrates that a significant portion of consumers have embraced the reverse model: the re-tailer going to the consumer.

However, retailers need to consider the following issues in developing a business model:

- **Product/content issues:** What kind of products are suited for online retailing?
- **Software interface issues:** What kind of features will constitute an effec-tive interface? What features make it easy to find and select items for on-line purchase?
- **Process issues:** What are the specific steps in the shopping process from a consumer's perspective? What kind of processes should companies de-velop to fulfill orders efficiently?

Before examining the implications of changing consumer behavior and online retailing in the existing retail business, let us step back for a moment and ask the question: Why should retailers consider the online environment as a way of doing business? The answer lies in understanding the market changes that affect retailing and that will continue to affect it in the future.

Changing Retail Industry Dynamics

Important factors that affecting the retailing industry dynamics are :

- Overbuilding and excess supply.
- Change in consumer demographics, which more premium placed on efficient use of time
- Changes in consumer behavior, with less focus on brand name and more on lowest prices.
- Technology improvements that provide greater convenience and more information than traditional retailing.

Overbuilding and Excess Capacity

With online retailing, constraints of time and space disappear. There is no bricks and mortar storefront to worry about, no critical locations. This new way of retailing can severely affect companies that have invested in expan-sion and adding capacity. It is important to understand the trouble tradi-tional retailers will face if online retailing takes off.

The 1980s was a period of overexpansion and turmoil for retailers. By the end of the decade, complaints about excessive retail space were being voiced. Profits were declining and control of operating expenses became a paramount management objective. Retailers reduced staff and minimized merchandising in order to enhance profits. Sales growth and market share development were given second priority behind profit enhance-ment.

In the 1990s, companies are under pressure to grow and produce profit. An important measurement of profit gains is gross margin per square foot. For many retailers, this number is either growing slowly or declining, par-tially reflecting a less favorable product mix and more competition. Inadequate productivity, both per worker and per unit of space, is also re-ducing profit margins. Overbuilding also resulted in a growing shortage of low-cost, entry-level workers for the retail industry. The shortage of entry -level workers means that retailers are using under trained workers who are less able to empathize with shopper needs-leading to a perception that re-tailers in general and shopping centers in particular are unable or unwilling to provide quality service.

Clearly, with crowded domestic markets and competition constantly grinding away at operating profit, new ways of retailing are being explored by forward-thinking companies such as Wal-Mart.

Demographic Changes

Shopping patterns are beginning to change with the increase of time -strapped, two-career couples and the aging of America. Value and time management are the consumer concerns driving interest in online retailing. Recent retail data shows a decline in the amount of time Americans are spending in shopping malls [EDR95]. The suggested reasons vary: time constraints, safety concerns, and growing frustration with the lack of cour-teous service and insufficient product information. Understanding the im-plications of time constraints on consumer shopping behavior is important as they portend the trends to come. For instance, Americans have openly embraced shopping channels like QVC and Home Shopping Network and retailers like CUC International.

Today's time-strapped shoppers have less time and want better values, fewer hassles, and more options. Today, a shopping trip requires a con-sumer to decide what he or she or the family needs, brave the traffic on the way to a store, hunt for parking,

find and select items for purchase, take them to a checkout, wait in line, pay for the items, sometimes bag them, and carry them back home. It can be a hassle and a lot of work, so most working professionals have learned to dread shopping trips. As technology improves, it may not be long before driving to the store gives way to online shopping with home delivery as provided by Peapod

In contrast, there is a growing segment of the population for whom time constraints are less of a problem. The demographic outlook in the United States is for an increasing share of older shoppers (age 50 and above) who prefer shopping at stores rather than online. However, the product mix of-fered by many department stores and malls is increasingly out of touch with the aging population and does not reflect the shift in purchas-ing power. Also, with the aging of the population, there is evidence to indicate a shift in consumer interest away from material goods and toward experi-ences, such as travel and recreation. In addition, as people get older, they tend to become more frugal.

Retailers will need to concentrate on value by offering new product mixes. By this we mean a product mix that includes not only merchandise but also bundles in entertainment and "recreational" shopping with movie theaters, restaurants, bookstores, libraries, and community meeting facili-ties. This sort of change is already occurring in bookstore design (such as Borders Bookstores and Barnes and Noble), which include a variety of facil-ities such as coffee shops. However, building shopping malls based on these new business models is a risky venture and requires huge investments.

Consumer Behavior

Consumer behavior is more volatile than ever before, and companies need new ways of responding to consumer needs and satisfying demand. According to one survey, the typical consumer spent only four hours a month in a shopping mall in 1990 versus ten hours in 1985, and sales per square foot dropped. Specialty retailing-power centers, discount malls, discount stores, and catalog shopping-has become one solution for closely monitoring consumer trends and reacting to them quickly. All of these alter-natives have one thing in common: they provide consumers with a very large selection of producers priced with deep discounts.

Consumers are no longer as influenced by brand names as they used to be. The emergence of the value shopper is changing retailing. Today, the shopper is less willing to pay the premium for the brand name and much more attentive to quality and value. The decline in gross margins is the first evidence of the impact of that change, reflecting lower initial markups and more discriminating shoppers in that segment. Clearly, retailers that are fo-cused on providing value-the best price, service, and selection-regardless of the brand name will be successful. The real differentiating characteristic for retailers will be in their ability to define what the broad or niche con-sumer segment is looking for, identifying characteristics of customers in each target segment, and learning how to bundle products and package brands so that they become the preferred choice for online customers

Technology Improvements in Electronic Retailing

Today, electronic retailing is still far from being a competitive threat to more traditional store retailing (see Table), but it is becoming increas-ingly attractive as technology and applications improve, and retailers gain experience.

Table Traditional Retail Outlets

Type of Outlet	Definition and Examples
Shopping malls and	These include under one roof general merchandise, drug stores, and groceries department stores
Supercenters	These consist of three or more anchor stores with a total leasable area between 200,000 and 700,000 square feet
Factory outlet mall	These primarily stock name-brand manufacturers' items. These are growing in stature and popularity as well. Like power centers, factory outlet malls are also gaining market share at the expense of shop-ping malls.
Warehouse clubs	These are retailers offering common consumer prod-ucts at near whole sale prices when purchased in bulk quantities. Examples include Wal-Mart's Sam's Club, Price/Costco, and BJ's Wholesale

Three dominant forms of electronic retailing channels are: television re-tailing, CD-ROM retailing, and online service-based retailing, in which we include Web-based retailing. Now we can discuss about the most prominent one: the television retailing.

Television Retailing: Television retailing grossed an estimated $3.2 billion in 1994. One of the pioneers in this area is Home Shopping Network, Inc. (HSN), which began broadcasting electronic retailing to a small, local audi-ence in 1982. Three years later they took this still unproven idea national- and made it work. Today, HSN is a television-based retail, entertainment company, and online retailer (owns Internet Shopping Net-work), with coast-to-coast customers and annual sales of $1 + billion.

The breadth and reach of TV retailing are amazing. In. 1994, HSN reached 65.8 million television households throughout the United States. These households received the signals via cable, broadcast, and satellite dish, twenty-four hours a day, seven days a week. Unlike online audiences, which tend to be predominantly affluent and well educated (net annual in-come is estimated at $60,000-$80,000), the target audience for television retailing is moderate income households and mostly women.

How does it work? The TV retail marketing and programming are di-vided into segments that are televised live, with a show host who presents the merchandise and conveys information

relating to the product, including price, quality, features, and benefits. Show hosts engage callers in on-air discussions regarding the currently featured product or the caller's previous experience with the company's products. Viewers place orders for products by calling a toll-free telephone number. Generally, merchandise is delivered to customers within seven to ten business days of placing an order. The purchased item may be returned within thirty days for a full refund of the purchase price, including the original shipping and handling charges.

The success of television shopping is the result of the effective utiliza-tion of electronic media for capturing the power and influence of celebrity and the magic of showmanship, and bringing them to bear on a sale. In its annual report, the Home Shopping Network states that a celebrity can de-but a line of jewelry on HSN and sell more than $2 million in a single week-end. Of course, there's another advantage to television retailing. When customer interest, which is monitored by the number of calls being re-ceived, begins to wane, the retailer knows it instantly and can simply move on to the next product.

More recently, infomercials have become a crucial retailing topic. The in-fomercial has become a new and interesting way to retail specialty prod-ucts. Modem filming techniques and ingenuity make it possible to create high-quality, cost-efficient, and entertaining documentaries that sell. This Coincides with the television viewing public's appetite for information. Infomercials are an especially logical medium since retailers have the opportunity to economically test and evaluate a product through mass channels such as television retailing before committing major capital resources to infomercial production.

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LESSON 34:
MANAGEMENT CHALLENGES IN ONLINE RETAILING

While changes in retailing may be driven by technology, managerial vision is required for successful implementation. Traditionally, retailing has been a low-tech environment in which retailing executives often relegated technol-ogy issues to back-room operators. These managers are most at risk, as they do not have a clue that a major revolution has begun. Most of them have never used a computer (or had to), never been on an online service, and do not know what the Internet is or what it can do. The winners will be the players who understand how to leverage the unique capabilities of the on-line medium to effectively meet the changing needs of the consumer.

While the technology required to implement online retailing is matur-ing, many management issues remain unanswered. No one really knows yet how to build and run a successful, mass-market online mall. The sales Medium is new, the technology is new , and retailers have a lot to learn about tricky technology, customer behavior , and management issue . But one thing is clear: For online retailing to succeed, online technology must complement management and operational strategy.

Case Study-II

Online Retailing Success Stories

Peapod, CUC International, and Virtual Vineyards help to explain the intri-cacies of online retailing.

Online Retailing: Peapod's Experience

Peapod, based in Evanston, Illinois, is using the online medium for food retailing services. Founded in 1989 by two brothers, Peapod (http://www.peapod.com/) is a member of an online grocery/drug-store shopping and delivery service that already has thousands of cus-tomers in the Chicago, San Francisco, and Boston areas.

Peapod was founded on the idea that people do not want to go to the grocery store. Peapod has an online database of over 25,000 grocery and drugstore items, and allows comparison shopping based on price, nutri-tional content, fat, or calories. Other features include electronic coupons, re-tailer preferred customer discounts, and other benefits like recipes, tips, and information. Peapod membership also allows users to use the shopping and home delivery service. Peapod has a staff of professional shoppers, produce specialists, and delivery people who fulfill the order.

How Does It Work?

Peapod provides customers with home shopping ser-vices via Pc. Customers need to buy a software application that enables them to access Peapod's database through an online computer service. Peapod initially had a DOS-based system with graphics. They introduced a new version of the software in 1995-a Windows platform in which product pictures are available.

Using the PC, a consumer can access all of the items in a grocery store and drug store. Peapod customers create their own grocery aisles in their own virtual store. Customers can request a list of items by category (cere-als), by item (Frosted Flakes), by brand (Kellogg's), or even by what is on sale in the store on a given day. Within categories, they can choose to have the items arranged alphabetically by brand or sorted by lowest cost per ounce, package size, unit price, or nutritional value. Customers also can cre-ate repeated use shopping lists (baby items, barbecue needs, and the like). Peapod's back office is linked with the mainframe databases of the super-markets at which it shops for its customers (Jewel in Chicago and Safeway in San Francisco), allowing it to provide the supermarkets' stock keeping units and shelf prices electronically to its customers.

Once consumers have made a selection, they can then give specific shopping instructions, such as "substitute with same calories," or red grapes only." They can click on the "Comment" button and type in any ex-tra information they would like the Peapod shopper to know. At any time during the order, a consumer can subtotal the amount purchased, or access the "Help" screen for immediate assistance.

Online ordering is simple: users double-click on the Peapod icon and then enter their user IDs and passwords. On verifica-tion, users get access to a whole grocery store and drug store of items. Before the actual purchase of an item, users can view images of it and the nutritional content as well. The system allows users to sort items by various criteria like price, price/unit, total calories, fat, protein, carbohydrates, and cholesterol. With these fea-tures, Pea pod aims to target the health and fitness conscious consumer who chooses foods tailored to specific dietary needs. There are also search fea-tures to help locate a particular item. A "Find Item" option at the top of the screen lets users search either by brand name or product type.

When users have finished shopping, they click on "Done" and the order is electronically routed to Peapod. During the transaction closing process, users need to choose a delivery time within a 90-minute slot. Pinpoint delivery

within a 3D-minute window) can be selected for a small additional charge. Payment can be made by check, charge, or Peapod Electronic Payment.

Eighty-five to ninety percent of Peapod's orders come in via computer; the rest are faxed or phoned. Peapod orders are taken centrally, and then faxed to the stores. The store gets a printout with the order, the delivery ad-dress, and instructions for getting there. Each order is filled by a Peapod employee, who shops the aisles of the store. The employee pays for the gro-ceries, often at special Peapod counters in the back of the store. The order is then taken to a holding area in the supermarket, where the appropriate items are kept cold or frozen until the deliverer picks up a set of orders and takes them to the customers within their 90-minute pre-selected windows. At each stage-ordering, shopping, holding, and delivery-the

processes are tailored to provide personalized service at a relatively low cost.

If a customer has a problem, he or she can call Membership Services, and a service representative will try to resolve the matter. Peapod treats each call as an opportunity to learn (and remember) each customer's prefer-ences and to figure out what the company can do to improve service as a whole. For example, service representatives found that some customers were receiving five bags of grapefruits when they really wanted only five grapefruits. In response, Peapod began asking customers to confirm orders in which order-entry errors may occur.

Peapod members are charged actual shelf prices, plus a monthly service fee, a per-order charge of $5.00 plus 5 percent of the order amount. Customers are willing to pay these extra charges for convenience and because Peapod provides a lower cost shopping experience for the consumer. Consumers save money-despite the extra overhead-because they use more coupons, do better comparison shopping, and buy fewer impulse items than they would if they shopped at a real supermarket. Reducing im-pulse purchases is important when you consider that 80 percent of the items purchased in a grocery store are impulse items-non-planned pur-chases. In addition, consumers save time and have more control because they can shop from home or work whenever they want.

What Is the Business Model?

Rather than automating the trip to a retail store, as other online providers are doing, Peapod is using interactive tech-nology to change the shopping experience altogether. Indeed, the formula for Peapod's success is the busy American lifestyle. The homes it delivers to cut across many demographics. The one thing these demographics have in common is they have better things to do than grocery shop. Still, if it were not for well-managed logistics, these customers would be back in the stores in a second. The behind-the-scenes logistics are central to what Peapod is all about; Peapod has to make sure the orders get to the stores and that they are shopped correctly.

How does Peapod compete with traditional retailers? Tradi-tional retail-ers make money from the suppliers. They provide access to customers and make their money by buying on deals, volume discounts, and getting coop advertising. Peapod makes all of its money on the customers it serves, it is a mass customizer. It creates the supply chain after identifying a specific de-mand from a specific customer, and it feeds off the existing infrastructure to do it.

However, existing retailers do have some advantages. An important, though subtle, advantage enjoyed by food retailers is the shopper's resis-tance to switching food stores because of familiarity with the shelf locations of products purchased. It is also inconvenient for consumers to relearn dozens of product locations at a new store. The online environment must offer significant advantages to overcome shopper inertia and induce trial, let alone continued, patronage.

Is Peapod a competitor to the retail grocer? Not really. Peapod's strategy has been to partner with the retailer rather than compete directly. A lot of credibility comes with the name of the retailer in its individual market. Peapod can help grocers expand into places that might not otherwise be practical from a capital investment standpoint. However, it is quite possible that in the future Peapod may be tempted to compete with grocers by emulating certain aspects of their warehousing. Why? As these new retail formats emerge , and once Peapod gains enough customers, Peapod will be tempted to say it is costing a lot to go to the store and pick up product off the shelf. To avoid the overhead , Peapod could have its own warehouse. As soon as the Peapod does that it is likely to fall into the same traps as the retailers, such as having an overflow warehouse when some-thing is available on a deal or buying products before there is actual need.

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LESSON 35:
ELECTRONIC COMMERCE AND ONLINE PUBLISHING

The Web may have blossomed because of peer-to-peer publishing, but judg-ing from recent product offerings, there is an enormous groundswell of in-terest among both commercial and corporate publishers in the Web. For instance, it was reported that, in less than three months, the Wall Street Journal Interactive Edition attracted 500,000 registered readers on the Web, and that number is growing by some 3,000 readers per day. Also, the elec-tronic edition has attracted more than thirty advertisers paying to reach this audince.

Initially, growth in the online publishing marketplace was driven by the potential of new interactive technologies and applications. The promise of new interactive publishing captured the imagination of both content providers and the public. However, from 1993 to 1995 much of online pub-lishing was inhibited by a lack of business purpose. At that time, the con-tent creation side of online publishing was dominated by techno-savvy individuals who were not experi-enced at selling and who did not under-stand the business of publishing. In addition, there were publishing compa-nies who took a "Just Get Me on the Web!" approach, failing to define the business purposes driving their online presence.

As the initial euphoria wore off, publishers realized that simply having a presence on the Web did not guarantee profits. They discovered that offering exciting technology without compelling content is insufficient to capture market share. These firms are learning that the best way to capture con-sumers' attention is to develop a business model that allows the company to offer unique and valuable information, programming, and services. This content, no matter how it is delivered, must be packaged so that it provides more value than alternative sources of information. The key is to identify what the customer wants and finds interesting and to avoid being distracted by new technologies. Publishers need to pay more attention to their core competency of packaging and delivering content and making money online. These are tricky but necessary conditions to successful online publishing.

Many online publishing pioneers have gone up the technology curve and are confronting tough management questions such as how to gain mar-ket share and how to be profitable sooner than later. Some of these firms have invested tens of millions of dollars in people, equipment, and market-ing, and they have not yet turned a profit. Some of the sites employ hun-dreds of people, with millions of dollars in payroll alone. Many early pioneers invested a huge amount of money into brand building, marketing, and content, but they have not been able to figure out which business model works best for making money.

Online publishers are developing new business models to charge cus-tomers directly and convince them that such charges are justified. As more and more firms begin to offer online content, they are being forced to adjust to new customer attitudes regarding pricing. Publishers currently finance their businesses by offering advertisers mass markets for delivering their message in return for large advertising fees. The public has been trained to think that the news, information, and entertain-ment they receive should be subsidized or nearly free and that advertisers will pay the bill. This ap-proach may not be viable in the online medium when mass markets are re-placed by customers selecting their information and delivery methods.

The early online publishing pioneers are trying to accomplish a difficult feat. Newspaper and magazine publishers, some of the first to stake their claims on the Internet, are tinkering with new advertising models for their fledgling Web sites. In general, mainstream advertisers have been skittish about pumping money into a medium with an audience whose size and habits are nearly impossible to figure out. As a result of relatively low ad revenues, none of the Web publishers have turned a profit. While ad rev-enues are not coming close to covering expenses now, they could grow sub-stantially in coming years as the traffic increases and brand names become established. Brand develop-ment is important because every time a user sits in front of a Web browser, she needs to make a decision about where to go. The better the brand, the more likely it is to pop up in the consumer's mind

Another key issue in online publishing relates to digital copyrights. Effective technological protection mechanisms are vital to ensuring the availability of quality content online. Today, publishers such as Addison--Wesley only offer catalogs or sample selections of works available online. They do not and cannot offer more because in an environment where the culture and technology provide so little protection for the rights of content producers, there is too great a risk to their intellectual property. The Internet makes it extremely easy to copy, retrans-mit, and alter works without the permission or the copyright holder. Moreover, the digital world has no in-ternational boundaries, and policing is impossible since the levels of protec-tions and sanctions against infringement vary widely in countries across the globe, which makes the risk even greater.

Online Publishing Strategies

As with any new development, there are generally three strategies for pub-lishing companies to consider:

Early movers: These are highly skilled independent publishers with ex-isting access to such key capabilities as direct marketing and order fulfill-ment. These publishers have the capacity to derive the highest benefits from new media as their learning curves are much shorter than others, and they already have many of the necessary resources at hand.

Watchers: These are large publishing companies that employ scale-sensi-tive economics. They are unlikely to view online publishing as a suffi-ciently attractive channel until costs fall and distribution widens. This category includes publishers of

unbranded or less distinctive content who cannot attract a sufficiently large initial consumer franchise, as well as fo-cused publishers in categories not easily suited for the online medium.

Testers: These are the majority of publishers that face either attractive-ness and/or skill challenges. Gathered here are many multi category and specialty publishers who are competing successfully in traditional mar-kets, who are uncertain who will win in the online marketplace, and who neither need nor want to make a choice now. Testers also include branded general publishers with robust consumer franchises and attrac-tive distribution channels already in place. For this group, the online medium appears to be an alternative.

In general, publishers are educating themselves about the potential op-portunities without committing themselves to anyone position. Those with strong brand images and existing consumer franchises may choose to post-pone entry until they find viable service providers and distributors. Publishers such as the Wall Street Journal and New York Times are taking part in targeted tests and pilot projects aimed at learning what online publishing has to offer, building required skills, and exploring the attractiveness of po-tential channels. These tests often include a skill-building program as well as an early warning system so that a company can quickly identify and re-act to changes within the industry or economy.

Content, incentives, service, quality, and price will not be enough to compete in this new environment. Speed of delivery, bundling of products, and diversity of choice also become critical success factors. Publishers will have to innovate con-stantly and challenge present concepts if this form of commerce is to become widely accepted and popular. Winning in online publishing will entail developing new skills in areas such as tailored adver-tising, order processing and fulfillment, and customer service as well as re-learning the fundamental prin-ciples concerning why people subscribe.

Online Publishing Approaches

There are four contrasting content publishing approaches.

- The online archive approach. This is new to the Web, but is a logical extension of the trends in electronic delivery over the past several years.
- The new medium approach. This is more controversial and more difficult to implement, but also more exciting.
- The publishing intermediation approach. This is an online extension of the third-party publisher role off-line.
- The dynamic and just-in-time approach. In this approach, content is assembled in real-time and transmitted in the format best suited to the user's tastes and preferences.

The Online Archive Approach: The online archive approach (including bibliographic databases and full-text search/retrieval services) is one that appeals to corporate publishers and, to some extent, commercial publishers (such as academic or journal publishers) who have an existing digital archive that they want to deliver over the Web as well as on paper, CD- ROM, or other media.

The most prevalent example of online archive approach is library cata-logs and bibliographic databases. Most libraries have replaced traditional card catalogs with sophisticated electronic online bibliographic databases offering an incredible range of functions. At revenues of over $1 billion a year, bibliographic databases represent a sizable chunk of the online data-base market. An example of a bibliographic database is MEDLINE, devel-oped by the National Library of Medicine (NLM), which caters to an increasing number of physicians who rely on online medical databases to keep up to date with the latest develop-ments and literature. The spread of PCs has enabled physicians to directly search databases used only by librar-ians in the past. MEDLINE and other medical databases are available free of charge on the Internet.

The online archive approach is also being used by niche publishers such as Ziff-Davis, which began its venture into electronic publishing in .1985 with a bulletin board system for readers of PC Magazine. That bul-letin board evolved in 1988 to become PC Mag-Net on CompuServe, which quickly grew in popularity. In 1991, Ziff-Davis created the ZD Net sub-scription service on CompuServe to provide a service supporting online versions of all its publications. Members of the ZD Net/CompuServe edi-tion have access to several features, including the ZD Net University series of comprehen-sive online "continuing education courses, sophisticated on-line forums with top industry personalities, and a comprehensive database of past articles. In addition to its successful CompuServe subscription ser-vice, the ZD Net Web Edition (http://www.zdnet.com) logs access by more than 700,000 Internet hosts each month and is reportedly showing a profit.

The New Medium Approach The new medium approach (including real -time news delivery, personalized news delivery, and edutainment) aims to create new material for the Web-to treat the Web as its own medium, one deserving its own material. This approach will have the most appeal to commercial print publishers, such as magazines, that view the Web as an al-ternative, not a replacement, for print publications. For example, Wired magazine sees very little crossover in content between its magazine and its HotWired venture. Some writers may write for both media, but separate content streams will be developed for each medium.

This approach currently has some teething problems because of technolog-ical limitations. For instance, the formatting limita-tions of the Web are frustrat-ing at the moment, but with technological advancements they will soon be forgotten. The frustrations are more than offset by the excitement of the inter-activity the Web offers; its model is both broadcasting and conversation at the same time. With online publishing there may be a well-known starting point, but with no controlling gatekeeper, the subsequent value-added improvisation from readers makes each online magazine a unique experience.

Even if the technology constraints were overcome, the expecta-tions of the Web are so different from print media that new content, written for a Web audience, must be created. It quickly becomes apparent that under this model, the old paradigms do not work. The publisher gives up not only its brand name, but its intellectual content, too-once the information is out there, it is no longer, owned. Faced with that model, all a publisher can do is "be the first with the most interesting stuff," an approach

that HotWired is taking in its attempt to create a place where readers can see what the world has to say on a minute-by-minute basis.

The Publishing Intermediation Approach: The publishing intermedia-tion approach (including online directories) exploits new service opportuni-ties for intermediaries. For example, in the growing market for educational material such as course packs and other customized books, companies offer-ing material owned by more than one publisher face the daunting task of obtaining permissions. New organizations that specialize in the manage-ment of copyright clearance are emerging as key players.

Online directories are important for several reasons. Companies and consumers interested in conducting electronic commerce often struggle to navigate the Internet to create an electronic marketplace. Once on that sprawling network, they are having trouble finding other companies, prod-ucts, and services. The success of Yahoo's initial public offering (IPO) un-derscores the importance of online directories. Yahoo (which stands for Yet Another Hierarchical Officious Oracle) was created in 1994 by David Filo and Jerry Yang, two Stanford, University electrical engineering PhD stu-dents who began DY simply compiling lists of their favorite Web sites. It went on to become one of the most popular means of navigating around the Internet. Yahoo is the first place millions of Internet users go when they try to find their way around the rapidly growing Internet. At one time, Yahoo was getting about 6 million visitors per day, which made it the second most active Web site next to Netscape's home page.

Clearly, there will be a demand for intermediation because there will al-ways be a need for a good directory to help people locate goods, services, and products. The future is bright for the publishing intermediaries who of-fer ease of operation, speed, and detailed information.

The Dynamic and Just-in-Time Publishing Approach: Online content is no longer static information. Content can now be created in real-time and transmitted on the fly in the format best suited to the user's location, tastes, and preferences. More importantly, the content engine recognizes repeat visitors to a site and configures the Web pages to match the individual's known preferences. For example, a publisher planning to deploy a large product catalog will no longer have to author and update each individual Web page. Instead, the elements of each page-text, graphics, video, and sound-are stored separately in a database and used to create individual-ized pages on the fly as each user browses the site. The page content can be further customized to reflect which Web browser is being used, the user's geographic location, and modem speed.

Another way of looking at dynamic publishing is that it is just-in-time publishing. That is, the stories, applets, and content flow into the computer just as consumers need them, and then self-destruct after usage. A six-story subscription to Sports World might cost 99 cents. Pictures of your favorite ac-tor might go for $1.99. Want to buy a round in a cyber adventure game? How about a quarter? However, there is one question that constrains this vision: How can payments be collected on a product that costs a nickel or dime? So who cares if it costs 15 cents or more to process the transaction? Businesses do, and to satisfy the small-amount transaction market need, "micropayments" are essential.

A number of micropayment schemes are emerging. The world of online entertainment-specifically "pay-for-play" outlets being developed by Sony, Sierra On-Line, and others-could serve as the best model for every-one else [PCW96]. Clearly publishers and developers should be thinking about low-value payments, but it is still too early for most companies to de-ploy. For micro payments to work, transaction costs must be very small (around 10 cents), and they are nowhere near that yet. What is more, the proposed schemes vary widely and many kinks in the micro payment puz-zle have to be worked out.

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LESSON 36: ADVERTISING AND ONLINE PUBLISHING

With the intention of attracting advertising dollars, magazines and newspa-pers have also set up sites on the Web. Many online periodicals include tradi-tional advertisements as well as icons, which display an advertiser's logo and, when clicked with a mouse, send a user across the Web to the advertiser's Web site. Among periodicals that have gone from print to online advertising with some degree of advertising success are: Knight-Ridder's San Jose Mercury News newspaper, which reportedly charges $100 per day for an advertisement, and magazines such as Hot Wired, Playboy, and People, which reportedly charge $30,000-$45,000 per quarter for an advertiser to place an icon in the periodical. Promotions are also common. In many cases, advertisers ask site visitors to provide their names and addresses in exchange for a pr()duct discount.

Advertising spending is expected to increase for five reasons.

Shorter access times: As more bandwidth becomes available, users will spend a larger proportion of their time on Web sites and a smaller propor-tion waiting to access them. With more time available to draw users' atten-tion, advertisers should be willing to pay more per user to place their icons in online periodicals. Shorter access times also enable increasingly complex graphics to be placed on Web sites, without requiring additional access time. This should draw to the Web advertisers who may have been con-cerned that the current graphical quality was insufficient for displaying their products. With more advertisers, advertising rates should rise.

Reduced access fees: New Internet users will be attracted by reduced ac-cess fees, with part of the reduction covered by advertisers. The cost of the access fee itself can be shared by an advertiser if, for example, the advertiser pays for the access time used when accessing online yellow pages.

Increasingly convenient access to information: As the amount of informa-tion online increases, it should be increas-ingly important for advertisers to get users to their sites quickly, leading them to pay more for placement in online periodicals.

Increasingly valuable information: Product descriptions can be enhanced through online advertising. With more informa-tion available, the decision to purchase should be easier and more purchases should occur (assuming the product is desirable). This should boost the appeal of the Web and in-crease the rates that advertisers could be charged for placing their icons in an online periodical.

Better measurement of advertising effectiveness: Product advertising is far more effective if it leads to a purchase. If online advertising encourages users to shift a portion of their purchases to the Web, then companies may pay far more to advertise. However, a measurement system will not be use-ful until: (1) an online publisher can use it to determine advertising rates and the appeal of its articles, and (2) an advertiser can use it to justify the cost of promoting a Web site, maintaining a Web site, and placing a site -linked icon in an online page.

Despite the popularity of advertising on Web sites, few publishers have attempted to measure how many advertising dollars are being spent. There are three reasons for this:

The market is too small to justify the cost of measuring its size.

There is not a clear definition of what advertising expenses should be counted. Spending can be the amount that advertis-ers pay other Web sites such as periodicals and games to display their icons or product of-ferings.

The market is changing too rapidly to develop an effective means of measurement.

Effective measurement of online advertising is taking center stage. It was reported in MediaWeek [MW96] that Procter & Gamble was ready to spend some of its $3.3 billion ad budget to advertise on various Web sites. However, the packaged-goods giant told the online publishing community that it will compensate the ad banners it buys only on a "click-through" ba-sis. In other words, standard impressions-delivered when an Internet surfer sees an ad banner but does not click on it to connect to a Web site -are considered to have no value by P&G. The anticipated P&G strategy, a sharp departure from the industry standard which measures hits ,has sent a shiver down the spine of many ad sales executives. The con-cern was that other advertisers will follow P&G's lead.

Web Advertising Measurement

HIT An entry into the log file of a Web server, generated by every request for a file made to that server. The number of hits has no predictable relation to the number of visi-tors to a Web site because, for example, a single page with ten small icons will register ten hits in the log file for each icon.

QUALIFIED HITS Hits that deliver information to a user. This excludes such things as error messages and redirects and does not indi-cate the number of visitors.

VISIT The gross number of occasions on which a user looked up the site. This is a sequence of hits made by one user at a site within a set period of time. It does not indicate whether visitors are digging into the site's content or just skimming.

UNIQUE USERS The number of individuals who visit a site within a spe-cific period of time. It is calculated by recording some form of user registration or identification. Most Web sites are not equipped with this feature.

STANDARD IMPRESSIONS The number of times an Internet surfer sees an ad banner but does not click on it to connect to the advertiser's Web site.

AD CLICK The number of times users "click" on an in-line ad (com-monly called a "banner") within a certain period of time. It does not measure effectiveness of an ad.

Why is this a radical departure? Only about 10 percent of Web surfers currently click on ad banners. Because Web advertising rates generally are determined by the size of a site's overall audience-the method used in pricing television and print advertising units-P&G's proposed "click- through" model is expected to generate considerably less revenue for Web sites.

The demand for coming up with credible measurement methods is strong. Inside Media [IMD9S] reported that the vice president of General Motors' North American marketing and advertising stated he was "terribly distressed about the lack of attention that [Web site] measurement has been given." Let us then give "measurement" some attention.

Digital Copyrights and Electronic Publishing

Intellectual property rights (copyrights, trademarks, and licenses) is an im-portant asset possessed by the publishers in their respective markets. Protecting intellectual property rights and collecting dues from online users is proving to be quite challenging. The scope and magnitude of the problem is clear. The potential of online copyright infringement vastly surpasses the damage that can be inflicted with a photocopy machine. Anyone with a computer can make and distribute countless copies of anything digital, be it a book, a TV or computer program, or a piece of music. Even worse, the digital version can be sent to friends or even a bulletin board system (BBS) for downloading by anyone with a modern.

Advances in technology have raised the stakes considerably. Today, vir-tually any work can be "digitized," archived, and used in the digital format. This increases the ease and speed with which a work can be reproduced, the quality of the copies, the ability to manipulate and change the work, and the speed with which copies (authorized and unauthorized) can be "delivered" to the public. Works also can be combined with other works into a single medium, such as a CD-ROM, causing a blurring of the tradi-tional content lines. The establishment of high-speed networking makes it possible for one individual, with a few key strokes, to deliver perfect copies of digitized works to scores of other individuals.

In short, the emergence of the Internet is dramatically changing how consumers and businesses deal in information and entertainment products and services; as well as how works are created, owned, distributed, repro-duced, displayed, performed, licensed, managed, presented, organized, sold, accessed, used, and stored. All of this has led to a clarion call for changes in the copyright law.

The stakes are high. Owners of copyrights are not willing to put their interests at risk if appropriate protections are not in place to permit them to set and enforce the terms and conditions under which their works are made available online. Likewise, the public will not use the services avail-able and create the market necessary for online publishing's success un-less access to a wide variety of works is provided under equitable and reasonable terms and conditions, and unless the integrity of those works is assured.

Online Copyright Protection Methods

Unauthorized access to published content can be restricted by two methods:

Restricting access to the source of the work. This includes controlling Web server access or controlling individual docu-ment access.

Restricting manipulation of the electronic file containing the work.

Controlling Web Server Access: Nearly all information providers, in-cluding commercial online services such as America Online and dial-up pri-vate bulletin boards, not only control access to their systems but also vary it depending on the information a user wishes to access; that is, access to cer-tain data is conditioned on paying a higher fee, and having greater access rights. Some information providers on the Internet grant full unrestricted access to all the information contained on their servers, so that anyone can access any data stored on the servers. Other information providers restrict access to users with accounts or grant only limited access to unregistered users. For example, a user can often log on to an FTP server as an "anony-mous" user (a user for whom no account has been created in advance), but access through anonymous FTP is limited to certain data.

Controlling server access may be used as one of the first levels of protec-tion for the works stored on it. Access to servers can vary from completely uncontrolled access (the full contents of the server are accessible without re-striction), to partially controlled access (unrestricted access is granted to only certain data on the server), to completely controlled access (no uncon-trolled access in any form is permitted). Access control is effected through user identification and authentication procedures (log-in name and pass-word) that deny access to unauthorized users of a server or to particular in-formation on a server. But access control does not preclude copies from being made once this initial layer of protection is passed.

Controlling Document Access: A second level of control can be exerted through measures tied to the electronic file contain-ing the work. One type of restriction can be implemented through "rendering" or "viewing" soft-ware. Such systems require.

A proprietary or unique file format that can be read only by certain software and that is developed or controlled by the information provider; or

Software that incorporates both a "control" measure to prevent viewing or use of a work without authorization from the information provider and "manipulation" functions to permit the user to view or use the work.

Another method of access restriction is encryption. Encryption tech-nologies can be used to deny access to a work in a usable form. File encryp-tion simply converts a file from a viewable file format such as a word processor document to a scrambled format. The user can obtain authoriza-tion from the publisher in the form of an appropriate password or "key," which is required to "decrypt" the file and restore it to its original format.

Controlling Use of the Work: Hardware and/or software placed in per-sonal computers can provide protection against unauthorized uses of copy-righted works. For instance, the Audio Home Recording Act requires circuitry in digital audio recording devices and digital audio interface devices that controls

serial copying. Based on the information it reads, the hardware circuitry will either permit unrestricted copying, permit copying but label the copies it makes with codes to restrict further copying, or disal-low copying. The serial copy management system implemented by this cir-cuitry allows unlimited first-generation copying-digital reproduction of originals-but prevents further digital copying using those reproductions.

Controlling use of a published work can be implemented through hard-ware, software, or both. For example, files containing works can include in-structions used solely to govern or control distribution of the work. This information might be placed in the "header" section of a file or another part of the file. In conjunction with receiving hardware or software, the copy-right information can be used to limit what can be done with the original or a copy of the file containing the work. It can limit the use of the file to read/view only. It can also limit the number of times the work can be re-trieved, opened, dupli-cated, or printed.

Introduction to internet marketing

This chapter provides an overview of the core concepts of internet marketing. It begins with a discussion of the ways in which the Internet. has irrevocably transformed the field of marketing through the introduction of new products, new audiences, and new strategies for reaching those audiences. Traditional marketing methods are still highly relevant in the new economy. But firms must also consider a host of new and innovative marketing methods now at their disposal, such as dynamic pricing and banner advertisements.

The Internet marketing process occurs in seven stages. The process begins with the formulation of corporate and business-unit strategy, then moves to framing the market opportunity, formulating the marketing strategy, designing the customer experience, designing the marketing program, crafting the customer interface, and evaluating the results of the marketing program as a whole.

This chapter also introduces two other concepts that alter the playing field of modern marketing: individualization and interactivity. In contrast to the one-way mass promotion that characterizes much of modern marketing, Internet marketing enables firms to engage in individual, personalized dialogue with their customers. The chapter concludes with a discussion of the changing role of marketing professionals in this new environment.

Notes -

LESSON 37:

INTERNET MARKETING

Please consider the following questions as you read this chapter:

1. What is Internet marketing?
2. What is the narrow view versus broad view of Internet marketing?
3. What are the seven stages of Internet marketing? What are the four stages of the customer re1ationship?
4. What are the six c1asses of variab1es in the Internet marketing mix?
5. What is the Markets' pace Matrix?
6. How do interactivity and individualization come into p1ay in the design of the marketing program?
7. What are the critica1 success factors for the Internet marketing professional?

Introduction

At its core, the mission of marketing is to attract and retain customers. To accom-plish this goal, a traditional bricks-and-mortar marketer uses a variety of market-ing variables-including pricing, advertising, and channel choice-to satisfy cur-rent and new customers. In this context, the standard marketing-mix toolkit includes such mass-marketing levers as television advertising, direct mail, and pub-lic relations, as well as cus-tomer-specific marketing techniques such as the use of sales reps.

With the emergence of the Internet and its associated technol-ogy-enabled, screen-ta-face interfaces (e.g., mobile phones, interactive television), a new era of marketing has emerged. Well-respected academics and practitioners have called for new rules and urged debate about fundamental tenets of marketing, including seg-mentation, mass marketing, and regionalized programs.) At the 'other extreme, pundits and academics alike have argued that both the basic building blocks of marketing strategy and the pathways to competitive advantage have remained the same

The approach taken in the current volume falls between these polar views. That is, new levers have been added to the marketing mix, segments have been narrowed to finer grada-tions, consumer expectations about convenience have forever been altered, and competitive responses happen in real time. In short, these are new, exciting changes that have a profound impact on the practice of marketing. At the same time, some of the fundamentals of business strategy-seeking competitive advantage based on superior value, building unique resources, and positioning in the minds of customers-have remained the same.

The intent of this text is to provide a clear indication of what has changed and what has not changed. At the same time, the text would not be complete (and indeed might be actionable from the standpoint of business practice!) if it did not propose a broader framework to understanding the practice of Internet marketing. Frameworks such as the 4Ps of marketing or the five forces of competitive analysis are important because they provide easy-to-remember, simplifying structures for complex problems. They also serve as guides to managerial action. Thus, under-standing the five forces enables firms to comprehensively map their competitive environment while simultaneously identifying specific actions for their managers (e.g., reduce buyer power by increasing the number of buyers). This opening chap-ter provides a simple seven-stage framework for Internet marketing. But first it offers a brief review of the basics of marketing and the scope of Internet marketing.

Definition and Scope of Internet Marketing

It is perhaps best to begin with the basic American Marketing Association defini-tion of marketing:

Marketing is the process of planning and executing the conception, pricing, pro-motion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational goals

The Basics: What Is Marketing?

The definition summarized above has four critical features. These are:

Marketing is a Process: A process is a particular method of doing an activity, gen-erally involving a series of steps or operations. The classical marketing approach involves four broad steps: market analysis, market planning, implementation, and control. 5 Market analysis involves searching for opportuni-ties in the marketplace, upon which a particular firm-with unique skills-can capitalize. Market planning requires segmenta-tion, target market choice, positioning, and the design of the marketing mix (also termed the 4Ps, or marketing program). Market implementa-tion includes the systems and processes to go to market with the marketing pro-gram. Finally, marketing control refers to the informal and formal mechanisms that marketing mangers can use to keep the marketing program on course. Analysis, planning, implementation, and control collectively provide a process for marketing managers to follow in the design and execution of marketing programs.

It involves a mix of Product, Pricing, Promotion, and Distribution: Strong marketing programs do not involve one action, such as the design of a great product. Rather, the most successful marketing programs involve mixing the ingredients of mar-keting to deliver value to customers. This mixing entails blending the right amounts of the 4P ingredients, at the right time, and in the right sequence. Too often, marketing programs fail because they allocate too many (or too few) resources in an uncoordinated way. How often have you witnessed the hot Christmas toy advertised-but not found it on the shelf? In the Internet environ-ment, this translates into significant problems with order fulfillment at the most pressing times of the year.

It Is about Exchange: Marketing is not successful unless two parties exchange some-thing of value. The buyer may exchange time, money, or services, while the seller must exchange something of value to the buyer. The traditional retail context pro-vides the simplest illustration of this principle. A given consumer exchanges money for a particular good or service. However, exchange also occurs in a wide variety of contexts, many of which are non monetary. These include bartering, volunteering services, and political donations.

It is Intended to satisfy Individual and Organizational Needs: The aim of marketing is to provide a satisfactory outcome for both the firm and the customer. Firms can have highly satisfied customers if they provide services for free. However, those organizations are not likely to have a long life. The key to modern marketing is simultaneously satisfying the customer, the firm, and its shareholders. In the long run, the firm must have a positive cash flow or show a clear path to profitability for investors to maintain confidence.

What is Internet Marketing?

If traditional marketing is about creating exchanges that simultaneously satisfy the firm and customers, what is Internet marketing?

Internet marketing is the process of building and maintaining customer relation-ships through online activities to facilitate the exchange of ideas, products, and serv-ices that satisfy the goals of both parties.

This definition can be divided into five components:

A Process: Like a traditional-marketing program, an Internet-marketing program involves a process. The seven stages of the Internet-marketing program process are setting corporate and business-unit strategy, framing the market opportunity, for-mulating the marketing strategy, designing the customer experience, designing the marketing program, crafting the customer interface, and evaluating the results of the marketing program. These seven stages must be coordinated and internally consistent. While the process can be described in a simple linear fashion, the mar-keting strategist often has to loop back and forth during the seven stages.

Building and maintaining Customer Relationship: The goal of marketing is to build and create lasting customer relation-ships. Hence, the focal point shifts from finding customers to nurturing a sufficient number of committed, loyal customers.? Successful marketing programs move target customers through three stages of rela-tionship building: awareness, exploration, and commitment. It is important to stress that the goal of Internet marketing is not simply building relationships with online customers. Rather, the goal is to build offline (as relevant) as well as online relationships. The Internet marketing program may well be part of a broader cam-paign to satisfy customers who use both online and offline services.

Online: By definition, Internet marketing deals with levers that are available in the world of the Internet. However, as noted above, the success of an Internet market-ing program 'may rest with traditional, offline marketing vehicles. Consider, for example, the recruiting and job-seeking service Monster.com. Monster's success can be tied directly to the effectiveness of its television advertising and, in particu-lar, its widely successful of the past two years.

Exchange. At the core of both online and offline marketing programs is the concept

of exchange. In both the online and offline worlds, exchange is still the heart of marketing. In the new economy, firms must be very sensitive to cross-channel exchanges. That is, an online marketing program must be evaluated according to its overall exchange impact-not just the online exchange impact. Hence, online mar-keting may produce exchanges in retail stores. Firms must be increasingly sensitive to these cross-channel effects if they are to measure the independent effects of online and offline marketing programs.

Satisfaction of Goals of Both Parties: One of the authors of this book is a loyal user of the website weather.com. Each day he arises and checks the weather in his city as well as the weather in cities he will be traveling to during the week. He is clearly sat-isfied with and loyal to the site. To the extent that weather.com can monetize this loyalty-most likely, in the form of advertising revenue-both parties will be satis-fied. However, if the firm is unable to meet its financial obligations to employees, suppliers, or shareholders, then the exchange is unbalanced. Customers are still happy, but the firm is unable to sustain its revenue model. Both parties must be sat-isfied for exchange to con-tinue.

A Narrow View us. a Broad View

The above discussion raises the question of how broadly one should define the scope and impact of Internet-marketing programs. Consider, for example, Figure1. Cell I represents a situation in which the marketing effort is online (e.g., viral marketing, banner ads) and the sales revenue is realized online. Online marketing clearly produces online-based revenue. However, consider Cell 2. Here, the online marketing effort has led to revenue increases offline; visiting Gap's online store results in more sales to the traditional Gap retail store. Cell 3 shows the reverse effect. That is, traditional offline marketing activities (e.g., Amazon billboard, Monster Super Bowl ad) drive traffic and purchases at the website. Cell 4 is a situ-ation in which traditional advertising (e.g., television ads for Gap retail stores) drives the traffic and purchases at the retail store.

So, should Internet marketing be broadly defined? A narrow view would be that Internet marketing focuses principally on Cell I. Advocates of this view would argue that it is only in the quadrant in question that one can truly measure and attribute the effects of Internet marketing. Other cells (or the spillover effects) should not be counted. On the other hand, it could be argued that Cells 1,2, and 3 should be counted as part of the overall Internet marketing effort. After all, the firm would real-ize lower total revenue if the cross-channel marketing effects did not occur. Hence, these cross-channel impacts should be considered part of Internet marketing.

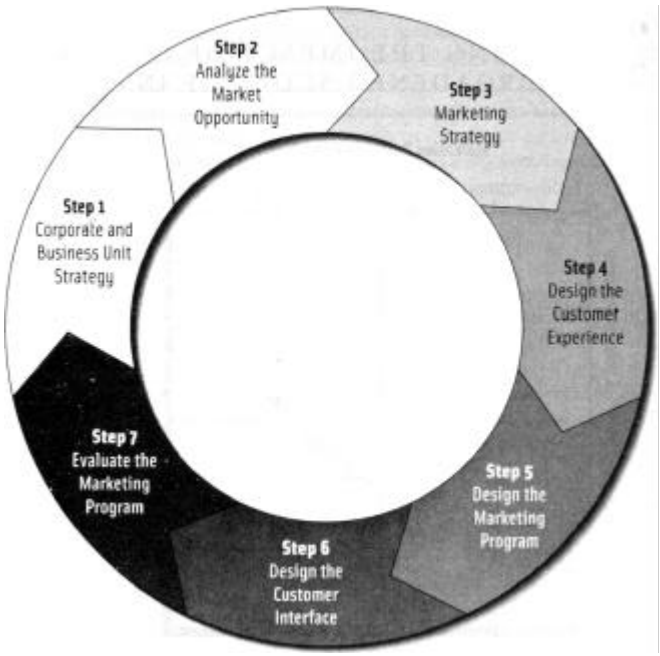
Internet Marketing Impact

This text strongly advocates the broad view of Internet marketing. Moreover, the overall efforts of marketing-all four quadrants-need to be coordinated and managed in an integrated way. Throughout this volume, the careful reader will notice that this text addresses the integration of all four quadrants.

The Seven Stages of Internet Marketing

Tp given figure provides an overview of the seven stages of Internet marketing. The seven stages are these: setting corporate and business-unit strategy, framing the market opportunity, formulating the marketing strategy, designing the customer experience, designing the marketing program, crafting the customer interface, and evaluating the results of the marketing program.

The Seven Stage Cycle of Internet Marketing



Stage One: Setting Corporate and Business-Unit Strategy

Corporate strategy addresses the interrelationship between the various business units in a firm, including decisions about which units should be kept, sold, or aug-mented. Business-unit strategy focuses on how a particular unit in the company attacks a market to gain competitive advantage. Consider, for example, Amazon.com. Corporate-strategy issues relate to the choice, mix, and number of business units such as kitchen, music, electronics, books, and tools/hardware. Once these business units are established and incubated in Amazon's corporate head~ quarters, the senior leadership team of each unit sets the strategic direction and steers the business unit toward its goals.

Stage Two: Framing the Market Opportunity

Stage two entails the analysis of market opportunities and an initial first pass of the business concept-that is, collecting sufficient online and offline data to establish the burden of proof of opportunity assessment. Let's say, for example, that you are running a major dot-com business such as Amazon. The senior management team is continually confronted with go/no-go decisions about whether to add a new business unit or develop a new product line within an existing business unit. What mechanism do they put in place to evaluate these opportunities? In this second part of the Internet-marketing process, a simple six-step methodology helps evaluate the attractiveness of the opportunity

The six steps include: seeding the opportunity, specifying unmet or underserved customer needs, identifying the target segment, declaring the company's resource-based opportunity for advantage, assessing opportunity attractiveness, and making the final go/no-go decision. The final go/no-go choice is often a corporate or business-unit deci-sion. However, it is very important to stress that marketing plays a critical role in this market-opportunity assessment phase.

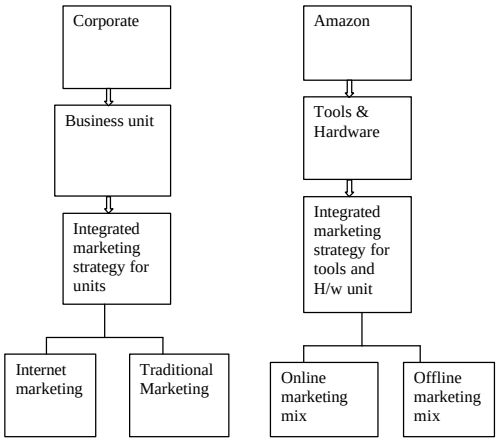
In order for the firm to make an informed choice about the opportunity, the management team needs to obtain a sufficient picture of the marketplace and a clear articulation of the customer experience that is at the core of the opportunity. Thus, during the market-opportunity assessment phase, the firm also needs to col-lect sufficient market research data.

Stage Three: Formulating the Marketing Strategy

Internet marketing strategy is based upon corporate, business-unit, and overall marketing strategies of the firm. This set of linkages is shown in figure . The marketing strategy goals, resources, and sequencing of actions must be tightly aligned with the business-unit strategy. Finally, the overall marketing strategy com-prises both offline and online marketing activities.

Corporate, Business-unit and Marketing Strategy

MAR KFTTNG STR ATEGY



for pure-play online businesses such as Amazon's tools and hardware group,

Stage Four: Designing the Customer Experience

Firms must understand the type of customer experience that needs to be delivered to meet the market opportunity. The experience should correlate with the firm's positioning and marketing strategy. Thus, the design of the customer experience constitutes a bridge between the high-level marketing strategy (step three) and the marketing program tactics (step five).

Stage Five: Designing the Marketing Program

The completion of stages one through four results in clear strategic direction for the firm. The firm has made a go/no-go

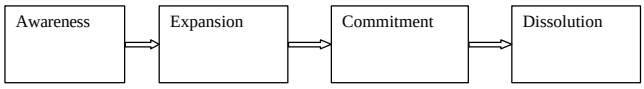
decision on a particular option. Moreover, it has decided upon the target segment and the specific position that it wishes to own in the minds of the target customer. Stage five entails designing a particular combi-nation of marketing actions (termed levers) to move target customers from aware-ness to commitment. The framework used to accomplish this task is the Market space Matrix. Simply put, the Internet marketer has six classes of levers (e.g., pricing, community) that can be used to create target customer awareness, explo-ration, and, it is hoped, commitment to the firm's offering. However, prior to dis-cussion of the Market space Matrix, the stages of the customer relationship and the associated classes of levers that can be employed must be defined.

Building and Nurturing Customer Relationships: A relationship can be defined as a bond or connection between the firm and its customers. This bond can originate from cognitive or emotional sources. The connection may manifest itself in a deep, intense commitment to the brand (e.g., the Harley-Davidson HOG club-member) or a simple, functional-based commitment (e.g., regular use of weather.com). Whether defined as a function or an organization-wide culture, marketing is responsible for acquiring and retaining target customers. In this process, success-ful marketers manage to move desirable customers from awareness through explo-ration and, finally, commitment. Once customers reach commitment, the firm is in a position to observe their behavior patterns and determine which customers to nurture and which customers to terminate (or serve at a lower level of cost). Managing this building and pruning process is one of marketing's key tasks. The four stages of customer relationships are briefly outlined below

Awareness: When customers have some basic information, knowledge, or attitudes about a firm or its offerings but have not initiated any communications with the firm, they are in the awareness stage. Consumers become aware of firms through a variety of sources, including word-of-mouth, traditional marketing such as televi-sion advertising, and online marketing programs such as banner ads. Awareness is the first step in a potentially deeper relationship with the firm. However, as one can imagine, awareness without action is not in the best interests of the firm.

Exploration: In the exploration stage, the customer (and firm) begin to initiate com-munications and actions that enable an evaluation of whether or not to pursue a deeper connection.

The four key stages of customer relationship.



This stage is also likely to include some trial on the part of the cus-tomer. Exploration is analogous to sampling songs, going on a first date, or test- driving a car. In the online world, exploration may take the form of frequent site vis-its, some e-commerce retail exchanges, and possibly even the return of merchandise. It may include phone call follow-ups on delivery times or e-mails about product inventory. The exploration stage may take only a few visits or perhaps years to unfold.

Commitment: In this context, commitment involves feeling a sense of obligation or responsibility for a product or firm. When customers commit to a website, their repeated, enduring attitudes and behaviors reflect loyalty. Commitment is a state of mind (e.g., I strongly prefer Amazon.com over Barnes & Noble.com) as well as a pattern of behavior (e.g., 9 out of 10 of my book purchases are made through Amazon). One direct measure of commitment to a particular site is the extent to which the individual has invested in customizing the site (e.g., creating a Myweather page on weather. com).

Dissolution: Not all customers are equally valuable to the firm. In an industrial- marketing context, managers often refer to the 80/20 rule of profitability. That is, 20 percent of customers provide 80 percent of the profit. By implication, therefore, a large number of customers are unprofitable or have high cost to serve. Firms should segment their most valuable and less valuable customers. The most valuable customers may be identified based on profit, revenue, and/or strategic significance (e.g., a large well-regarded customer may not be profitable but opens the door to new accounts). The firm does not want this set of customers to terminate the rela-tionship. Unprofitable, non strategic customers are a different matter. Often it is in the best interests of the firm to terminate the relationship or encourage this set of customers to disengage with the firm. Chapter 7 provides a much more thorough review of these four stages.

The four stages vary by the 'intensity of the connection between the firm and the customer Intensity of connection may be defined as the degree or amount of connection that unfolds between the firm and its target customers. Three dimensions capture intensity:

1. The frequency of the connection. (How often does the customer visit the site?)
2. The scope of the connection. (How many different points of contact does the customer have with the firm?)
3. The depth of contact. (How thoroughly is the customer using the site?)

A customer might visit a website such as Amazon on a regular basis, but only to purchase books. This visitor would have a high level of frequent contact but a low level of scope. Another customer might visit Amazon frequently but not stay on the site for a long duration or engage in deeper connections such as writing reviews, commenting on products, or communicating with other Amazon users. This cus-tomer would have high frequency but low depth. In all cases, relationship intensity is correlated with the stage of the relationship .

The Internet marketing mix: The traditional 4Ps of market-ing are product, price, promotion, and place/distribution. All four of these choices are part of the Internet marketing mix, plus two new elements: community and branding. Community is the level of interaction that unfolds between users. Certainly, the firm can encourage community formation and nurture community development. However, community is about user-to-user connections. Branding is a critical component of building long-term relationships on the Web. Thus, rather than view branding as a subcomponent of the product, it is

developed here as a mod-erating variable upon the levers-product, pricing, communication, community, and distribution.

Product: The product is the service or physical good that a firm offers for exchange. A wide range of product forms are being offered on the Internet, includ-ing physical goods (e.g., clothing), information-intensive products (e.g., The Wall Street Journal online), and services (e.g., online grocers). Frequently, the offerings are a combination of all three forms. In the course of building customer rela-tionships, the firm can use a variety of product levers to build enduring customer relationships. Product packaging is often used to build customer awareness, ,

upgrades and complementary services enable customers to explore a deeper con-nection, and customized offerings strengthen commitment. The key point is that specific product levers can be used to encourage a stronger connection. Chapter 8 further develops the process by which product levers can move customers through the four stages.

Pricing: Price is the amount the firm charges customers for a particular market transaction. This would include the price of the product, shipping, handling, war-ranty, and other financial costs incurred by the customer. Price is critical because it influences the perceived customer value (the complete product offering minus cost is often termed customer value). While a .casual observer might view the pricing levers quite narrowly (there is only one choice: the price to charge lor the good), there is a wide variety of traditional and new-to-the-world levers that emerge on the Internet. Traditional levers include such potential choices as tiered loyalty pro-grams, volume discounts, subscrip-tion models, and targeted price promotions. The Internet has created an entirely new category of pricing tools for new-economy firms to use, including dynamic pricing strategies.

Communication: Marketing communication can be defined as activities that inform one or more groups of target customers about the firm and its products. This text takes a broad view of market communication to include all types of firm- level communications, including public relations, the use of sales representatives, and online advertising. Everyone knows how advertising and other forms of com-munication such as television and direct mail can make target customers aware of the offerings of the firm. However, marketing communication can also encourage exploration, commitment, and dissolution. For example, viral marketing (where one user informs another user about a site through e-mails) often leads to explo-ration of a firm's offerings by new customers. Also, permission market-ing (where customers opt to receive communications from the firm) is intended to encourage commitment to the firm. Both offline and online communication levers can encourage customers to build a stronger bond with the firm and should be inte-grated in any marketing program.

Community: Community is defined as a set of interwoven relationships built upon shared interests, which satisfy mem-bers' needs otherwise unattainable individually. One of the unique aspects of the Internet is the speed with which commu-nities can be formed. Equally important is the impact that these communities can have on the firm. A critical question confront-ing Internet marketers is how communities should be leveraged to build deep customer relationships. Communities can be leveraged to build awareness (e.g., user-to-user communication to make others aware of a prod-uct promotion), encourage exploration (e.g., user groups discussing which automo-tive options to purchase-or not purchase), and commitment (e.g., bonds between users lead to deepening involvement with the site). Chapter 11 addresses the com-munity levers that can be employed to nurture customer relationships.

Distribution: The Internet is simultaneously a completely new form of commerce- a revolution in how customers and firms interact-and a distribution channel for the firm's products. With respect to the role as a distribution channel, the Internet has the power to shift customers to a new channel-or to use this channel in com-bination with other channels (e.g., search the Internet and then purchase at the retail store). Distribution levers include the number of intermediaries (both online and offline), the breadth of channel coverage, and the messaging from the channels. Broad levels of distribution impact both customer awareness and the potential for more customer exploration of the firm and its offerings.

Branding: Branding plays two roles in marketing strategy. First, branding is an out-come or result of the firm's marketing activities. Marketing programs affect how consumers perceive the brand, and hence its value. Second, branding is a part of every marketing strategy. That is, each marketing activity is enhanced if the brand is strong, or suppressed if the brand is weak. Thus, a strong advertising program for Travelocity.com is likely to produce better results than a strong advertising program for a site with a weakerbrand, such as Travel.com. Branding levers work in concert with other marketing levers to produce positive financial and/or customer results for the firm.

In sum, the Internet marketing mix comprises six classes of levers.. The interactive, or multiplier, effect of the brand can be positive or negative. Importantly, this does not mean that the other mix elements do not interact, because they do. However, branding is unique insofar as it is both a lever and an outcome of marketing actions.

Individualization and Interactivity: The previous section provided an overview of the six variables in the Internet marketing mix. However, simply specifying that the firm is able to manage these six classes of variables in an online environ-ment does not do full justice to the uniqueness of the Internet environment. Two very impor-tant concepts need to be introduced to fully understand the profound implications that the Internet brings to business. These two concepts are. individualization (or customization) and interactivity.

The first concept is individual-level marketing exchange. In addition to high lev-els of interactivity, customers expect to have a personal experience with the firm. Broadcast approaches send the same messages to all members of the target audi-ence. The Internet enables the firm to engage in customer-specific actions-a broadcast to an audience of one. Equally important, the customer can control the degree of customization by taking action to set the level of customization he or she desires. Hence, the amount of individualization can be controlled either by the firm or by the customer.

Interactivity is defined as the extent to which a two-way communication flow occurs between the firm and customers.

The Internet enables a level of customer dialogue that has not previously been experienced in the history of business. Certainly customers could have conversations with retail-store clerks, sales reps, or managers; however, it was not possible at the scale that the Internet affords. Hence, the fundamental shift is one from broadcast media such as television, radio, and newspapers to one that encourages debate, exchange, and conversation.

Pricing can be both inter-active and individualized-indeed, that is the essence of dynamic pricing. And market communications can be both interactive and individualized-that is the purpose of real-time customer service on the Web. Further, more, products and services can be designed in real time by the customer, maximizing both interactiv-ity and customization. This level of custom dialogue has revolutionized the impact of the Internet on marketing.

Stage Six: Crafting the Customer Interface

The Internet has shifted the locus of the exchange from the marketplace (i.e., face-to-face interaction) to the market space (i.e., screen-tb-face interaction). The key difference is that the nature of the exchange relationship is now mediated by a technology interface. This interface can be a desktop PC, sub-notebook, personal digital assistant, mobile phone, wireless applications protocol (WAP) device, or other Internet-enabled appliance. As this shift from people-mediated to technology -mediated interfaces unfolds, it is important to consider the types of interface design considerations that confront the senior management team. What is the look-and--feel, or context, of the site? Should the site include commerce activities? How important are communities in the business model?

Stage Seven: Evaluating the Marketing Program

This last stage involves the evaluation of the overall Internet marketing program. This includes a balanced focus on both customer and financial metrics.

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LESSON 38:
CRITICAL SUCCESS FACTORS FOR INTERNET MARKETING EXECUTIVES

Marketers have always been in the business of anticipating and managing change, and technology has been their principle tool for managing it. The Internet presents an adaptive challenge for the marketing executive. Today's Internet marketing exec-utive must have all the traditional skills of the offline marketing professional, but must place extra emphasis on some of them to account for the new economy. These critical new skills include customer advocacy and insight, integration, balanced thinking, and a willingness to accept risk and ambiguity.

Customer Advocacy and Insight

An insatiable curiosity for customers and marketplaces is a bare necessity for today's marketing professional. This innate curiosity fuels an individual's desire to transform mounds of customer data into meaningful and actionable insights, which in turn become a platform for advocacy. Because the Internet enables a much greater degree of interaction with customers, designing and promoting these interactions around customers' needs and progressively gaining deeper insights are critical components of creating positive customer experience. A true customer advocate will be looking to provide demonstrable added value to each customer interaction to form the basis for a meaningful relationship. As both cus-tomer behaviors and enabling technologies simultaneously evolve, a deep under-standing of customer needs should serve as the guidepost driving marketing deci-sions. Marketing professionals will need to strategically collect information from many disparate sources, create insightful customer mosaics, and effectively trans-late them into marketing strategies and tactics.

Integration

The Internet represents both a new channel and a new commu-nications medium. The new-economy marketing professional needs to have an integrated or' holistic view of the customer and the enterprise in order to create a uniquely advantaged strategic plan. In today's multi channel environment, a consis-tent message and experience must be maintained across customer touch points in order to create a consistent brand image. Beyond strategy, a marketing manager must fundamen-tally understand how to integrate these new tools into the overall marketing mix. Managers who are able to hone their marketing plan in a highly integrated fashion are more likely to capitalize on the synergies between marketing elements and thus drive greater effectiveness.

Balanced Thinking

An Internet marketing professional needs to be highly analytical and very creative. Culling specific customer insights from a veritable fire hose of data is critically important for new-economy managers. It requires understanding the dynamic ten-sion between one-to-one marketing and mass marketing and being able to strike a strategic balance between them. It also requires determining the appropriate cus-tomer data require-ments. Internet marketing professionals must also be technolog-ically savvy. Understanding the strategic and tactical implications of the Internet, leveraging the rapid learning environment and accelerated decision-making process it creates, and then creatively applying the insights gleaned from analysis are critical success factors for all Internet marketing profession-als.

Passion and Entrepreneurial spirit

Although very hard to objectively assess, passion, or fire in the belly, is what will dif-ferentiate leaders from followers in the new economy. Trying to change the status quo is never easy, and only people with conviction and passion will be heard over the din of the inevitable naysayers. Successful marketing managers use this passion to fuel their entrepreneurial instincts and vision, creating "bleeding edge" tools as they lead their teams to success.

Willingness to Accept Risk and Ambiguity

In the new economy, Internet marketing professionals need to retool them-selves and their companies to enter into a whole new era of customer-centric marketing. The Internet has enabled customers to have much more informa-tion and many more choices than ever before, thus shifting the balance of power toward the customer and creating the need for a whole new set of "pull" -based marketing tools. Successful Internet professionals need to rely on a whole new set of marketing tools that work in an extraordinarily dynamic environ-ment. Having the courage to try new things is the key to developing break-through Internet marketing. The risk and ambiguity of managing in such uncharted territory is tremendous, and the most successful Internet marketers will be willing to play at the edges.

Today's online marketing professionals must have the basic skill set of the offline marketing professional. But they must also react more quickly and manage more information and channels in order to stay one step ahead of the competition. The skill set has not changed tremendously, but-the tools need to be applied with more vigor and sometimes with greater speed. Successful Internet marketers will build their business models and value propositions around a deep understanding of cus-tomer needs-not around the product.

LESSON 39:
CASE STUDY

Ticketek Buying tickets online

On November 11th 1997 without the familiar fanfare of website launches, Ticketek, one of Australia's largest ticket selling organizations, launched a secure E-Commerce merchant system to allow people to purchase tickets to entertainment performances online. By mid February 1998, Ticketek had achieved six figure sales through their website located at http://www.ticketek.com.au.

"The objectives for Ticketek's E-Commerce initiative was to make it easier and provide the ultimate flexibility for customers to buy tickets. To this extent we have been successful" says Adam Lyle, CEO of Ticketek.

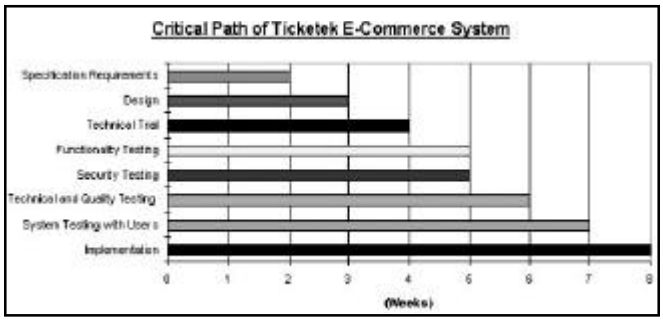
This flexibility is illustrated as the keystrokes that the Internet user makes when buying tickets online directly competes with the keystrokes made by Ticketek staff that take orders via the telephone and over the counter. This guarantees that the Internet user has an equal chance of getting the best seat at that point in time, regardless whether they are purchasing via the Internet, standing in queue or ringing on a mobile telephone.

This technological solution was made possible by Spike Transact, a division of Spike Wireless, who integrated Ticketek's existing Softix ticketing system which is used for both over the counter and telephone sales with a compatible Microsoft server using Structure Query Language (SQL)

As most technical personnel employed know very well, the implementation of an E-Commerce merchant system can be very difficult. Spike's Stuart Duguid, Director of Technology, who holds a PhD in Telecommunications explained that "one of the most common challenges to be overcome when implementing E-Commerce is to integrate the existing sales administration and accounting procedures with Internet technology."

Technology and Implementation Requirements

To illustrate how an E-Commerce system is implemented, the accompanying chart details the critical path that Spike Transact took to implement the Ticketek E-Commerce system. Although it was produced and commercialised in approximately 8 weeks, a 7 day work vigil was maintained to complete the project on time.



Another important aspect of implementing an E-Commerce website is to ensure that your organizations legal personnel overviews the website so that it complies with the correct legal obligations.

The Online Ordering Process

From a users perspective, a transactions website should be efficient. According to Adam Lyle, "Ticketek's key design element of transaction speed was not compromised for the technical gadgets because the main driver of increasing E-Commerce sales is to ensue your online customers have a good buying experience."

Ticketek have exemplified efficient transaction processing times with online ticket buyers being required to take only 8 steps to complete an order on the Ticketek website. It is important that the process is relatively straight forward and does not involve too many steps that could potentially frustrate potential buyers.

Step 1. Internet users arrive at the Ticketek entry page.

Step 2. The search page allows users to identify by keyword or category an artist, venue and tour dates.

Step 3. Event details are now displayed.

Step 4. Conditions of sale: A page of this type is required to be displayed to all users prior to the purchase order process being completed.

Step 5. The Ticket Selection page allows users to choose the quantity of tickets required.

Step 6. The Ticket Offer page ensures that names, addresses, contact phone numbers are recorded.

Step 7. The Ticket Offer is presented with Credit card, details and expiry date.

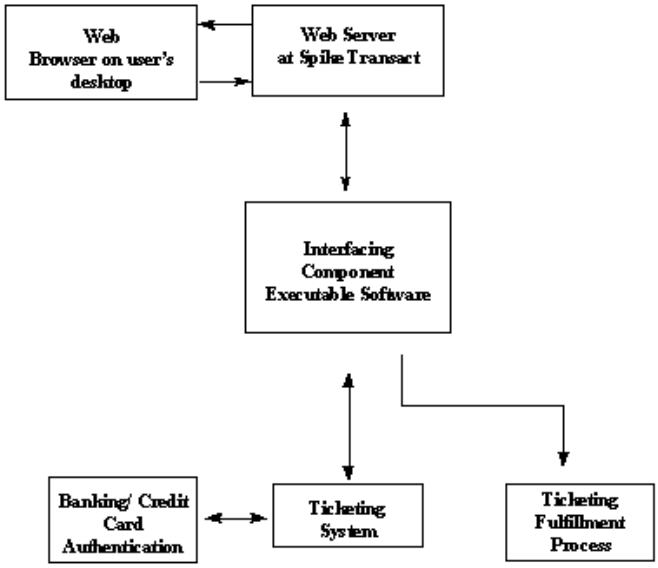
Step 8. The final step involves Ticket Confirmation.

Ticketek offers Internet purchasers a number of ways to collect their tickets. Although tickets cannot be downloaded via the website, customers can collect their tickets either by mail to a nominated address or collected from the venue on the day of the event.

Ticketek Internet Architecture & Security

The accompanying chart illustrates the technological architecture of Ticketek's online purchasing process. To ensure the highest security, Ticketek have used the Secure Socket Layer standard 40 bit encryption public private key. They have also deployed two dedicated 128 ISDN lines for their website. This acts as an extra security measure as each ISDN line is connected with a different Internet Service Provider allowing Ticketek to separate incoming and outgoing traffic.

The key technical requirements is the connection between the Microsoft Internet Information Server 3.0 and the Softix ticketing systems.



Costs and Return on Investment

Although Ticketek would not divulge actual set up costs, an integrated E-Commerce solution which includes order look up facilities ranges in price from $200,000 to $500,000 over a 12 month period. However, a simple E-Commerce solution begins at an annual cost of approximately $50,000. It is likely that Ticketek will return their investment within two years.

Who is buying tickets online ?

Ticketek have found that the majority of online purchasers are made from people either at work or in regional areas. Interestingly, Ticketek were quite surprised with the increase in demand from overseas residents who purchased a ticket to an Australian concert and combined it with a holiday because they often could not obtain a ticket to a concert in their homeland!

Marketing Opportunities

Ticketek have over 1,100 hyper text links to their website from around the world. These include related professional organizations such as the Sydney Entertainment Centre to individuals with their personal web pages devoted to their favourite band. This represents a powerful network of what may one day become a virtual community or retail network for Ticketek.

Lessons Learnt from E-Commerce

Brett Judd, IT Manager for Ticketek, warns that organizations should not underestimate the amount of email responses resulting from online transactions. “As a result of their E-Commerce initiative, Ticketek now employ a full time staff member who answers between 700 to 1,200 emails per week.”

According to Stephen Murphy, Strategic Director of Spike Wireless, the most common experience for organizations that implement an E-Commerce system is that stage two of the E-Commerce project is initially planned to be managed in house yet it is very important that the outsourced company is maintained after stage one.

The Future

Imagine being able to view the seating arrangement and using Quick Time Virtual Reality, the view you would have from different sections. Whilst this is voyeuristic, what will become reality in the next 12 months is Ticketek’s personalized email messages sent to registrants who have preselected which events they are interested in.

Overall, Australian business are now starting to learn about the benefits of E-Commerce. The drive to lower transactions costs and greater profitability will see the Internet propelled as the most cost efficient transactional medium of the 21st Century.

The following E-Commerce case studies can also be referred

Nick’s Wine Merchants
http://www.sofcom.com.au/Nicks/

Yellow Pages® Shopping Guide
http://www.yellowpages.com.au

Cyberhorse (The Virtual Formguide)
http://www.cyberhorse.net.au

Netpsych
http://www.netpsych.net.au/

The Mail Service
http://www.lotteries.net.au/

Stamps.AU
http://www.stampsau.com.au

Boots Online
http://www.bootsonline.com.au/

Discussion Questions

- Identify how a business can expand by using e-commerce
- Decide whether you can supply or service international markets
- Continue looking for ways to expand your business plan to include online solutions

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LESSON 40: E-COMMERCE STRATEGIES FOR DEVELOPMENT

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.

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 last 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.1 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 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.

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". Ecommerce 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.

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.

The following discussion reflects the findings of an initial survey of national ecommerce strategies as well as previous work done by UNCTAD and other international agencies on specific e-strategy elements. The selection of policy areas addressed in the paper reflects the priorities of the country strategies; these areas should be seen as a first segment of a discussion on national e-strategies, with further elements to be discussed in future meetings.

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LESSON 41: ELEMENTS OF NATIONAL E-COMMERCE STRATEGIES

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. Therefore, of the 51 countries surveyed, 37 were developing and 14developed countries.

The countries surveyed are at very different stages in their development of national ecommerce strategies. Some have already implemented a number of the policies included in their plans, or have even revised earlier plans, while others (mainly developing countries) have barely started to set up national working groups to examine the topic and provide policy recommendations for action.

In spite of this, most strategies contain a number of common elements.

As we can see, three broad policy areas are addressed by the large majority of country strategies: (i) awareness building, training and education; (ii) access and infrastructure; and (iii) legal and regulatory issues. These are followed by policies to support the enterprise sector in using ICT; policies to enhance the development and use of ICT and e-business in targeted domestic sectors; e-government; policies related to the banking system and e-payments; and a number of other elements, such as those related to standards and trade facilitation, research in the domestic IT sector and e-commerce, and participation in international forums (e.g. WTO, WIPO). The following parts will discuss the most common policy areas in greater detail, trying to identify the key policy elements and assessing the various policy options available, especially for developing countries.

A. Awareness Building, Training and Education

As a result of the survey, policies related to awareness building, training and education are by far the most important elements of national e-commerce strategies: combined, they are included in the national strategies of 50 countries. Almost all of the surveyed developing countries (70 per cent), and most of the developed countries (64 percent), have included activities related to training and awareness building.

Most policy makers agree that unless businesses and consumers are educated about the opportunities and benefits offered by ICT, and unless they are trained to use the Internet, e-commerce will not take off. While access to computers and the Internet is essential, it is not enough; it is equally essential to create a demand for the new technologies and for ecommerce. Some have even argued that education, and not connectivity, is the main challenge for most developing countries seeking to participate in the digital economy.

Myths, misperceptions, and missed opportunities surround e-commerce especially in the developing countries, where enterprises are often unaware of the benefits and applications of e-commerce and ICT. Promoting the use of ICT and the Internet therefore ranks highly on the e-commerce agendas of developing countries Here governments can set a valuable example by providing information and services online and using the Internet as an additional channel of communication with citizens. By stimulating demand for information networks, the government and other public agencies can play an important role in raising awareness of the usefulness of e-commerce and contributing to the increased use of the new technologies .

Raising Awareness Among Citizens and Enterprises

Many countries have launched awareness-raising programmes to stimulate the use of the Internet among businesses (especially SMEs) and consumers. Pakistan, for example, has carried out large regional awareness-building programmes to disseminate information about the benefits, importance and challenges of e-commerce; discuss revenue generation, efficiency and competition issues; and generally reduce confusion about e-commerce. Pakistan's goal is to train 5,000 people in technology, business processes and regulations related to e-commerce by 2003. Similarly, the Government of Jamaica is planning a public awareness programme along with the restructuring of the educational system to provide IT training and retraining at all levels linked to the needs of the industry. Developing-country governments are not the only ones concerned by the need to raise awareness in the business community of the usefulness of ICT. Scotland (UK), for example, has launched a national e-promotion campaign aimed at moving companies from awareness to understanding though a programme of local and national events and a comprehensive information package available to every business in the country via the Internet or a telephone hotline. And a key element of the

European Union's e-commerce strategy is to promote e-business for SMEs and encourage them to "go digital".

Awareness building and training often serve the same purpose – to stimulate the use of ICT. However, raising awareness among citizens who have never used a computer or among businesses that have no IT professionals will achieve little. Therefore, education and training are fundamental to the widespread and effective use of new technologies. Since a networked society is essentially a knowledge society, many of the potential benefits of ICT and e-commerce relate directly to the capability to use information to create new knowledge.

Governments can play an important role in enhancing digital literacy through the country's basic education system. Improving Internet access and the number of computers in schools and training teachers in the use of ICT in the classroom will not only improve education but also contribute to a new generation of IT-literate children. At the same time, governments need to be aware that an increase in the number of computers in schools will require training teachers to use the new technologies, and an increase in the number of technicians and other IT-literate people to operate and repair computers and teach software programmes. In low-income countries and remote communities, where education systems may have major deficiencies, community-based centres (such as tele centres) have proven to be successful in providing basic training in ICT literacy and raising awareness of the benefits of using the Internet.

A serious problem facing many developing countries, especially LDCs, is illiteracy. According to UNESCO, 21 per cent of the adult population was illiterate in 2000, with particular concentrations in South Asia and sub-Saharan Africa. While some of the new technologies (e.g. mobile telephones or tele-centres with support staff) can be used by people with minimal or no literacy, the real gains come from using the information and applications provided by ICT (ILO 2001).

Apart from introducing basic computer education in schools, countries will also need IT professionals such as software engineers, programmers and other technical specialists, as well as business people with IT skills. The demand for ICT-related skills is not limited to the ICT sector but arises in all areas of economic activity, as ICT becomes an essential part of every enterprise. For example, every company using computer systems needs an IT support staff. The demand for IT skills has grown considerably over the past few years and has not been met by the supply of IT labour. As a result, there is a considerable shortage of IT skills, especially (but not only) in the developed countries. To fill this labour shortage, some developed countries have hired high-skilled migrant labour, often from developing countries. This practice can be costly for developing countries, such as India, that have invested heavily in creating a domestic IT human resources pool and that are facing increasing domestic demand for IT professionals. Hence, companies in low-wage countries need to consider providing attractive working conditions to prevent their IT professionals from looking for alternatives abroad.

Enhancing Digital Literacy

A number of countries have invested heavily in improving computer literacy among their citizens. For example, the Republic of Korea has introduced mandatory computer education at all primary schools. It has also established basic computer and Internet training classes for senior citizens at 50 universities across the nation, with the goal of training about 100,000 seniors by the end of 2001.14 The Government has also targeted housewives, through a programme called "Cyber Korea 21", in its nationwide campaign to teach Internet use, given Korean mothers' important role in educating their children.

Costa Rica, well known for its success in building a strong ICT sector, has placed major emphasis on education. Faced with a limited number of engineers and technicians, the government launched an aggressive campaign, in cooperation with local technical institutions and with financing from the IDB and the private sector, to increase the number of IT and engineering professionals. Today, over 100 small software development companies are operational in the country, employing more than 1,000

professionals and exporting to neighboring countries, South-East Asia, Europe and Africa. The involvement of both public- and private-sector companies in providing IT training has also been part of the South African e-strategy. Telkom, the South African telecommunications company, has received funds to offer IT training at its training centres throughout the country and software development training in some of the centres. The department of education is introducing ICT in secondary schools that have Internet connectivity and is planning to include ICT courses in primary school curricula.

Access and Infrastructure

Policies related to access, infrastructure and reforms of the telecommunication sector have been included by 41 countries and thus rank second among the country strategies.

Again, different priorities were given by developing and developed countries. In the developed countries, which usually have a much better telecommunications infrastructure, infrastructure was included in only four countries' strategies, and policies related to access by only one.

Unquestionably, a key priority for developing countries is to ensure that their citizens have access to the Internet at a reasonable cost. In fact, while Internet access can enable an entrepreneur to find information about the market price of the goods he or she produces as well as about new market opportunities, it can also improve access to education, knowledge and health care for the population as a whole.

However, as Figure 1 shows, the Internet remains beyond the reach of the great majority of the world population. Whereas in developed countries over 40 per cent of the population is using the Internet, the percentage drops to less than 1 per cent in Africa.

Accessing the Web is possible only when telephones and personal computers (PCs) are available, but these technologies are still in very scarce supply. In addition to this problem, Internet access is still very costly – both in absolute terms and relative to per-capita income – in most developing countries. To tackle these problems, a number of initiatives have been put in place at the national, regional and international (see part I) levels. This part focuses on the policy environment and on actions that Governments can take to increase access to ICT.

Open-source software: an opportunity for developing countries?

Open-source software is written and perfected by volunteers, who freely share the programming code that would otherwise be kept secret. The code of most commercial software is kept secret. In principle, anyone can redistribute open-source software without paying fees to its author, and anyone can

modify it if he or she distributes the new version under the original distribution terms. Open-source products such as the operating system Linux have become significant competitors to proprietary software products. Linux is the operating system running 30 per cent of all active Web sites on the Internet. Unsurprisingly, commercial software companies feel threatened by the rise of open-source software, and misconceptions abound. One is that the software is inherently free, meaning that it must be given away without charge and cannot become part of a lucrative enterprise. Open-source software is free in the sense that anyone is free to view and modify its source code, but not in the sense that nobody is selling it. For-profit companies have found ways to sell open-source software basically by selling customer service and support. While commercial software still dominates the market for personal computers, open-source products are widely used on the servers that power the Internet, a development with profound implications for the software industry and the Internet economy. The 64 per cent market share of the open-source Apache server software is substantially higher than that of any competing product.

Another strategy that developing countries could pursue is that of promoting means of accessing the Internet without using a PC – for instance, through handheld devices such as portable telephones. A very promising development in this respect is mobile commerce (mcommerce), which permits the conducting of e-business via wireless communications.

Reforming the domestic telecommunications sector has proved effective in improving access to and the quality of telecommunication services. In many developing countries, the sector is still a state monopoly. This often results in expensive, inefficient and poor-quality telecommunication services. Hence, there is a tendency to open up the domestic telecommunications market and allow competition, including that from foreign suppliers. The short-term loss of revenue is usually outweighed by the long-term gains resulting from a more competitive, efficient and high-quality telecommunications market. The experience of the last decade shows conclusively that effective reform must include three key elements:

private-sector participation, market competition and the creation of an independent regulatory body.

As regards the first element, the ITU recently counted as many as 113 countries (out of 201) that had partially or fully privatized their incumbent telecommunications operator. Other countries allowed competition in some segments of the market, while 39 countries had a fully state-owned operator. Private-sector participation has been introduced in the telecommunications sector in different ways: by selling a share of the incumbent to an investor, making a public offering of shares to the public or the incumbent's employees, or issuing additional licences (franchising) to provide telecommunication services or other specific services such as mobile communications, data, and so on.

The second key to improving the general performance of telecommunication services is competition in the telecommunications market. Competition has been strongest in some segments of the market, such as mobile telephones and international calling, whereas the market for local calling is still a monopoly in most countries.

Finally, regulation of the telecommunications market is still necessary, although today it has a different emphasis than it did in the past, when regulation consisted mostly of tariff and prices control. Today it encompasses competition among suppliers and enforcement of various types of contractual obligations.

Actions taken in the three key areas referred to above has allowed unprecedented growth in the number of telephone lines (mobile and fixed) while at the same time bringing down the costs of fixed and mobile telephony. While progress has been universal, some countries have unquestionably performed better than others. While reform priorities have been similar across the world, each country has chosen a different path as regards the sequencing and implementation of the various dimensions of reform of the telecommunications sector, and conclusions can be drawn regarding which approaches have worked best.

An important objective to be considered when reforming the telecommunications sector is to ensure that services are equally available in all parts of the country. Generally speaking, rural and poor areas are often the last to be connected or are simply excluded from access to telecommunication infrastructures and services. In many developing countries, the majority of poor people are women living in rural areas, who are also the most affected by unequal telecommunication infrastructures and services. Numerous approaches to tackling this problem include imposing on the telecommunications provider specific targets for covering the country's rural areas and establishing a network based on village mobile telephones.

High-speed Access as a Strategy Element

A number of middle-income countries have included high-speed access as part of their infrastructure development policies. For example, improving Internet connectivity is one of the key elements in Jordan's e-commerce strategy. According to its latest report, "Jordan Telecom already offers ISDN access and 64 KBPS to 2 MBPS leased capacity (without modem). State-of-the-art broadband technologies like DSL (Digital Subscriber Lines) and PRI (Primary Rate Interface) are now available, and Frame Relay, fiber and ATM (Asynchronous Transfer Mode) are now offered commercially. Two new high-speed Internet connectivity ADSL lines will be available to users, offering download speeds at 512Kbs and 1,024Kbs. A newly completed dedicated data network, access to a national Internet node, and links to international fiber optic systems such as FLAG (Fiber Optic Link around the Globe) have all dramatically improved Jordan's Internet and data transmission capabilities."

Similarly, providing high-speed Internet access has been a priority for the Government of the Republic of Korea. The country, which already has the highest broadband density worldwide, planned to provide more than 80 per cent of telephone users in the country with access to a high-speed Internet connection by the end of 2001. Furthermore, the country has introduced low Internet access fees: in 2000, Korea had the least expensive Internet access charges of all 29 OECD member countries. The development of broad band has also

been a major element of Costa Rica's e-strategy. As a result, Costa Rica is now second worldwide in broadband density (DLS connections per 100 inhabitants), after South Korea and followed by Canada and the United States.

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LESSON 42:
E-COMMERCE STRATEGIES-II

Legal and Regulatory Issues

Policies related to establishing the legal basis for e-commerce (both at the international and national levels) have been included in the e-strategy programmes of 29 of the surveyed 51 countries. Together with fiscal policies, they appear in 37 country strategies and thus rank third in the national strategies. A clear difference can be observed between the priorities of developed and developing countries: while all surveyed developed countries include either legal or fiscal issues in their strategies, only 50 per cent (19 out of 37) of the developing countries have thus far mentioned the legal environment in their programmes for e-commerce.

An important concern of many countries is that existing legal frameworks may not adequately accommodate e-commerce, and that existing laws centring on paper-based systems may prove a barrier to increased global e-trade. Thus, in a number of meetings and intergovernmental debates held under UNCTAD auspices, the need for a legal and policy infrastructure that is supportive of and conducive to the practice of e-commerce was identified as one of the prerequisites for the growth of such commerce. The existence of a predictable legal framework has likewise been singled out on a number of occasions as an essential tool for enhancing the level of trust of both businesses and consumers in commercial transactions.

Countries wishing to ensure that electronic transactions are legally valid, binding and enforceable must address the following three fundamental questions: (i) Is the transaction enforceable in electronic form? (ii) Do the parties trust the message? (iii) What rules govern the electronic transaction? Although a number of important legal issues such as applicable law, jurisdiction, consumer privacy and data protection remain unresolved at the international level, a certain degree of predictability and legal certainty has been achieved by a large number of countries, including some developing countries, that have enacted legislation recognizing the legal value of electronic means of communication and the validity of electronic signatures. Thus, legislation based on the 1996 UNCITRAL Model Law on Electronic Commerce, whose main objective is to offer national legislators a set of internationally acceptable rules allowing a number of legal obstacles to be removed and a more secure legal environment to be created for e-commerce, has already been adopted by a significant number of countries.

Only a select number of issues will be discussed in this section. Others, such as those related to taxation, e-finance and e-payments, consumer protection and certification are equally.

In addition to electronic contracting and authentication of electronic records, an area that deserves special attention is the resolution of commercial disputes arising in the context of e-commerce. Governments face options ranging from using the judicial apparatus of the State – often too rigid and slow in responding to disputes in cyberspace – to delegating some or all of the dispute resolution power of the State to private self-regulating entities. Methods under consideration range from mediation, which aims at encouraging the parties to reach an amicable settlement, to binding arbitration, which imposes on the parties a legally enforceable arbitral award through the reasoned decision of the arbitrator. These methods are often subsumed under the rubric of alternative dispute resolution (ADR) or online dispute resolution (ODR) when it takes place using computer-mediated communication. Governments wishing to foster the use of ADR/ODR systems should ensure that their legislation does not hamper the use of out-of-court schemes. Since ADR/ODR systems will continue to be developed independently of the court system, States should also consider investing more in modernizing their judicial system by training judges, increasing the number of judges, equipping their courts with up-to-date infrastructures and allowing them to proceed online if need be.

Although not many developing countries have enacted legislation in the field of data protection and information privacy, some governments in the developed world have already begun to implement data protection or information privacy concepts by regulating the collection, use, dissemination, and protection of personal data to which business actors have access over the Internet. While data protection legislation is generally designed to be effective domestically, restrictions on transborder transfers of data have a direct effect on other countries. Thus, many developed countries, in order to prevent circumvention of the law through the use of a third-party country and to protect the rights of individuals to their personal data, prohibit the transfer of personal data to countries where the data are not provided the same, or an adequate, level of protection.25 This approach might particularly affect developing countries, where legal infrastructures often offer little protection, if any, to personal data. The approach may have a detrimental effect on many developing countries, whose economic growth may be limited by restrictions on transfers of data from industrialized countries. To avert the negative consequences of such restrictions, developing countries might consider providing an adequate level of protection for transfers of personal

A growing number of developing countries in Latin America and Asia have enacted legislation that recognizes the validity of electronic signatures. Thus, out of approximately 60 countries that have enacted legislation on electronic/digital signatures, 21 are developing countries. African countries lag far behind, and many of them do not have any legislation accommodating e-commerce.

In the area of intellectual property there is a clear recognition that electronic means of communication facilitate exchanges, both authorized and unauthorized, of patented ideas and copyrighted works. Intellectual property and cyberspace intersect

at many levels. Some important issues such as the definition and scope of rights in the digital environment and some of the challenges of online enforcement and licensing are addressed in two treaties that were concluded at WIPO in 1996: the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT) (commonly referred to as the "Internet treaties"). The ratification by developing countries of these treaties will assist in the adaptation of intellectual property laws for the digital age and will provide governments with the tools to protect their national intellectual property assets. This in turn will ensure that their territories do not become havens for intellectual property piracy and infringement of intellectual property rights, which would discourage international investment and technology transfer.28 The goal of the evolving legal principles in this area should be the protection of intellectual property rights through development of an appropriate intellectual property framework that does not impede the growth of the Internet.

Another important issue to be considered by Governments is security. Lack of an adequate legal framework with respect to information and infrastructure security and computer crime will wholly or partially prevent developing countries from grasping the opportunities offered by e-commerce. Most industrialized countries have enacted legislation pertaining to IT security and computer crime. Developing countries are encouraged to take a global perspective when developing a legal and regulatory framework regarding IT. In this respect it is important to emphasize that while nation-states have borders, cyberspace does not. International coordination and cooperation is a necessity in the fight against cybercrime.

Where the regulation of Internet content is concerned, the global nature of the Internet creates serious issues for systems of law based on territorial and national boundaries. Thus, it is almost impossible for a particular country to regulate content originating in foreign countries. Because of this, most countries have focused their law enforcement efforts on content providers in their own countries.

Finally, it should be mentioned that, in addition to legislation (national and international legal instruments) and contractual solutions (e.g. model interchange agreements), self-regulatory instruments such as trust-marks or "seals of approval", guidelines and codes of conduct constitute additional valuable tools for promoting consumer confidence and boosting e-commerce. States can play an important role in the creation of self-regulation instruments by promoting and facilitating the development of such instruments and by adopting them.

Sector-specific Policies to Promote e-business

A number of different policies related to trade, investment and the development of specific industry sectors have been included in the e-commerce agendas of 19 of the surveyed countries, both developed and developing. They include changes in trade policies, developing the domestic IT industry (including the establishment of software technology parks) and offering investment incentives to IT-related businesses. A number of countries have targeted specific sectors that they see as particularly suited to the adoption of e-commerce.

Common changes in trade policies include the lowering of import tariffs on computers and other hard- and software, which are important inputs into the domestic IT industry. As this measure typically results in lower prices, it has proved to be helpful for increasing the use of computers and ICT in general, and especially among SMEs.

Sectoral policies aim at strengthening the use of ICT and e-commerce in specific economic sectors where a country has a comparative advantage, or "mainstreaming" ecommerce.

Targeting Potential e-business Sectors

Countries that have included in their national e-strategies specific sectors to be targeted for the development of e-commerce include the following:

Australia - Transport, financial services and health industries;

Egypt - Tourism, health, entertainment, foods and beverages, textiles, furniture and electronics;

India - Computing and electronics, chemicals and petrochemicals, the automotive industry, natural medicines, paper products, financial services, travel and tourism, business services, communications and utilities;

Ireland - Hardware, software, processed food, digital support services, training and digital content distribution sectors;

Jamaica - Music and the software industry;

Mexico - Fresh and processed foods, footwear, textiles, furniture and gifts; and

Oman - Tourism.

Developing the domestic IT sector can be critical for increasing ICT usage in the economy as it provides key inputs for companies which want to move into e-business. When developing the domestic IT industry, it is important to target sectors in which the country has a real and potential comparative advantage. In the developing countries, generally speaking, policies should support IT businesses that offer support of general purpose software, develop specialized software for markets for which there is local demand, offer services linked to local IT use, support e-commerce, develop Internet content, or who offer call centres and similar IT-enabled services. Less recommended to developing countries or newcomers are industries focusing on mass hardware production, semiconductor production and general purpose packaged software as they require capital-intensive infrastructure, manufacturing capabilities, and an established industrial base.

Targeted industries and sectors should be developed in close relationship with local end users and their needs. Software services are especially suited to adapt to local needs; at the same time they can be used to develop commercial IT products for export. But the development of customized software services may require a high-skilled workforce, whereas cheap, labour-intensive services such as call centres, data processing or support services to international firms require relatively little investment and training. Each country needs to identify its own needs and potential opportunities of ICT and e-commerce.

E. E-government

By assuming a leadership role in the adoption of e-business practices, governments can make an important contribution to the promotion of e-commerce. Of the surveyed countries, 16 decided that putting the government online was an important element of their ecommerce strategies. Interestingly, developed countries are more heavily represented in this area than developing countries: while 43 per cent of the surveyed developed countries included e-government in their strategies, only 27 per cent of the developing countries did so.

The adoption of e-government practices35 is a fundamental facet of e-commerce strategies. By becoming "model users" of the Internet, governments can at the same time facilitate the achievement of e-commerce strategies and contribute to core development objectives:

- **Efficiency:** As an information-intensive activity, government operations are ideal candidates to benefit from the efficiency gains created by the Internet. Given the relative importance of the public sector in many economies and the volume of resources it manages, such gains will have a major impact on the overall efficiency of the economy.
- **Competitiveness:** By offering online services in sectors such as taxation, social security, customs, import and export procedures, and permits and licences, e-government can reduce the cost for enterprises of complying with government regulations.
- **Transparency:** Increased transparency and accountability in public services facilitate the fight against corruption, which creates additional costs for enterprises. Transparency can therefore be another way in which e-government can help improve a country's competitiveness and its ability to attract foreign investment.
- **Awareness and education:** By embracing the Internet, governments can accelerate the change in attitude that is needed for e-commerce practices to spread among private-sector enterprises (particularly SMEs) in developing countries. Just as some large corporations have forced their suppliers and distributors to adapt to e-commerce, governments canstimulate the introduction of e-commerce by demonstrating the potential of the Internet and by encouraging the private sector to adopt e-practices in its dealings with government agencies.

Fundamentally, e-government is about using the Internet to reorganize government services, focus them on the needs of users and make them more transparent and efficient.

At a less conceptual level, and in addition to the problems faced by any enterprise adapting to e-commerce, government agencies will have to overcome specific issues relating to their size and complexity. They will also have to address concerns about inequality of access to the Internet, and they will have to revise the regulatory framework in which they operate (e.g. to address privacy concerns), which may require interventions that are quite different from those needed for the legal accommodation of e-commerce. Another important aspect of the implementation of e-government strategies is that the shift in focus from the needs of the organization to those of users must translate into a change in resource allocation priorities and a thorough review of business processes. This in turn can be a source of internal conflict, which, if it results in service disruptions, can damage the credibility of an e-government project.

Following are some practical issues that governments interested in the potential of the Internet to enhance their services may wish to consider:

- Technology for e-government does not need to be complicated, but it must be reliable and fast. In a first phase, off-the-shelf e-commerce solutions should be used whenever possible.
- Business-oriented e-government projects should receive priority, given that the return of the investment in terms of competitiveness gains is likely to be higher.
- As long as a large part of the population remains without easy access to the Internet, traditional channels such as counter service and the telephone will remain important.
- Citizens and businesses need to be made aware of the availability and advantages of e-government services.
- E-government projects are an excellent opportunity for establishing new partnerships with the private sector, which can contribute financial resources and its experience in ebusiness.

III. Conclusion

This paper has discussed a number of issues that have been central to the development of national e-commerce strategies. Neither the list of issues covered here nor the substantive discussion of each issue should be considered exhaustive. Rather, the paper's goal is to identify selected key elements of e-strategies that can be discussed in depth by the experts attending the meeting.

A final issue that needs to be considered in the debate on national e-commerce strategies concerns the methodology of the design and implementation of the strategies. Here a participatory approach is essential. Creating awareness at the political level or adopting a state-of-the-art regulatory framework will be fruitless unless the elements of an e-commerce strategy are rooted in the reality of the national economy. This can only be achieved through a consultative process that allows the involvement of all the stakeholders of the development process, especially the private sector and the NGOs. Therefore, experts are particularly encouraged to introduce into the debate their experiences in designing and implementing e-strategies as well as identifying the successes and failures of specific policies.

LESSON 43:
E-COMMERCE AND SALES STRATEGY

Benefit from an E-commerce Sales Strategy

The internet is changing the balance of power between business and the customer. Before online shopping, companies could be reasonably certain that buying almost anything was not easy, so once a customer found a supplier they were comfortable with they tended to stick with them, at least until something went wrong.

But with the advent of e-commerce, customers can check out the options anywhere, and then buy from anyone. Customers can use comparison sites or shopping agents, or "bots" as they are known, to search the web for a bundle of products and report back on which supplier is offering them the cheapest. As a general rule, whatever sells in print in a catalogue will also sell on the internet.

There are several major advantages to developing an e-commerce sales strategy:

Efficiency - Electronic purchase orders and sales orders are more economical to place, track and manage.

Convenience - Buying and selling can go on 24 hours a day, 7 days a week, 365 days a year from any location.

Speed - It takes far less time to complete the entire buy/sell process, thus speeding payment.

Accuracy - Virtually eliminates processing errors. Buying and selling firms have the same views of the transactions, which make online commerce more precise.

Global reach - Gives businesses an instant global reach to find supplies anywhere in the world, in any time or currency zone.

Low cost entry - Before the web, selling direct to consumers could be expensive. Setting up a retail outlet or printing a glossy catalogue could cost hundreds of thousands of pounds. On the web, you can sell direct to consumers worldwide for a hundred pounds a month.

Up-to-date status and alerts - Generates instant pager, fax and e-mail notification to identify potential problems, enabling problem avoidance or swifter solutions. Also provides order histories.

Case Study

This case study describes how an advertising gift distributor is boosting sales through use of e-commerce.

Based in Windsor, Healey Williams is an advertising gift distributor. The company supplies a wide range of business and promotional gifts to corporate clients within the UK, but also reaches a worldwide audience through the internet.

Founded in 1987, Healey Williams started life in a small room with two partners, a desk, phone and typewriter. Today, it employs 10 people and is one of the first companies in the UK to offer a fully integrated online ordering service for business gifts. Their customers are mostly blue chip companies, especially within the IT and financial sectors.

Founding partner, Nigel Williams, explains: "We believed that e-commerce would provide us with a competitive edge in an industry that has a reputation for being lethargic in adopting new technology. We also hoped that it could bring genuine benefits and additional services to our customers, something that has proved to be true. We experienced a rise in sales in excess of £200,000 as a direct result of our ability to offer online catalogues for new and existing customers."

Through the use of e-commerce the business was able to introduce its own online catalogues for its range of business and promotional gifts. They have taken this a step further and are now designing customised online catalogues for a number of corporate clients such as SUN Microsystems, AEI and DOW Chemical. These online sites show the client's own branding on business gifts, giving a more personalized business approach along with greater cost effectiveness.

"The online solution brought a host of benefits, like the ability to do business with the international offices of some of our customers. It offers long-term contracts, reduces sales administration and increases profitability. The catalogue sites offer additional business benefits as they open up our customer networks resulting in new business opportunities that may not have been available to us before. The catalogue sites also reduce costs as they replace printed literature and can be quickly and easily updated.

Their customers can, through the click of a button, have access to individual pictures of their range of products, descriptions, prices and the quantities held in stock for them. The ability to show actual quantities held in stock, together with the automatic de-stocking facility, ensures that products cannot be ordered twice by different buyers from the same company.

Healey Williams invested more than £50,000 during 1998/99 to create a sales and order processing system called Sales Force. A further £10,000 was invested to develop their website and customized catalogues for their customers. In addition, they have employed an in-house graphics specialist to ensure the ongoing provision of a quality service to their customers. The company is in the process of creating a final link between their website and Sales Force. This combined system will be able to provide customers with an even speedier and higher quality of service and will cut sales administration costs.

Nigel Williams indicates that plans are being developed to expand even further into e-commerce: "We have exciting plans for the future to provide an even more extensive online service to our customers. At the moment we are developing joint venture sites with some of our key suppliers. We are also increasing our web-based marketing through the implementation of a comprehensive search engine registration service. Plans

are also underway to have our full brochure online and to increase our use of graphics to help customers visualize the products quickly and without the need for expensive pre-production proofs."

Business lessons:

- Identify how your business can expand by using e-commerce
- Decide whether you can supply or service international markets
- Continue looking for ways to expand your business plan to include online solutions

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