E-Commerce

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Abbreviations

AAC	-	Advanced Audio Coding
ANSI	-	American National Standards Institute
APACS	-	Payment Clearing Services
ASC	-	Accredited Standards Committee
ASP	-	Authentication Service Provider
B2B	-	Business to Business
CCPS	-	Chip Card Payment Service
CDA	-	Compound Document Architecture
CVV	-	Card Verification Value
DCM	-	Demand Chain Management
EDI	-	Electronic Data Interchange
EDI	-	Electronic Data Interchange
EFT	-	Electronic Funds Transfer
EMV	-	Europay MasterCard Visa
FAQ	-	Frequently Asked Questions
IFPI	-	International Federation of the Phonographic Industry
IPSec	-	Internet Protocol Secure Standard
ITU-TSS	-	International Telecommunication Union-Telecommunication Standardisation sector
MHEG	-	Multimedia /Hypermedia Encoding/Exporting Group
MMIR	-	Multimedia Information Retrieval
ODA	-	Office Document Architecture
OMC	-	Order Management Cycle
OTPP	-	On-line Third-Party Processors
PC	-	Personal Computer
PDF	-	Portable Document File
PIN	-	Personal Identification Number
PKI	-	Public Key Infrastructure
POS	-	Point of Sales
QoE	-	Quality of Experience
ROI	-	Return On Investment
RTF	-	Rich –Text Format
SAML	-	Security Assertion Markup Language
SCM	-	Supply Chain Management
SET	-	Secure Electronic Transactions
SGML	-	Standard Generalisation Markup Language
SP	-	Service Provider
SSL	-	Secure Sockets Layer
SSO	-	Single Sign-On
TIFF	-	Tag Image File Format
VAN	-	Value Added Network
VIS	-	Visa Integrated Circuit Card

Chapter I

Introduction to E-Commerce

Aim

The aim of this chapter is to:

- explain the infrastructure of e-commerce
- elucidate the e-commerce framework
- discuss the application of e-commerce

Objectives

The objectives of this chapter are to:

- explain multimedia content for e-commerce applications
- enlist e-commerce consumer applications
- illustrate the benefits of retailing

Learning outcome

At the end of this chapter, you will be able to:

- recognise e-commerce organisation applications
- classify internal processes of multimedia servers
- describe anatomy of e-commerce applications

1.1 E-Commerce Framework

From the business activity already taking place, it is clear that ecommerce applications will be built on the existing technology infrastructure-a myriad of computers, communication networks and communication software forming the nascent Information Superhighway.

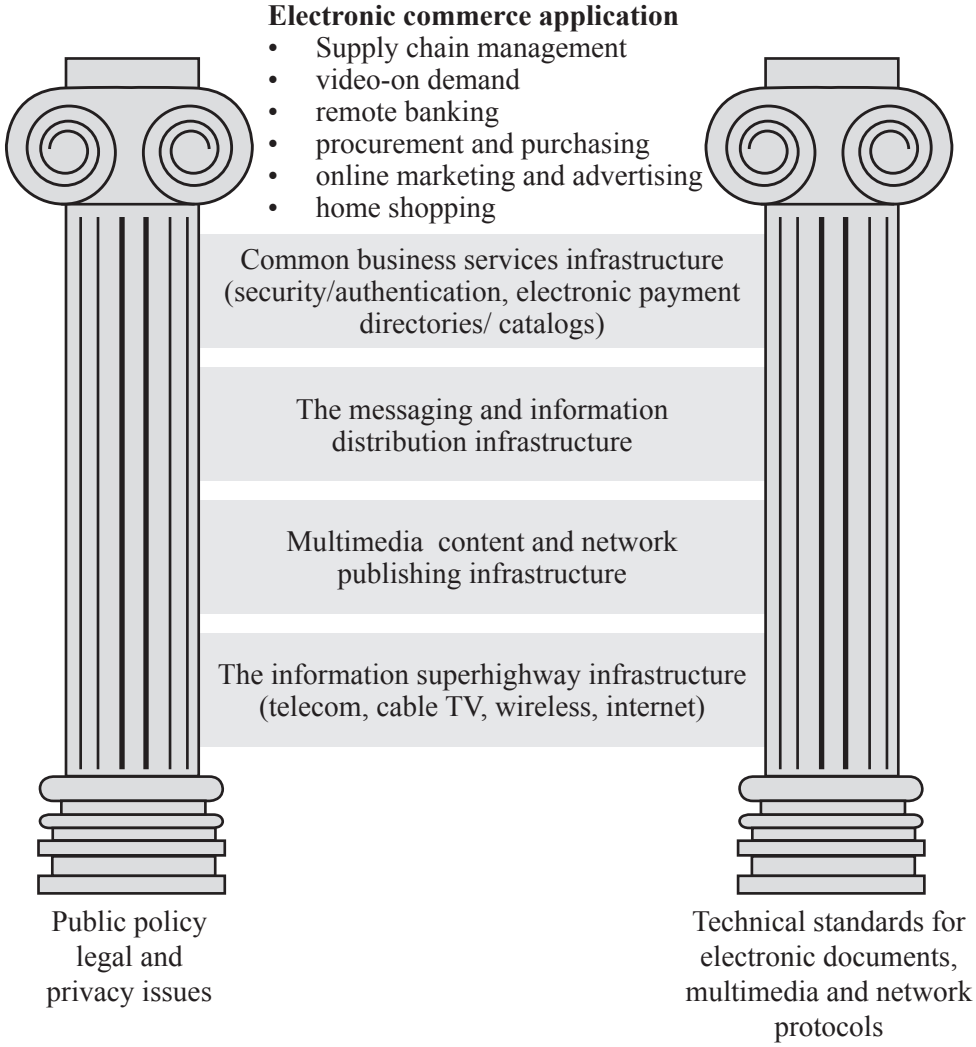

Fig. 1.1 E-commerce applications

(Source: http://sphoorthyengg.com/CSEupload/upload/ecom.pdf)

The figure given above shows a variety of possible e-commerce applications; including both inter-organisational and consumer oriented examples. None of these uses would be possible without each of the building blocks in the infrastructure:

- **Common business services**: for facilitating the buying and selling process.
- **Messaging and information distribution:** as a means of sending and retrieving information.
- **Multimedia content and network publishing:** for creating a product and a means to communicate about it.
- **The information superhighway-the very foundation**: for providing the highway system along which all e-commerce must travel the two pillars supporting all e-commerce applications and infrastructure-are just as indispensable.
- **Public policy:** to govern issues such as universal access, privacy, and information pricing.
- **Technical standards:** to dictate the nature of information publishing, user interfaces, and transport in the interest of compatibility across the entire network.

To understand the integration of various infrastructure components, it is vital to understand the analogy of a traditional transportation business.

Any successful e-commerce application requires an I-way infrastructure. I-way is a mesh of interconnected data highways of many forms: telephone wires, cable TV wires, radio-based wireless-cellular and satellite. Far from complete, the I-way is quickly acquiring new on-ramps and even small highway systems. Like in traditional transport business, numerous constructors were either in competition with eachother or in alliance with one another, all in an effort to convince traffic to use their on-ramps or sections of the highway because, like toll ways, revenues in e-commerce are based on vehicular traffic, in this case, vehicles transporting information or multimedia content. The myriad transactions among businesses means that the ultimate winner must select the technology for the I-way that best matches future business needs by using today's tools.

Building an access road to a ghost town or a highway too narrow to handle the traffic will yield equally little return on investment for those who have been less successful at matching needs with the infrastructure. Building the various highways is not enough.

Transport vehicles are needed, routing issues must be addressed, and of course the transportation costs must be paid. Same way, On the I-way, the nature of vehicular traffic is extremely important. The information and multimedia content determines what type of vehicle is needed. A breakdown of potential everyday e-commerce vehicles into their technological components shows that they vary widely in complexity and may even need to travel different routes on the I-way,

Movies = video + audio
Digital games = music + video + software
Electronic books = text + data + graphics + music + photographs + video.

In the electronic "highway system" multimedia content is stored in the form of electronic documents. These documents are often digitised, compressed, and stored in computerised libraries or multimedia storage warehouses called servers that are linked by transport networks to each other and to the software/hardware clients that allow customers to access them. Encryption and authentication method have been developed to ensure security of the contents while travelling the I-way and at their destination, and numerous electronic payment schemes are being developed to handle highly complex transactions with high reliability. These logistical issues are difficult to address in long-established transportation systems. In the case of vehicular traffic over the interstate highway system, public policy issue concerns pollution, consumer protection from fraud, environmental impact, and taxation. The e-commerce framework rest is a technical stand, without which the impact of this revolution would be minimised. For instance, returning to our analogy with traditional transportation systems, railroads would have not flourished, had each state established a separate track standard (meter gauge versus broad gauge, for example) and goods would have to be constantly moved from one train to another every time the standard changed.

Standards are crucial in the world of global e-commerce, to ensure not only seamless and harmonious integration across the transportation network but access of information on any type of device the consumer chooses laser disc, PCs, portable hand-held devices or television with set-top boxes (cable converter boxes) and on all types of operating systems. For example, without the adoption of video standards, video conferencing will never become widespread, as each manufacturer will attempt to develop equipment that maximises their short-term profits rather than working toward customer goals such as interoperability. The concept of convergence is essential to the operation of the Information Superhighway and to the way the business world is gearing up to deal with it.

1.2 Anatomy of E-Commerce Applications

Various applications of e-commerce are:

- Multimedia content for e-commerce applications
- Multi media storage servers
- Client server Video servers and electronic commerce
- Information delivery/ transport and e-commerce applications
- Consumer access devices

1.2.1 Multimedia Content for E-Commerce Applications

- Multimedia is the use of digital data in more than one format such a combination of text, audio, video, graphics in computer file.
- Multimedia is associated with the hardware convergence taking place in communication, computer and cable industry as the next generation digital.

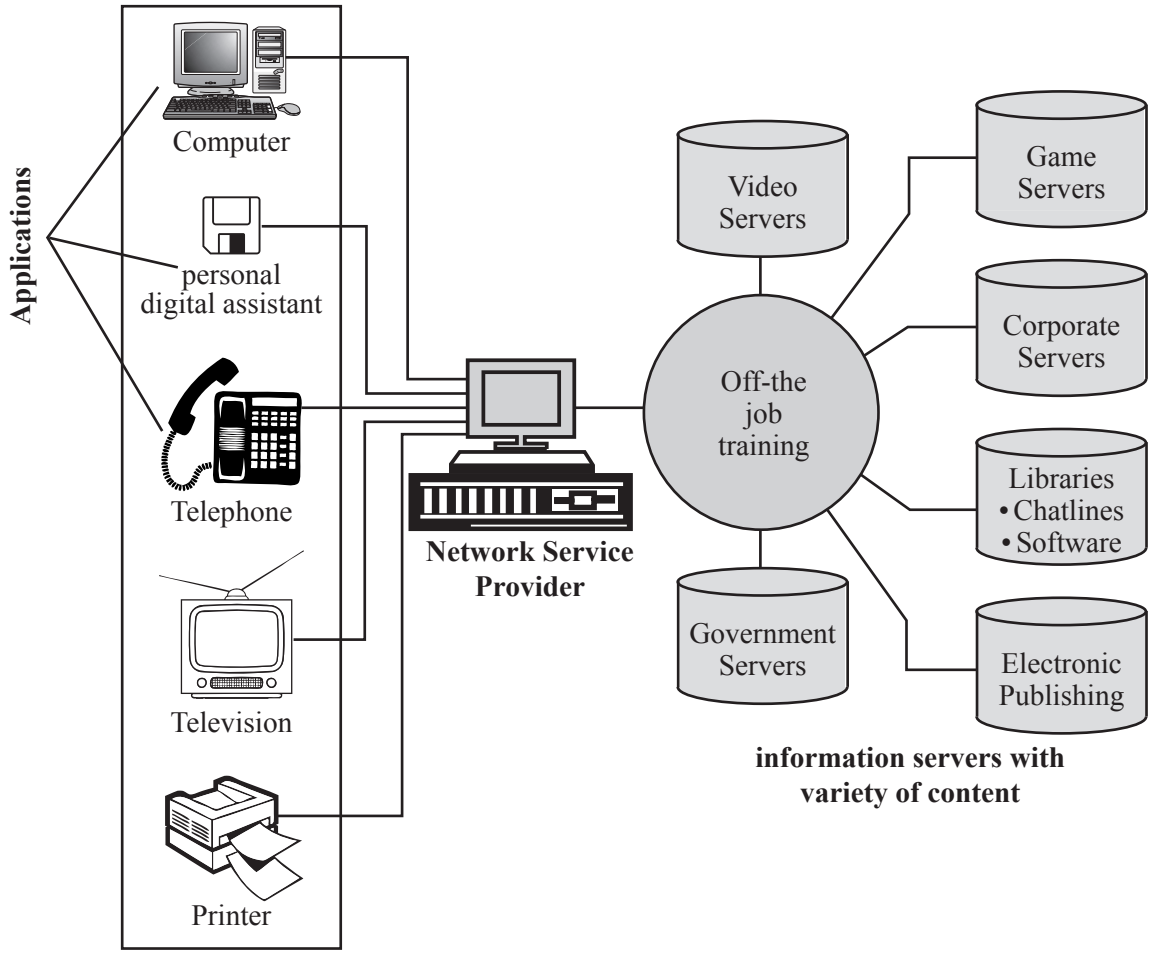

Fig. 1.2 Elements of e-commerce applications
(Source: http://sphoorthyengg.com/CSEupload/upload/ecom.pdf)

- Access to multimedia content depends on the hardware and software applications that run on it.
- The success of ecommerce applications also depends on variety and innovativeness of multimedia content and packaging. It includes television productions, traditional print productions, software and information services.
- Technical definition of multimedia is the use of digital data in more than one format, such as the combination of text, audio, video, images, graphics, numerical data, holograms, and animations in a computer file/document.

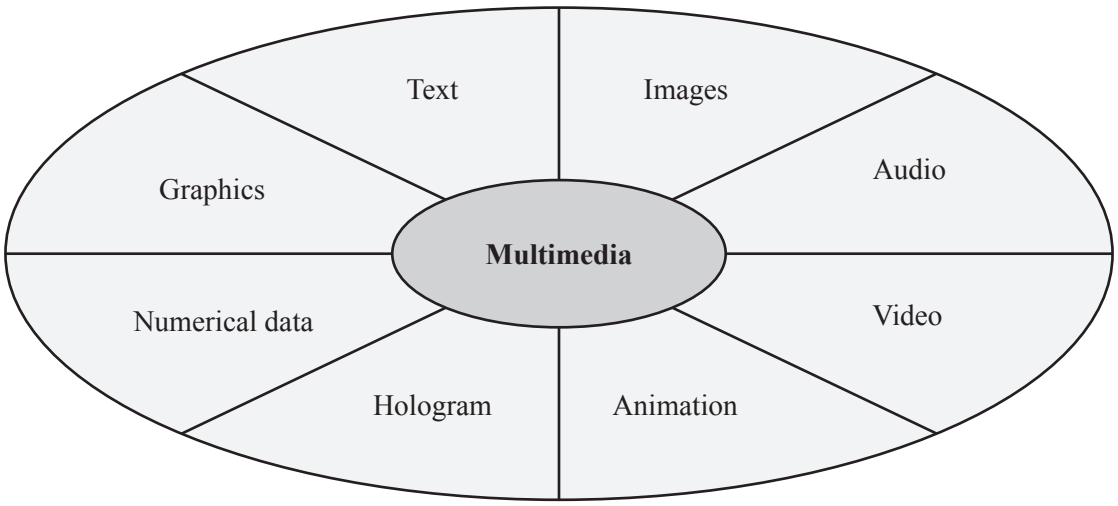

Fig. 1.3 Multimedia
(Source: http://sphoorthyengg.com/CSEupload/upload/ecom.pdf)

1.2.2 Multimedia Storage Servers and E-Commerce Applications

E-Commerce requires robust servers to store and distribute large amounts of digital content to consumers. These Multimedia storage servers are large information warehouses capable of handling various content ranging from books, newspapers, advertisement catalogues, movies, games, & X-ray images. The server name suggests that they serve information upon request, handle large-scale distribution, guarantee security and are completely reliable.

1.2.3 Client-Server Architecture in Electronic Commerce

- All e-commerce applications follow the client-server model. Clients are devices plus software that request information from servers or interact known as message passing.
- Mainframe computing is meant for "dump"
- The client server model, allows client to interact with server through request-reply sequence governed by a paradigm known as message passing.
- The server manages application tasks, storage and security and provides scalability-ability to add more clients and client devices (like Personal digital assistants to PC's).

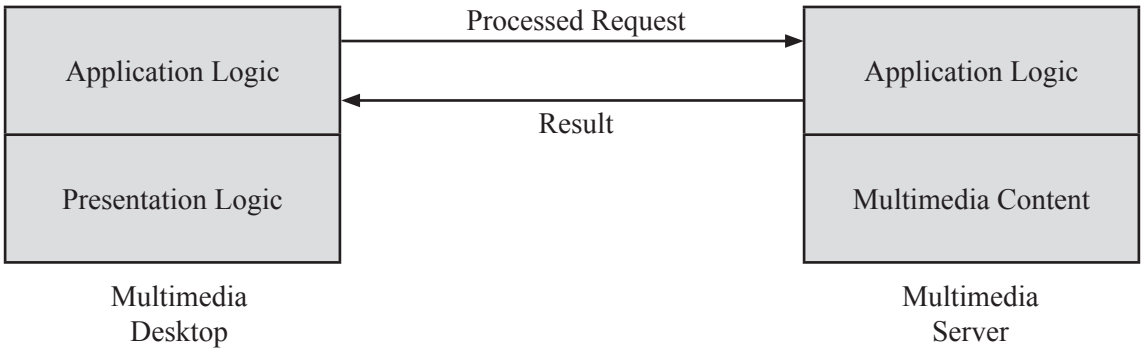

Fig. 1.4 Client-server architecture
(Source: http://sphoorthyengg.com/CSEupload/upload/ecom.pdf)

Internal processes of multimedia servers

- The internal processes involved in the storage, retrieval and management of multimedia data objects are integral to e-commerce applications.
- A multimedia server is a hardware and software combination that converts raw data into usable information and then dishes out.
- It captures, processes, manages, and delivers text, images, audio and video.
- It handles thousands of simultaneous users.
- Include high-end symmetric multiprocessors, clustered architecture, and massive parallel systems.

Video servers and e-commerce

The electronic commerce applications related to digital video will include:

- Telecommunicating and video conferencing
- Geographical information systems that require storage and navigation over maps
- Corporate multimedia servers
- Postproduction studios
- Shopping kiosks

Consumer applications will include video-on-demand. The figure which is of video–on demand consist video servers, it is a link between the content providers (media) and transport providers (cable operators).

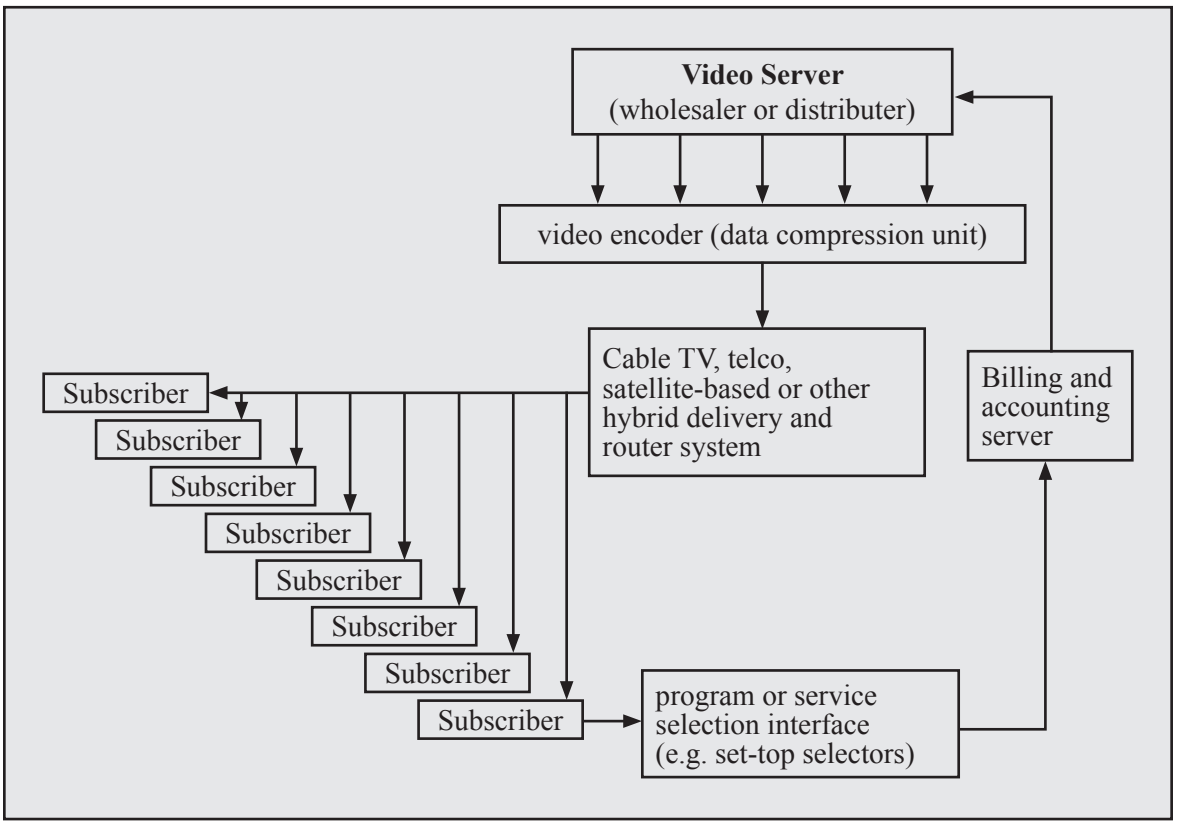

Fig. 1.5 Video-on demand

(Source: http://sphoorthyengg.com/CSEupload/upload/ecom.pdf)

1.2.4 Information Delivery/Transport and E-Commerce Applications

Transport providers are principally telecommunications, cable, and wireless industries.

Information transport providers	Information delivery methods
Telecommunication companies	Long distance telephone lines; local telephone lines
Cable television companies	Cable TV-coaxial; fibre optic and satellite lines
Computer based online servers	Internet commercial on-line server provider
Wireless communications	Cellular and radio networks; paging systems

Table 1.1 Transport routers

Information Consumers	Access Devices
Computers with audio & video Mobile computing	Personal/desktop computing capabilities
Telephonic devices	Videophone
Consumer electronics	Television + set-top box Game systems
Personal digital assistants (PDAs)	Pen-based computing, voice-driven computing

Table 1.2 Consumer access devices

1.3 E-Commerce Consumer Applications

Consumer-oriented e-commerce or e-retailing involves selling directly to consumers who are the end users on the internet. It frequently involves a temporary relationship. The buyers visit the selling site either casually or very infrequently, perhaps only once. It has a relatively low volume of transactions and involves relatively small payments. It usually involves much more documentation and record-keeping, which is necessary for a business. The volume of transactions in B2B (business-oriented) e-commerce is likely to be high and certainly much higher than in customer-oriented transactions. The amount of payments involved are also quite large. As the transaction volumes and the payment levels are high, the buyer normally have much more buying leverage in B2B e-commerce. E-retailing essentially consists of the sale of goods and services. Sometimes we refer to this as the sale of tangible and intangible goods, as shown in the figure.

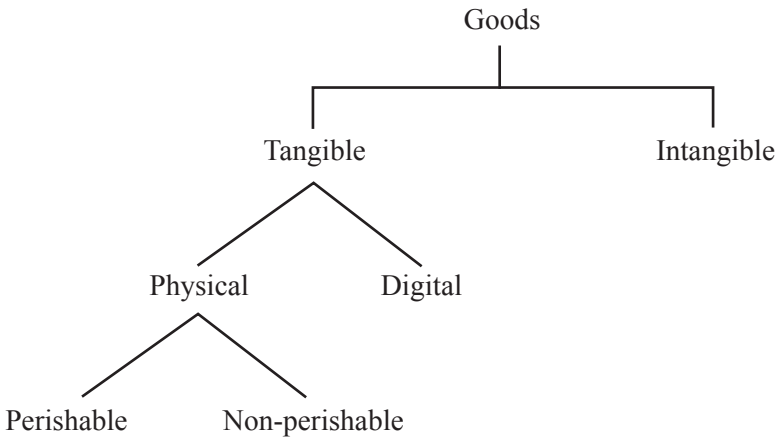

Fig. 1.6 Classification of goods

Entertainment such as games that would be played on the internet is also an example of e-services. So are the sales of services such as telecommunication services or banking services. The sale of tangible and intangible goods is all referred to as customer-oriented e-commerce or e-retailing, if they are sold directly to the consumer who is the end user. They specialise in a particular product line. Thus, we get specialised e-stores, such as 1-800-Flowers, which specialises in selling flowers and Amazon.com@, which started by specialising in selling books.

Internet has allowed a new kind of specialisation to emerge. Instead of specialising just in a special product line, they allow specialisation in particular classes of customers and sellers. In addition to these specialised stores, we also get generalised e-stores where a store sells several product lines under a single management. Examples of these generalised stores include JC penny and Wal-mart.

Internet has electronic counterpart of malls or e-malls. E-malls essentially provide a web-hosting service for your individual store much in the way that malls provide a hosting service in the sense of a physical location for your store. Examples of these e-malls are Yahoo!Store, GEOShops, and CNET stores. A customer may want to find a particular kind of goods and the e-broker sets about determining which supplier would provide those goods. It takes several forms, e.g., comparison shopping.

Benefits of retailing to the customer

Customers enjoy a number of benefits from e-retailing. Some of them are enlisted below:

- The first of these is convenience. It is convenient for the customer as they do not have to move from shop to shop physically in order to examine goods. The customer is able to sit in front of a terminal, search the net and examine the information about goods.
- The second aspect of convenience he gets is in terms of time. Normally, the traditional shop has an opening time and a closing time and the customer can only visit the shop within these periods. On the net, the customer can choose at any time to visit a site to examine the goods that are available and actually carry out his purchasing at one's own convenient time.
- The third aspect of convenience that the customer gets is that he has access to a search engine, which will actually locate the products that he describes and also the site where they may be available, or perhaps even locate the sites where they may be available at the best price.
- The fourth aspect of benefit to customers is better information. The Internet and the World Wide Web are essential communication media that allow retailers to put on quite extensive information related to their products, which is available to the customers.
- Furthermore, since the customer can look at several sites, he will be able to obtain different pieces of information from each site, to build a far better picture for him, about the products that he is interested in.

- The fifth aspect of benefit that the customer gets is competitive pricing. This is due to two factors. The first is lowered costs to the retailer because he does not have to maintain a physical showroom, he does not have to hire several shop assistants, and these savings can be passed on to customers in the form of reduced prices. Secondly, competitive pricing pressure that arises from the fact that the customer is now able to look at prices at several sites.
- The sixth aspect is customisation. The customer can actually specify the features of the products that he would like and thus in some cases it is possible that the retailer may allow a customised product to be delivered. In summary, the benefits of e-retailing to the customer include:
  - convenience
  - better information
  - competitive price
  - customisation
  - shopping anywhere, anytime

1.4 E-Commerce Organisation Applications

The third important category is Business-to-Business (or B2B) e-commerce. The important differentiating factor of this kind of e-commerce is that the vendor and the buyer of the goods or services involved in a transaction are both business organisations rather than individual customers who are end users of the goods purchased. The business that is the purchaser could either utilise the goods or services itself in conducting its business or, alternatively, transform the goods purchased (in the case of raw materials or components) into a manufactured product which it then sells. Generally speaking, the size of commerce carried out between businesses dwarfs the commerce between businesses and consumers. The potential for B2B e-commerce is now projected to be much larger than that for consumer oriented e-commerce.

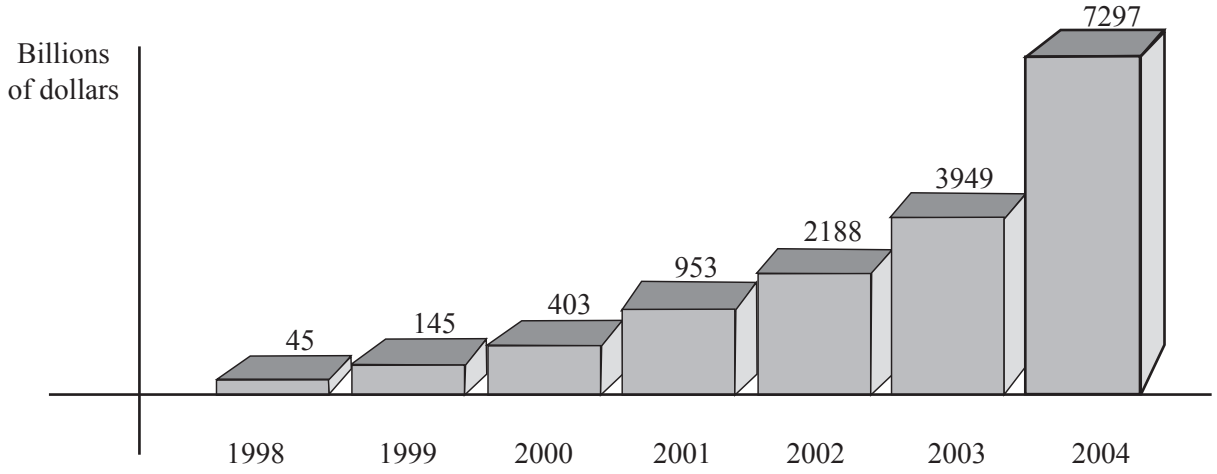

Fig. 1.7 Projection growth of B2B e-commerce drawn from a report by Gartner Group
(Source: Chan, H., 2007. E-Commerce, Fundamentals and Applications)

From the above figure, one can see that we are only at the very beginning of exploiting B2B e-commerce and its projected potential size are quite staggering. Businesses currently need to:

- Sell and distribute their goods to other businesses
- Carry out procurement of goods and services
- Have logistics to move goods to the appropriate place at the defined time and in
- Have storage or warehousing facilities at the right places in the presence of the correct quantities, i.e. the just-in-time (JIT) management; uncertain demand to store required components and materials as well as finished products, i.e. Warehouse logistics
- Carry out marketing and advertising of their goods and services

- Have appropriate support services for different business support functions such as human resources, accounting, inventory control, order processing, and payment processing. It would be preferable if these could be integrated so that a change entered in one part of such a support service will be automatically reflected in other appropriate parts; tune their activities to meet these.
- Obtain appropriate information, forecasts, and market intelligence so as to best tune their activities to meet these.

Any of these activities are potential candidates for B2B e-commerce. Thus, one could basically conduct one of the activities that falls into the aforementioned categories on the internet and the web, and thus carry out B2B e-commerce. The advantages that would accrue to the business are:

- Global rather than local sales
- Global purchasing
- Ability to buy and sell 24 hours a day
- Savings on staffing
- Savings on premises and showrooms
- Better customer service

However, in the case of B2B e-commerce, they only represent a small portion of the advantages. Far more significant advantages arise from:

- Integration between the business processes of different business enterprises resulting in collaborative and fully-automatic Supply Chain Management (SCM) and Demand Chain Management (DCM) systems;
- Automation of business processes within a business enterprise
- Integration of different back-office business functions
- Integration between the front end and internet, and web server systems
- JIT manufacture and delivery;
- Mass customisation
- Electronic Data Interchange (EDI)
- Data warehousing
- Enterprise Resource Planning (ERP) system
- Backend systems

These factors will lead to sizable savings in business enterprises, and thus provide much of the current impetus for introducing B2B e-commerce in a number of existing bricks and mortar businesses. These will impact the type of e-commerce model that is ultimately adopted.

Summary

- To understand the integration of various infrastructure components, it is vital to understand the analogy of a traditional transportation business.
- Any successful e-commerce application requires the I-way infrastructure.
- In the electronic "highway system" multimedia content is stored in the form of electronic documents.
- The e-commerce framework rest is technical standings, without which the impact of this revolution would be minimised.
- Multimedia is the use of digital data in more than one format such a combination of text, audio, video, graphics in computer file.
- The success of ecommerce applications also depends on the variety and innovativeness of multimedia content and packaging.
- A multimedia server is a hardware and software combination that converts raw data into usable information and then dishes out.
- Consumer-oriented e-commerce or e-retailing involves selling directly to consumers who are the end users on the internet.
- The internet has allowed a new kind of specialisation to emerge. Instead of specialising just in a special product line, they allow specialisation in particular classes of customers and sellers.
- In contrast to B2C e-commerce, B2B e-commerce is characterised by a number of features

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- Korper, S. & Ellis, J., 2001. *The E-commerce book: building the E-empire*, Morgan Kaufmann.

Self Assessment

1. Match the following.

1. Common business services	A. For facilitating the buying and selling process
2. Messaging and information distribution	B. For creating a product and a means to communicate about it
3. Media content and network publishing	C. To dictate the nature of information publishing
4. Technical standards	D. as a means of sending and retrieving information

   a. 1-A, 2-D, 3-B, 4-C
   b. 1-C, 2-D, 3-B, 4-A
   c. 1-A, 2-B, 3-D, 4-C
   d. 1-C, 2-B, 3-D, 4-A

2. Which of the following is not a building block in the infrastructure of e-commerce?
   a. Common business services
   b. Messaging and information distribution
   c. Public policy
   d. Situational standards

3. _____ is a mesh of interconnected data highways of many forms.
   a. Computer
   b. I-way
   c. E-commerce
   d. Business service

4. Which of the following statements is false?
   a. Encryption and authentication method have been developed to ensure security of the contents while travelling the I-way
   b. In the electronic "highway system" multimedia content is stored in the form of electronic documents.
   c. A breakdown of potential everyday e-commerce vehicles into their technological components shows that they vary widely in complexity.
   d. The e-commerce framework rest is situational standings, without which the impact of this revolution would be maximised.

5. _____ is the use of digital data in more than one format such a combination of text, audio, video, graphics in computer file.
   a. Multimedia
   b. Digitalisation
   c. Media serving
   d. Information delivery

6. Which of the following is not an application of e-commerce?
   a. Multimedia storage servers
   b. Consumer access devices
   c. Electronic commerce
   d. Global interference

7. Which of the following is not included in electronic commerce applications related to digital video?
   a. Telecommunicating and video conferencing
   b. Corporate multimedia servers
   c. video-on-demand
   d. Postproduction studios

8. Which of the following is not an information delivery method?
   a. Long distance telephones lines
   b. Cable TV-coaxial
   c. Cellular and radio networks
   d. Wireless communications

9. Which of the following statements is false?
   a. Customers enjoy a number of benefits from e-retailing.
   b. The third important category is Business-to-Business (or B2B) e-commerce.
   c. The potential for B2B e-commerce is now projected to be much larger than that for consumer oriented e-commerce.
   d. The potential for B2B e-commerce is now projected to be much larger than that for dealer oriented e-commerce.

10. The _____ aspect of benefit that the customer gets is competitive pricing.
    a. fifth
    b. third
    c. fourth
    d. first

Chapter II

Electronic Payment System

Aim

The aim of this chapter is to:

- explain the digital token in e-payment
- elucidate e- payment system
- describe EMV specifications

Objectives

The objectives of this chapter are to:

- explain the smart cards used in e-payment
- enlist the advantages of e-payment
- classify the categories of EFT

Learning outcome

At the end of this chapter, you will be able to:

- recognise visa integrated specifications
- classify encryption and credit cards
- describe credit cards payment on internet

2.1 Introduction to E-Payment System

E-payment system is the mechanism of transferring money over the Internet and technology used in this transfer is called as EFT.

EFT is defined as transfer of fund initiated through an e-terminal, telephonic instrument, or computer or magnetic tape to order, instruct or authorise a financial institution to debit or credit an account. It is mostly used for Business to business (B2B) commerce where companies doing business together tend to use electronic data interchange (EDI) system to send each other bills and notices of payment.

Advantages of E-Payment

The advantages of e- payment are as follows:

- Increase payment efficiency
  - Reduce transaction costs
  - Enable trade in goods and services of very low value
- Increase convenience of making payments
  - Payment can be made swiftly and remotely using various devices
- Can be used for
  - E-commerce / e-Trade
  - For other purposes like paying bills, taxes and so on

Categories of EFT

The EFT categories are:

- Banking and financial payments
  - Large-scale or wholesale payment
  - Small scale or retail payment
  - Home banking
- Retailing payments
  - Credit cards
  - Debit cards

On-line electronic commerce payments

- Token-based payment system:

  Electronic cash

  Electronic checks

  Smart cards or debit cards
- Credit card-based payment systems:

  Encrypted credit cards

  Third-party authorisation numbers

Main factors when selecting e-payment method are:

- Availability (bank system, laws and regulations)
- The consideration of size and type of business, type of a target group of consumers, types of products and services.
- The ability to provide security against fraudulent activity
- Being cost effective for low value transaction fees

- Being protective of the privacy of the users
- Easy to use, and being convenient for purchasing on the web based e-business

2.2 Digital Token

Entirely new forms of financial instruments are also being developed. One such new financial instrument is electronic tokens in the form of electronic cash/money or checks. Electronic tokens are designed as electronic analogue of various forms of payment, which is backed by a bank or financial institution. Electronic tokens are equivalent to cash that is backed by a bank.

Electronic tokens are of three types:

- **Cash or real-time:** Transactions are settled with the exchange of electronic currency. An example of on-line currency is electronic cash (e-cash).
- **Debit or prepaid:** Users pay in advance for the privilege of getting information. Examples of prepaid payment mechanisms are stored in smart cards and electronic purses that store electronic money.
- **Credit or postpaid:** The server authenticates the customer's account and verifies with the bank that funds are adequate before purchase. Examples of post paid mechanisms are credit/debit cards and electronic checks.

Here are four dimensions that are useful for analysing the different initiatives:

- **The nature of the transaction for which the instrument is designed:** Some tokens are specifically designed to handle micro payments, that is, payments for small information. Others are designed for more traditional products. Some systems target specific niche transactions, others seek more general transactions. It is the key to identify the parties involved, the average amounts, and the purchase interaction.
- **The means of settlement used:** Tokens must be backed by cash, credit, electronic bill payments, cashiers checks, letters and lines of credit and wire transfers, to name a few. Each option incurs trade-offs among transaction speed, risk and cost. Most transaction settlement methods use credit cards, while others use other proxies for value, effectively creating currencies of dubious liquidity and with interesting tax, risk and float implications.
- **Approach to security, anonymity and authentication:** Electronic token varies in the protection of privacy and confidentiality of the transactions. Encryption can help with the authentication, non-reputability and assistant management.
- **The question of risk:** Risks also arise if the transaction has long lag times between product delivery and payments to merchants. The tokens might suddenly become worthless and the customers might have the 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. Also electronic tokens might be subject discounting or arbitrage.

2.3 Smart Cards

The electronic payment card has been in use since many years. It started in the form of a card embossed with details of the cardholder (account number, name, expiration date), which could be used at a point of sale to the point of purchase goods or services. The magnetic stripe was then introduced as a means of holding more data than was possible by embossing alone. The magnetic stripe also allowed cardholder details to be read electronically in a suitable terminal, so that checks could be made with little or no human intervention about the cardholder's credit worthiness or whether the card had been reported lost or stolen.

Card technology has advanced over the years to encounter the worldwide increase in card-related crime. As the criminal fraternity found ways of producing sufficiently good counterfeit cards, the card companies introduced new ways of overcoming the problem. A succession of antifraud measures have been introduced over the years, such as the hologram, the Card Verification Value (CVV, a value stored on the magnetic stripe that can be used to determine if a card has been produced illicitly), and in some cases, photographs of the cardholder.

Magnetic stripe card has now been developed to the point where there is little or no further scope for introducing more anticrime measures. This has caused the card associations to look at new technologies. One technology that offers many benefits is the smart card—essentially, a small computer chip embedded into a plastic card with the same dimensions as the magnetic stripe card. The only difference the cardholder sees is a small metal area on the face of the card that contains a set of electrical contacts through which the chip can be accessed.

From the anticrime perspective, there are a number of benefits in adopting the smart card. The card itself (or in conjunction with the terminal) can make decisions about whether or not a transaction can take place. Secret values can be stored on the card that are not accessible to the outside world—allowing, for example, the card to check the cardholder's PIN without having to go online to the card issuer's host system. Also, there is the possibility of modifying the way the card works, while it is inserted in a point-of-sale terminal—even to the point of blocking the card from further transactions if it has been reported lost or stolen.

As well as these antifraud measures, the smart card is seen as offering a number of other benefits to the card issuer and cardholder. These additional benefits are an integral part of building the business case for introducing smart card technology. Some of the other benefits of introducing smart cards are:

It has the ability to have more than one payment application resident on the card. For example, a card could contain an "electronic purse" to provide the equivalent of cash, usually for lower-value transactions, such as parking, tickets, newspapers, and so forth. Due to smart cards, the possibility of reducing online validation costs by allowing the card to operate offline more of the time increases.

There are many issues to be resolved before such all-embracing cards become commonplace, the most obvious ones being who owns the card and who controls which applications can be loaded or deleted. Today, the banks are interested mainly in providing payment-related services to their customers and most of the current activity surrounding the provision of smart card-based credit/debit services—sometimes with an additional electronic purse facility.

The Solution

In the early 1990s, the major card associations, Euro-pay, MasterCard, and Visa, recognised that for smart cards to become acceptable, it was necessary to standardise the way they work, at least for banking applications. Considerable work was undertaken to reach agreement on a standard culminating in the so-called Europay MasterCard Visa (EMV) specifications.

EMV Specifications

EMV specifications is defined as the physical characteristics (size, shape, thickness, position of contacts), the electrical characteristics (signals to be fed to each contact), command set (how to access data and functions on the card), overall card security methodologies (static data authentication, dynamic data authentication), and the data to be stored on cards for payment systems. The EMV specifications do not fully describe particular payment applications—that being left to individual card associations to define. They do describe the basic framework under which all payment applications will work. It is important to appreciate that although the EMV specifications describe how cards, terminals, and host systems interact, they do not describe how cards will be personalised, because different card manufacturers use different methodologies.

Visa specifications

Visa has produced a specification that deals with the details of how a credit/debit application will operate in a Visa world. This is known as the Visa Integrated circuit card (ICC) Specification (VIS).

Smart debit/credit

VIS refers to an application called Chip Card Payment Service (CCPS). This name is gradually being replaced by the term Visa Smart Debit/Credit. The Visa Smart Debit/Credit has recently been introduced to a significant number of countries in the last year.

Visa cash

The Visa electronic purse product is called Visa Cash. It is available in two basic forms: disposable and reloadable. There are two types of reloadable Visa Cash cards: the DES-based version and the public key version. The public key variant offers improvements in security because the public key algorithm is implemented on the card itself. Visa Cash is in use in many different countries around the world.

MasterCard specifications

MasterCard has released a set of specifications describing their product, which they call Debit and Credit on Chip. These are functionally equivalent to the Visa VIS specification, although there are small variations. MasterCard has recently implemented Debit and Credit on Chip on the Multos open platform card. The MasterCard electronic cash product is the Mondex purse. This can foreside on the same Multos card as Debit and Credit on Chip.

Other specifications

In UK, the Association for Payment Clearing Services (APACS) has developed a specification detailing the chip credit and debit features that will be implemented in the UK. This is known as the UK ICC Specification (UKIS), and is effectively a subset of the Visa VIS specification. UKIS does not implement the PIN on the card feature because PINs at point of sale are not used in the UK. It is understood that Europay has recently developed a credit/ debit smart card scheme

2.4 Credit Cards

To avoid the complexity associated with digital cash and electronic checks, consumers and vendors are also looking at credit card payments on the Internet as one possible time-tested alternative. There is nothing new in the basic process. If consumers want to purchase a product or service, they simply send their credit card details to the service provider involved and the credit card organisation will handle this payment like any other.

Credit card payment on on-line networks can be organised into three basic categories:

- **Payments using plain credit card details:** The easiest method of 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.
- **Payments using encrypted credit card details:** It would make sense to encrypt your credit card details before sending them out, but even then there are certain factors to consider. One would be the cost of a credit card transaction itself. Such cost would prohibit low-value payments (micro payments) by adding costs to the transactions.
- **Payments using third-party verification:** One solution to security and verification problems is the introduction of a third party; a company that collects and approves payments from one client to another. After a certain period of time, one credit card transaction for the total accumulated amount is completed.

Encryption and credit cards

Encryption is instantiated when credit card information is entered into a browser or other electronic commerce device and sent securely over the net-work from buyer to seller as an encrypted message. To make a credit card transaction secure and non-refutable, the following sequence of steps must occur before actual goods, services, or funds flow:

- A customer presents his or her credit card information (along with an authenticity signature or other information such as mother's maiden name) securely to the merchant.
- The merchant validates the customer's identity as the owner of the credit card account.
- The merchant relays the credit card charge information and signature to its bank or on-line credit card processors.
- The bank or processing party relays the information tot the customer's, bank for authorisation approval.
- The customer's bank returns the credit card data, charge authentication, and authorisation to the merchant.

In this scheme, each consumer and each vendor generates a public key and a secret key. The public key is sent to the credit card company and put on its public key server. The secret key is re-encrypted with a password, and the unencrypted version is erased.

Third-party processors and credit cards

In third-party processing, consumers register with a third party on the Internet to verify electronic micro transactions. Verification mechanisms can be designed with many of the attributes of electronic tokens, including anonymity. They differ from electronic token systems in that:

- they depend on existing financial instruments
- they require the on-line involvement of at least one additional party and, in some cases, multiple parties to ensure extra security.

However, requiring an on-line third party connection for each transaction to different banks could lead to processing bottlenecks that could undermine the goal of reliable use. Companies that are already providing third party payment are referred to as on-line third-party processors (OTPPs) since both methods are fairly similar in nature. OTPPs have created a six-step process that they believe will be a fast and efficient way to buy information online:

- The consumer acquires an OTPP account number by filling out a registration form.
- To purchase an article, software, or other information online, the consumer requests the item from the merchant by quoting her OTPP account number.
- The merchant contacts the OTPP payment server with the customer's account number.
- The OTPP payment server verifies the customer's account number of, the vendor and checks for sufficient funds.
- The OTPP payment server sends an electronic message to the buyer. This message could be an automatic www form that is sent by the OTPP server or could be a simple e-mail.
- If the OTPP payment server gets a Yes from the customer, the merchant is informed and the customer is allowed to download the material immediately.
- The OTPP will not debit the buyer's account until it receives confirmation of purchase completion.

An on-line environment suitable for micro transactions will require many of the preceding steps to be automated. World Wide Web browsers capable of encryption can serve this purpose. Using a client browser, a user makes a purchase from a merchant server by clicking on a payment URL (hyper-Links), which is attached to the product on a WWW page. Payment URLs send the encoded information to the payment server. .

If the information entered by the customer is valid and funds are available, the payment server processes the payment transaction. The access URL is effectively-a digital invoice that has been stamped "paid" by the payment server. It provides evidence to the merchant that the user has paid for the information and provides a receipt that grants the user access. Once a customer is authenticated, the payment is automatically processed.

The payment server implements a modular payment architecture where accounts can be backed by different types of financial instruments, credit card accounts, prepaid accounts, billed accounts, debit cards, and other payment mechanisms. For credit card accounts, the payment system has a real-time connection to the credit card clearing network. The system can authorise payment in real time based on the profile of the transaction and the user.

The system supports small transactions by accumulating them and settling them in aggregate. All transactions are recorded in a user's on-line statement. The statement is a summary of recent purchases, and each summary line is a hypertext link. For non information goods, the link may point to an order status or summary page.

2.5 Risks in Electronic Payment systems

Electronic payment is a popular method of making payments globally. It involves sending money from bank to bank instantly, regardless of the distance involved. Such payment systems use Internet technology, where information is relayed through networked computers from one bank to another. Electronic payment systems are popular because of their convenience. However, they also may pose serious risks to consumers and financial institutions.

Tax evasion

Businesses are required by law to provide records of their financial transactions to the government so that their tax compliance can be verified. Electronic payment however can frustrate the efforts of tax collection. Unless a business discloses the various electronic payments it has made or received over the tax period, the government may not know the truth, which could cause tax evasion.

Fraud

Electronic payment systems are prone to fraud. The payment is done usually after keying in a password and sometimes answering security questions. There is no way of verifying the true identity of the maker of the transaction. As long as the password and security questions are correct, the system assumes you are the right person. If this information falls into the possession of fraudsters, then they can defraud you of your money.

Impulse buying

Electronic payment systems encourage impulse buying, especially online. You are likely to make a decision to purchase an item you find on sale online, even though you had not planned to buy it, just because it will cost you just a click to buy it through your credit card. Impulse buying leads to disorganised budgets and is one of the disadvantages of electronic payment systems.

Payment conflict

Payment conflicts often arise because the payments are not done manually but by an automated system that can cause errors. This is especially common when payment is done on a regular basis to many recipients. If you do not check your pay slip at the end of every pay period, for instance, then you might end up with a conflict due to these technical glitches, or anomalies.

Summary

- E-payment system is the mechanism of transferring money over the Internet and technology used in this transfer is called as EFT.
- EFT is defined as transfer of fund initiated through an e-terminal, telephonic instrument, or computer or magnetic tape to order, instruct or authorise a financial institution to debit or credit an account.
- Electronic tokens are equivalent to cash that is backed by a bank.
- The nature of the transaction for which the instrument is designed.
- Risks also arise if the transaction has long lag times between product delivery and payments to merchants.
- The magnetic stripe also allowed cardholder details to be read electronically in a suitable terminal.
- The EMV specifications do not fully describe particular payment applications—that being left to individual card associations to define.
- Visa has produced a specification that deals with the details of how a credit/debit application will operate in a Visa world.
- VIS refers to an application called Chip Card Payment Service (CCPS).
- The Visa electronic purse product is called Visa Cash. It is available in two basic forms: disposable and reloadable.
- Credit card payment on on-line networks can be organised into three basic categories.
- In third-party processing, consumers register with a third party on the Internet to verify electronic micro transactions.

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Self Assessment

1. Which of the following is not an advantage of e-payment?
   a. Increase payment efficiency
   b. Increase convenience of making payments
   c. Can be used for e-commerce
   d. Can be used for traditional market

2. Which of the following is not a category of EFT?
   a. Banking and financial payment
   b. Retailing payment
   c. Online electronic commerce payment
   d. Payment efficiency

3. _____ are designed as electronic analogue of various forms of payment, which is backed by a bank or financial institution.
   a. Electronic tokens
   b. Credit cards
   c. Debit cards
   d. Online payments

4. Which of the following statements is true?
   a. Electronic tokens are equivalent to cash that is backed by a bank.
   b. Electronic token are different from the cash that is backed by a bank.
   c. Electronic tokens are equivalent to cash that is backed by an online transaction.
   d. The ATM cards are equivalent to cash that is backed by a bank.

5. Which of the following is not a type of electronic tokens?
   a. Cash or real time
   b. Debit or prepaid
   c. Cash books
   d. Credit or postpaid

6. Match the following.

1. Cash	A. Users pay in advance for the privilege of getting information.
2. Debit	B. It started in the form of a card embossed with details of the cardholder
3. Credit	C. The server authenticates the customer's account and verifies with the bank that funds are adequate before purchase.
4. Smart card	D. Transactions are settled with the exchange of electronic currency.

   a. 1-D, 2-A, 3-C, 4-B
   b. 1-A, 2-D, 3-C, 4-B
   c. 1-D, 2-B, 3-C, 4-A
   d. 1-C, 2-D, 3-B, 4-C

7. The visa electronic purse product is called _____.
   a. debit card
   b. visa cash
   c. credit card
   d. fast cash

8. Which of the following is not a risk in electronic payment system?
   a. Tax invasion
   b. fraud
   c. impulse buying
   d. payment conflict

9. Which of the following statements is false?
   a. The easiest method of payment is the exchange of unencrypted credit cards over a public network such as telephone lines or the Internet.
   b. The low level of security inherent in the design of the Internet makes the e-payment method sustainable.
   c. One solution to security and verification problems is the introduction of a third party: a company that collects and approves payments from one client to another.
   d. In third-party processing, consumers register with a third party on the Internet to verify electronic micro transactions.

10. Which of the following statements is false?
   a. The payment is done usually after keying in a password and sometimes answering security questions.
   b. There is a secured way of verifying the true identity of the maker of the transaction.
   c. As long as the password and security questions are correct, the system assumes you are the right person.
   d. Electronic payment systems encourage impulse buying, especially online.

Chapter III

Inter Organisational E-Commerce

Aim

The aim of this chapter is to:

- discuss EDI implementation
- define electronic data interchange
- enumerate various services provided by EasyLink's VAN

Objectives

The objectives of this chapter are to:

- discuss value added networks
- explain the concept of adoption and implementation of EDI
- enlist the features of EasyLink's VANs

Learning outcome

At the end of this chapter, you will be able to:

- compare EDI transaction and pre-EDI transaction
- describe processes of typical EDI transaction
- enlist the use of EDI

3.1 Introduction to EDI

EDI (Electronic Data Interchange) is the means to communicate between companies from one computer to another. For many years companies have been using computers to send business documents instead of mailing paper documents (i.e. most of our pay checks are directly deposited into our bank accounts). This transfer of funds is accomplished by the use of an electronic file. The problem was that all efforts employed proprietary or unique formats. The absence of a standard format led to the condition where computers could no longer "talk" to one another without a great deal of effort by programmers. For example, Supplier X could recognise an electronic purchase order from retailer A but not from retailer B.

In 1979, the American National Standards Institute (ANSI) formed the Accredited Standards Committee (ASC) X12 to rectify this situation. This committee was to standardise the format of electronic documents to allow for an easy movement of information between computers. This humble beginning has led to the establishment of standards for over 400 business documents.

In the late 1980's there was a drive to standardise file formats in the rest of the world. This drive resulted in the UN/EDIFACT standard being adopted. For most transactions outside of North America, the UN/EDIFACT standards are used.

Overview of a "typical" EDI transaction vs. traditional transaction
A typical EDI transaction involves the following processes:

EDI Transaction	Pre-EDI Transaction
Purchase order is entered into your Purchase Order system.	Purchase order is entered into your Purchase Order system.
Purchase order is reformatted into an interim flat file that the TradeLink EDI Management Software can read.	A purchase order is printed and signed by your buyer.
TradeLink EDI Management Software will import the interim flat file, verify the contents of the file, combine the file together in an EDI Envelope and send the file to your Trading Partner (either directly or through a network).	The purchase order is mailed, faxed, phoned or handed in person to your trading partner.
Your Trading Partners EDI Software interprets the EDI Purchase Order and the file is electronically entered into their Order Management Software.	A clerk receives the Purchase Order, tries to interpret it and then enter it into their Order Management Software. (if the transaction is lost in the mail, the Purchase Order never gets entered into their Order Management Software.
Your Trading Partner's EDI Software Package verifies that it has received the Purchase Order by sending back a Functional Acknowledgement	

Table 3.1 EDI transaction vs. Pre-EDI transaction

The use of EDI allows for the following benefits:

- reduced manual data entry
- reduced postage and handling costs
- reduced labour processing costs
- reduced order cycle
- increased customer service

- improved accuracy of data
- reduced lead times
- reduced paper handling
- reduced inventory carrying costs

EDI was originally designed to formalise the electronic transfer of information from one trading partner to another. This idea is not new; companies have been transferring information via mail, phone, in-person or using proprietary electronic formats for years.

Industry groups pushed the standardisation of business documents into electronic format. Individual companies realised that they were sending similar documents to their trading partners. It is this fact that spurred companies in the same industry meet to create formalised EDI standards. In many cases the standards that were developed met the needs of that group of companies. Over time each committee added various codes and documents to meet their industries' needs. Each committee designed slightly different formats for their "flavour" of EDI.

By the late 1980's these industry-based committees realised that to increase the use of EDI throughout the whole of industry, these committee's standards would have to be amalgamated. By 1994, all industry committee's EDI standards were to be incorporated in one North American standard. This was accomplished but what resulted wasn't a rationalisation of the standard it was simply an accumulated of all of the industry committee's EDI standards. The North American Standard (ANSI) has over 400 documents defined.

It is important to note that no one wanted to eliminate any transactions from the standard as companies had developed their interfaces to match the various documents. In addition those umbrella organisations (ANSI) have kept all of the committee (it seems to have a lot to do with everyone in the Committee wants to go to Washington D.C. to drink). In any case it is important to note that in the rest of the world there are 40 transactions defined (the rest of the World uses a standard called UN/EDIFACT that was created much later that the North American standards), whereas in North America there are over 400 transactions. In fact there are 9 different Invoices (all slightly different) and 10 different Purchase Orders. The Key thing to note when people refer to EDI, what "flavour" of EDI is used will be important. (It is also worth noting that TradeLink EDI has the ability to handle any "flavour" of EDI and the majority of old Proprietary standards without an issue.)

3.2 EDI Implementation

Electronic Data Interchange (EDI) is the exchange of documents between organisations in standardised electronic form from one computer application to another computer application. In the early days of EDI research, most of the research in this field focused on the benefits of EDI and the ways in which EDI implementation would deliver many benefits from cost reduction to providing better customer service.

These studies then expanded to include the integration of EDI, often involving detailed analysis of a case study and the extent of EDI usage in organisations. A parallel theme in EDI implementation research concerned the factors contributing to success and failure of the implementation.

Studies investigating the factors influencing the adoption and implementation of EDI include the relationship between the influencing factors and the level of success of the implementation. The authors have identified several factors which affect the adoption and implementation of the technology ¾ which we now discuss in some detail. Implementation is a comparatively recent topic for researchers interested in the overall EDI phenomenon. At least until very recently, the majority of authors investigating this aspect of EDI have tended to focus upon influences and implications of EDI implementation.

Only a very few studies have taken into account the various stages of the implementation process ¾ for example the work of Doukidis and Fragopoulou 1994, which was carried out in Greece. These authors investigated the introduction of EDI when it was forced upon a smaller company by an influential trading partner. The study examines the relationships between four groups of factors which generally influence the adoption and implementation of EDI:

- Technology related factors
- Infrastructure related factors
- Organisation related factors
- Organisational environment related factors

Toward the stages in the implementation process:

- Adoption
- Implementation
- Evolution

The results of this study make it quite clear that 'the rule' (the factors generally influencing adoption) does not apply to these 'forced' companies, in which the implementation is initiated by the other party. The case study suggests that EDI implementation is, thus, not a straight-forward process ¾ but rather one in which the various stages and processes can be influenced and affected by factors such as level of proactively /reactivity.

3.3 Value Added Networks

EasyLink VAN offers a complete value added network (VAN) solution to meet your electronic data interchange (EDI) requirements in a secure, reliable, available and flexible environment – all at an affordable price to enable your initiatives to move information seamlessly and efficiently, and expedite transaction processing regardless of file size, communication protocol, or data format.

Value Added Networks (VAN) simplifies the communication process by reducing the number of parties that you have to communicate with. VANs insert themselves between trading partners. They typically operate on a mailbox scenario where a company would send a transaction to a VAN and the VAN would then place the transaction in the mailbox of the receiver. The receiver would then contact the VAN and pick up any transactions it might have and then send anything it might need to send. It is very similar to email, but rather than being unstructured text, it is used for structured standardised data. EasyLink operates a Value Added Network that provides this 'mail boxing' type of service and transmits the data using the Internet.

EasyLink VAN™ is a complete value added network (VAN) solution which meets electronic data interchange (EDI) and e-commerce requirements in a secure, reliable, available and flexible environment – all at an affordable price to move information seamlessly and efficiently, and to expedite transaction processing regardless of file size, communication protocol, or data format.

Features of EasyLink's VANs

- Global Internet based VAN
- Scalable Java-based technology system
- Featuring unrivaled service:
  - Detailed audit trails
  - 24x7x365 world-class support
  - Protected data center
  - Reliable and secure transmissions
  - Array of real-time reports
  - Real-time alert system and data delivery
  - Extended archival storage
  - Web-based document management
  - Extensive connectivity options

The various services provided by EasyLink's VAN are:

- Alert system: EasyLink VAN provides proactive alerts to document processing events, transmission issues or delivery receipts. The alerts are received on the preferred method for communication: email, text messaging or fax. With EasyLink VAN's real-time alert system, you are able to respond to your trading partners and address critical supply chain events immediately.
- Archival storage: EasyLink VAN archives information sent and received on-line for a period of 30 days and off-line for several years. EasyLink VAN's archival storage provides a safety net needed to resend or review documents or data. A longer on-line archival period is available with EasyLink ARCHIVE service capabilities.
- Audit trails: EasyLink maintains detailed audit trails of all set-up, configuration and document transmission events. By accessing audit trail information, EasyLink's Technical Support team has the ability to conduct the analysis required to answer your questions and address your issues.
- Connectivity options: EasyLink VAN provides a variety of communications options. FTP communications is included with the basic service. Other options are available with EasyLink.COMMS service capabilities. With EasyLink VAN's connectivity options, you can select from multiple communication protocols and options to ensure effective communications with your trading community of diverse communication protocols and security standards.
- Protected data center: EasyLink VAN's redundant servers are housed in a state-of-the-art facility built for efficiency, security and scalability. EasyLink VAN servers are secured by guards 24 hours a day, seven days a week, every day of the year, with two-factor biometric authentication and card-key access required for data center floor access.
- Real-time data delivery: EasyLink VAN delivers information in real-time, on a schedule or on an ad-hoc basis for you and you're trading partners. Real-time transmission reduces the problems inherent in batch delivery, such as the potential for corruption of data, time delays on delivery, and bottlenecks in the system.
- Reliable and secure transmission: EasyLink VAN offers a variety of industry-standard encryption solutions to provide secure and reliable transmissions over high-speed connections to the Internet. Every transaction is authenticated and provides for non-repudiation to secure supply chain communications.
- Reporting: EasyLink VAN provides a wide selection of on-line, real-time reports to ensure data is presented in the format required. Reports are easily accessed on-line or through batch mode and conveniently delivered to you through a browser, email or EDI system.
- Technical support: EasyLink provides U.S. based support representatives, 24 hours a day, seven days a week, every day of the year to set-up accounts, initiate proactive communication, solve problems or answer questions.
- Web-based document manager: EasyLink VAN enables you to view time stamp documents and transaction events through a feature-rich, real-time application program that uses a Web browser to provide easy-to-use access anytime, from anywhere. The document manager offers unprecedented control over data, including the flexibility to acknowledge, view, send, receive, hold, release, sort or search documents and other data files. EDI value added network suppliers must provide basic translation, encryption, storage and data conversion and transport. But to demonstrate value for their customers, VAN providers also offer extra services such as automated B2B communications, improved processes and management reports.

Summary

- EDI (Electronic Data Interchange) is the means to communicate between companies from one computer to another.
- In 1979, the American National Standards Institute (ANSI) formed the Accredited Standards Committee (ASC) X12 to rectify this situation.
- EDI was originally designed to formalise the electronic transfer of information from one trading partner to another.
- Industry groups pushed the standardisation of business documents into electronic format.
- Electronic Data Interchange (EDI) is the exchange of documents between organisations in standardised electronic form from one computer application to another computer application.
- EasyLink VAN offers a complete value added network (VAN) solution to meet your electronic data interchange (EDI) requirements in a secure, reliable, available and flexible environment.
- Value Added Networks (VAN) simplifies the communication process by reducing the number of parties that you have to communicate with.
- EasyLink VAN provides proactive alerts to document processing events, transmission issues or delivery receipts.
- EasyLink VAN's archival storage provides a safety net needed to resend or review documents or data.
- EasyLink VAN's redundant servers are housed in a state-of-the-art facility built for efficiency, security and scalability.

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Self Assessment

1. What refers to communication between companies from one computer to another?
   a. EDI
   b. ANSI
   c. Transaction
   d. ASC

2. Which of these is not a benefit of EDI use?
   a. Reduced manual data entry
   b. Increased customer service
   c. Reduced labour processing costs
   d. Increased order cycle

3. Which of these is a factor influencing the adoption and implementation of EDI?
   a. Technology related factors
   b. Evolution related factors
   c. Organisation related factors
   d. Organisational environment related factors

4. What simplifies the communication process by reducing the number of parties that you have to communicate with?
   a. VAN
   b. ASC
   c. ANSI
   d. EDI

5. Which of these is not a service provided by EasyLink's VAN?
   a. Alert system
   b. Archival storage
   c. Audit trails
   d. Unprotected data center

6. Which of the following statements is false?
   a. EasyLink provides U.S. based support representatives, 4 hours a day, three days a week, every day of the year to set-up accounts, initiate proactive communication, solve problems or answer questions.
   b. EasyLink VAN enables you to view time stamp documents and transaction events through a feature-rich, real-time application program.
   c. EasyLink VAN delivers information in real-time, on a schedule or on an ad-hoc basis for you and you're trading partners.
   d. EasyLink VAN's redundant servers are housed in a state-of-the-art facility built for efficiency, security and scalability.

7. Which of the following statements is false?
   a. EasyLink maintains detailed audit trails of all set-up, configuration and document transmission events.
   b. EasyLink VAN archives information sent and received on-line for a period of 10 days and off-line for several years.
   c. EasyLink VAN provides proactive alerts to document processing events, transmission issues or delivery receipts.
   d. EasyLink VAN's archival storage provides a safety net needed to resend or review documents or data.

8. Value Added Networks (VAN) simplifies the _____ process by reducing the number of parties that you have to communicate with.
   a. communication
   b. implementation
   c. evolution
   d. transmission

9. The North American Standard (ANSI) has over _____ documents defined.
   a. 400
   b. 500
   c. 200
   d. 100

10. Match the following.

1. Electronic Data Interchange	A. Reduced lead time
2. Global Internet based VAN	B. Alert system
3. EasyLink's VAN service	C. EasyLink's VANs feature
4. EDI benefit	D. Documents exchange

   a. 1-A, 2-B, 3-C, 4-D
   b. 1-B, 2-A, 3-D, 4-C
   c. 1-D, 2-C, 3-B, 4-A
   d. 1-A, 2-C, 3-B, 4-D

Chapter IV

Intra Organisational E-Commerce

Aim

The aim of this chapter is to:

- discuss workflow of intra organisational commerce
- define work flow automation
- enumerate the advantages of work flows

Objectives

The objectives of this chapter are to:

- discuss workflow coordination
- explain the concept of customisation and internal commerce
- list the functions of supply chain management

Learning outcome

At the end of this chapter, you will be able to:

- define supply chain management
- enumerate key supply chain activities
- enlist the impacts of e-commerce on supply chain management

4.1 Workflow of Intra Organisational Commerce

In electronic commerce scenario, effectiveness and efficiency of business process execution is of supreme importance for business success. They determine the chances of survival of organisations in fast moving, highly competitive electronic markets. To obtain the essential levels of effectiveness and efficiency, well structured business process support is required. For typical business to consumer (B2C) electronic commerce, process support is usually of an intra-organisational nature. For business to business (B2B) electronic commerce, process support across organisational boundaries is often required as the basis for virtual enterprises.

Work flow

The processes (vision) of automating routine business task is called work flow automation. It involves computer network which is applied to manage complex and interlocking task and the information they utilise and generate. The goal of the work flow automation is to be timely completeness, cost effectively and integrated ways to make business decisions.Work flow portrays the movement of business process and its associated task among workers and the operations requires processing the information that moves from initialisation stage to complete stage.

All work flows taken together constitute a process. For automation knowledge based business process can be defined. The work flow decomposed into different individual tasks with certain order. A work flow can be complex or simple.

Work flow advantages

Following are the advantages of the work flows:

- It is used to determine the amount of cross functional activities in which the organisation integrates.
- It should provide in-time completion and reduce the complexity of the process
- In an organisation the cross functional activity depends on the three different activities.
- Improving the existing process by utilising the technology
- After identifying the technology required information that needs for reach process.
- Integrating application programming interface, database access etc.

Workflow coordination

- It uses certain standard tools that implement electronic forms such as lotus notes and advanced software tools.
- The package that offer network based and customised and attractive to reduce the paper based work.
- To provide better work flow coordination companies are using software agents.

4.2 Customisation and Internal Commerce

Technology is resulting transforming consumer choices, thus further changing the marketplace and organisation itself. Technology embodies adaptability; flexibility and other qualities essential for customisation. Customers can have their own version of virtually any product. Customisation can also be used in textiles and clothing.

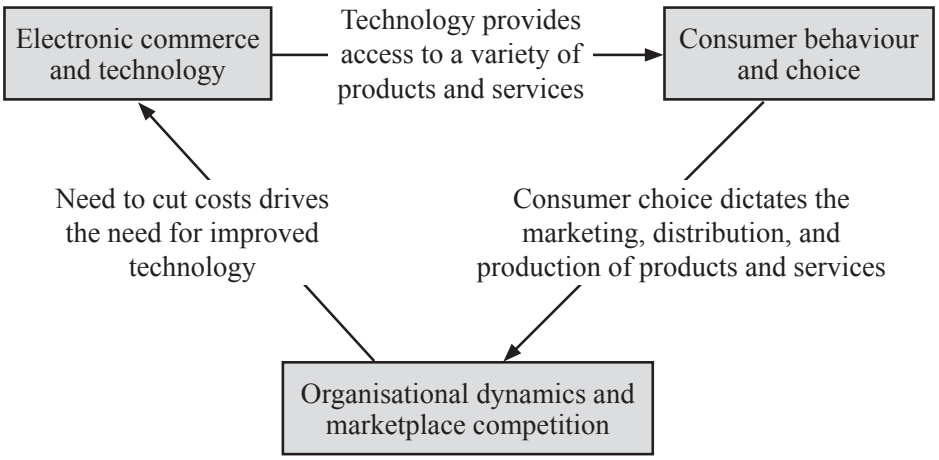

Fig. 4.1 Marketplace triad
(Source: Kalakota, 1996. *Frontiers of Electronic Commerce*, Pearson Education India)

Customer- driven customisation is becoming crucial because of many choices in the same product. But all markets are not well suited for the application of customisation principles. For example, the customers of commodities like oil, gas and wheat do not ask for product differentiation. Even very innovative products (distinctive) do not ask for and distinctive feature as they know nothing about the product.

Today technology is so pervasive that it is virtually impossible to make clear differentiation in design of work, technology and management. For this reason customisation needs re-examination through the technology lens.

4.3 Supply Chain Management

Supply chain management (SCM) is also called 'extending', meaning integrating the internal and external partners on the supply and process chain to get raw materials to the manufacturer and finished products to the consumer. Most of the companies fail because lack of integration due to fragmented supply chain management.

SCM plays an important role in the management of processes that cut across functions and departmental boundaries. It is important in retailing because it mange the demand and supply function. SCM optimises information and product flows from the receipt of the order to the purchase of raw materials to delivery and consumption of finished goods. SCM has the following characteristics:

- Ability to manage the information across industries and enterprises
- A centralised global business and business strategy with local execution
- Ability to source raw material or finished goods from any where in the world

Supply Chain management (SCM) have various functions:

- **Supply chain management:** The goal is to reduce the number of suppliers and get them to become partners in business in a win / win relationship.
- **Inventory management:** Its goal is to shorten the order-ship-bill cycle.
- **Distribution management:** Its goal is to move documents related to shipping.
- **Payment management:** The goal is to link the company and the suppliers and distributors so that the payment can be sent and received electronically.
- **Financial management:** The goal is to enable global companies to mange their money in various foreign exchange accounts.
- **Sales for productivity:** Its goal is to improve the communication and flow of information among the sales, customer and production functions. It contains two primary models namely:
- PUSH model
- PULL model

Each model has three primary elements:

Agile manufacturing
It calls for flexibility and quick response to changing market conditions, customer demands, and competitor actions.

Integrated logistics and distribution
It deals with integration of materials and physical distribution. Supply chain management has umbrella that incorporates the logistic function. An article called "distribution revolution "states the top management image of distribution and ware house operation that misplaces inventory, ship products, waste man powers. It also describes cost cutting and performance improvement at the product. Logistics and distribution can add upto as much as 30% of total cost for some business. Engineering companies are discovering creative methods of adding value, cutting costs and increased speed of the product through supply chain management.

Purchasing and inbound logistics: Take an example of supply scheduling, it requires the following steps:

- The planner requisition send to the buyer then buyer sends to the purchase order to the supply sales department via EDI.
- Then the sales department communicate to the order to the planner in the supplier's plant.

Integrated marketing and distribution
The order process could be initiated by marketing information systems like point of sales (POS), marketing edge in several areas like manufacturing, logistics planning, management and analysis of new markets and their targeted customer needs. Marketing must find a ways to integrate the customer into the company to create and sustain a relation between the company and customer. Use the information gained from the customer activities.

There are certain failures occurring in the business:

- Transaction failures are caused due to an error in the transaction by input data. This can be rectified by resetting the database to its state prior to the state of the database.
- Site failures can be caused due to hardware failures and also software failures. In order to stabilise the database, we employ logging protocols such as writeahead logging.
- Media failures are caused due to the loss of secondary storage devices like head crash or control failures and communication failures arises due to errors in messages, improper ordering of messages, lost or undelivered messages and line failures. Error messages and improper ordering of messages comes due to computer network protocols where as lost messages and line failures come due to distributed database management protocols. The reliability protocol is maintained by atomicity and durability. Atomicity refers to a transaction that has to be either committed if it has no transaction failures or it should be roll backed. Durability refers even if the subsequent failures happen that committed transactions should be hold.

A production supply chain refers to the flow of physical goods and associated information from the source to the consumer. Key supply chain activities include:

- Production planning
- Purchasing
- Materials management
- Distribution
- Customer service
- Sales forecasting

These processes are critical to the success of any operation whether they are manufacturers, wholesalers, or service providers.

Electronic commerce and the Internet are fundamentally changing the nature of supply chains, and redefining how consumers learn about, select, purchase, and use products and services. The result has been the emergence of new business-to business supply chains that are consumer-focused rather than product-focused. They also provide customised products and services.

E-commerce impacts supply chain management in a variety of keyways. These include:

- **Cost efficiency:** E-commerce allows transportation companies of all sizes to exchange cargo documents electronically over the Internet. E-commerce enables shippers, freight forwarders and trucking firms to streamline document handling without the monetary and time investment required by the traditional document delivery systems. By using e-commerce, companies can reduce costs, improve data accuracy, streamline business processes, accelerate business cycles, and enhance customer service. Ocean carriers and their trading partners can exchange bill of lading instructions, freight invoices, container status messages, motor carrier shipment instructions, and other documents with increased accuracy and efficiency by eliminating the need to re-key or reformat documents. The only tools needed to take advantage of this solution are a personal computer and an Internet browser.
- **Changes in the distribution system:** E-commerce will give businesses more flexibility in managing the increasingly complex movement of products and information between businesses, their suppliers and customers. E-commerce will close the link between customers and distribution centers. Customers can manage the increasingly complex movement of products and information through the supply chain.
- **Customer orientation:** E-commerce is a vital link in the support of logistics and transportation services for both internal and external customers. E-commerce will help companies deliver better services to their customers, accelerate the growth of the e-commerce initiatives that are critical to their business, and lower their operating costs. Using the Internet for e-commerce will allow customers to access rate information, place delivery orders, track shipments and pay freight bills. E-commerce makes it easier for customers to do business with companies: Anything that simplifies the process of arranging transportation services will help build companies' business and enhance shareholder value. By making more information available about the commercial side of companies, businesses will make their web site a place where customers will not only get detailed information about the services the company offers, but also where they can actually conduct business with the company. Ultimately, web sites can provide a universal, self-service system for customers. Shippers can order any service and access the information they need to conduct business with transportation companies exclusively online. E-commerce functions are taking companies a step forward, by providing customers with a faster and easier way to do business with them.
- **Shipment tracking:** E-commerce will allow users to establish an account and obtain real-time information about cargo shipments. They may also create and submit bills of lading, place a cargo order, analyse charges, submit a freight claim, and carry out many other functions. In addition, e-commerce allows customers to track shipments down to the individual product and perform other supply chain management and decision support functions. The application uses encryption technology to secure business transactions.
- **Shipping notice:** E-commerce can help automate the receiving process by electronically transmitting a packing list ahead of the shipment. It also allows companies to record the relevant details of each pallet, parcel, and item being shipped.
- **Freight auditing:** This will ensure that each freight bill is efficiently reviewed for accuracy. The result is a greatly reduced risk of overpayment, and the elimination of countless hours of paperwork, or the need for a third-party auditing firm. By intercepting duplicate billings and incorrect charges, a significant percent of shipping costs will be recovered. In addition, carrier comparison and assignment allows for instant access to a database containing the latest rates, discounts, and allowances for most major carriers, thus eliminating the need for unwieldy charts and tables.
- **Shipping documentation and labeling:** There will be less need for manual intervention because standard bills of lading, shipping labels, and carrier manifests will be automatically produced; this includes even the specialised export documentation required for overseas shipments. Paperwork is significantly reduced and the shipping department will therefore be more efficient.
- **Online shipping inquiry:** This gives instant shipping information access to anyone in the company, from any location. Parcel shipments can be tracked and proof of delivery quickly confirmed. A customer's transportation costs and performance can be analysed, thus helping the customer negotiate rates and improve service.

Summary

- In electronic commerce scenario, effectiveness and efficiency of business process execution is of supreme importance for business success.
- The processes (vision) of automating routine business task is called work flow automation.
- The goal of the work flow automation is to be timely completeness, cost effectively and integrated ways to make business decisions.
- Technology is resulting transforming consumer choices, thus further changing the marketplace and organisation itself.
- Technology embodies adaptability, flexibility ands other qualities essential for customisation.
- Supply chain management (SCM) is also called 'extending', meaning integrating the internal and external partners on the supply and process chain to get raw materials to the manufacturer and finished products to the consumer.
- A SCM plays an important role in the management of processes that cut across functions and departmental boundaries.
- Transaction failures are caused due to an error in the transaction by input data.
- Site failures can be caused due to hardware failures and also software failures. In order to stabilise the database, we employ logging protocols such as writeahead logging.
- Media failures are caused due to the loss of secondary storage devices like head crash or control failures and communication failures arises due to errors in messages, improper ordering of messages, lost or undelivered messages and line failures.
- Electronic commerce and the Internet are fundamentally changing the nature of supply chains, and redefining how consumers learn about, select, purchase, and use products and services.
- E-commerce can help automate the receiving process by electronically transmitting a packing list ahead of the shipment.

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Self Assessment

1. _____allows customers to track shipments down to the individual product and perform other supply chain management and decision support functions.
   a. E-commerce
   b. Freight auditing
   c. Point of sales
   d. EDI

2. _____ must find ways to integrate the customer into the company to create and sustain a relation between the company and customer.
   a. Marketing
   b. Production
   c. Sales
   d. Distribution

3. Which failures are caused due to an error in the transaction by input data?
   a. Transaction
   b. Media
   c. Site
   d. System

4. Which failures can be caused due to hardware failures and also software failures?
   a. Transaction
   b. Media
   c. Site
   d. System

5. Which failures are caused due to the loss of secondary storage devices like head crash or control failures and communication failures arises due to errors in messages, improper ordering of messages, lost or undelivered messages and line failures?
   a. Transaction
   b. Media
   c. Site
   d. System

6. What refers to a transaction that has to be either committed if it has no transaction failures or it should be roll backed?
   a. Atomicity
   b. Durability
   c. Forecasting
   d. Point of sales

7. _____ refers even if the subsequent failures happen that committed transactions should be hold.
   a. Atomicity
   b. Durability
   c. Forecasting
   d. Point of sales

8. Which of the following statements is false?
   a. Supply chain management has umbrella that incorporates the logistic function.
   b. Logistics and distribution can add upto as much as 90% of total cost for some business.
   c. Engineering companies are discovering creative methods of adding value, cutting costs and increased speed of the product through supply chain management.
   d. SCM plays an important role in the management of processes that cut across functions and departmental boundaries.

9. Which of the following statements is false?
   a. Supply chain management (SCM) is also called 'extending', meaning integrating the internal and external partners on the supply and process chain to get raw materials to the manufacturer and finished products to the consumer.
   b. Manufacturer- driven customisation is becoming crucial because of many choices in the same product.
   c. Technology embodies adaptability; flexibility and other qualities essential for customisation.
   d. Customers can have their own version of virtually any product.

10. Match the following.

1. Work flow	A. Extending
2. Supply chain management	B. Complex or simple
3. Inventory management	C. Physical distribution
4. Integrated logistics	D. Shorten order-ship-bill cycle

   a. 1-A, 2-B, 3-C, 4-D
   b. 1-B, 2-A, 3-D, 4-C
   c. 1-D, 2-C, 3-B, 4-A
   d. 1-A, 2-C, 3-B, 4-D

Chapter V

Corporate Digital Library

Aim

The aim of this chapter is to:

- discuss document imaging
- define document library
- enumerate the types of digital documents

Objectives

The objectives of this chapter are to:

- discuss standard for structured documents
- explain the concept of document-based framework flows
- enlist the document imaging standards

Learning outcome

At the end of this chapter, you will be able to:

- recognise advantages of corporate data warehouses
- describe corporate data warehouses
- enlist the types of data warehouses

5.1 Document Library

Many organisations manage their information through corporate library, if it provides the architecture to model, map, integrate and information in digital documents is called digital library. It provides information structures to organisations and workers access vast amount of data encoded in multimedia formats.

Digital libraries are of two types:

- **Electronic document-based digital libraries:** The term document is used to denote all non data records i.e., books, reports, e-files, videos and audios. Digital library is simply a distributed network of interlinked information.
- **Data-base oriented warehouses:** It is a central repository for combining and storing vast amount of data from different sources. Sources are main frame database, lint-server database, text reports etc.

Making a business case for document library

This section highlights the role that documents play in today's organisation and how business can better meet their customers' needs by improving document management support.

5.2 Digital Document Types

Digital document management issues and concerns

- **Ad hoc documents:** Letters, finance reports, manuals are called ad hoc documents, which are prepared by managers &professionals.
- **Process-specific documents**: invoices and purchase orders which are created, constructed and distributed by support personnel. These are form based.
- **Knowledge-oriented documents**: these are technical documents, catalogue of product information, and design documents.

Types of digital documents

Four types of digital documents are:

- Structuring applications around a document interface
- Structuring interlinked textual & multimedia documents
- Structuring and encoding information using document-encoding standards
- Scanning documents for storage and faxing

Document imaging

- Document imaging emulates microfiche and microfilm.
- An imaging system passes appear document through a scanner that renders it digital and then stores the digital data as a bit-mapped image of document.
- The problem with the imaging approach is that the output contains only images not text.

The following imaging standards are prominently used:

- **TIFF** (tag image file format): format for interchange of bit-mapped images.
- **ITU-TSS** (international telecommunication union-telecommunication standardisation sector) Group IV T.6 facsimile: this standard is used for compression and exchange of bit-mapped files.

Structured documents

- A structured document provides clear description of document content.
- Structured documents apply data-base structuring capabilities to individual documents and document collections.

Standard for structured documents are:

- **SGML (Standard Generalisation Markup Language):** It is an ISO standard for interchange and multi formatting description of text document in terms of logical structure.
- **ODA (Office Document Architecture):** It is an ANSI and ISO standard for interchange of compound office documents. ODA specifies both content & format.
- **CDA (Compound Document Architecture):** It defines set of rules for content and format. It defines services for compound documents.
- **RTF (Rich –Text Format):** It is developed by Microsoft for interchanging of desk top documents.
- **Hyper Text Documents:** Hyper text is a way of making document-based information more mobile.

Reasons for mobility of information are:

- Information in enterprises is seldom located on server but is distributed throughout the organisation.
- Accessing and retrieving large monolithic document is time consuming.
- Reuse of document for composing new documents is difficult task.
- In this relationship between documents can be represented through hypermedia links i.e., hyperlinks.
- Standards of Hypermedia:
  - HyTime: it adds time based relationships like synchronisation, it is extension of SGML.
  - HTML: developed by WWW to support distributed hypermedia.
  - MHEG(multimedia /hypermedia encoding/exporting Group): standard for presenting objects in multimedia.
- Active documents
  - Active document represents what is known as document oriented computing.
  - Active document provide an interactive interface between documents.
  - Active documents are especially powerful because they combine composition of information with the distributed nature of information.
  - For example, spreadsheet, word-processing etc.

Issues behind document infrastructure

Document infrastructure addressed these questions:

- What is the proper architecture for the corporate digital library?
- What are appropriate model?
- What protocols required?
- What are the best human interfaces?
- How does one represent and manipulate the information processing activities occurred in the digital library?

Document constituencies

The emerging document processing and management strategies must address these constituencies. They need system to access distributed repositories and to manipulate them in a number of ways.

Document-oriented processes

Components of document-oriented processes are:

- Document creation
- Document media conversation(it accept multiple forms of input)
- Document production and distribution
- Document storage and retrieval

Document-based framework flows
The following four activities make up a document-based framework flow:

- **Document modeling**: it defines the structure and processes the document.
- **Transformation:** creates modules for capturing and validating.
- **Synthesising:** create value-added information from the combination of two or more documents.
- **Business modeling**: defines the structure and processes of the business environment.

Definition of digital documents
Document data is anything printed, written or kept as a record in a specific medium. However it can be processed in one of two ways, digital or analog. Digital media is usually electronic media that works on digital codes. A computer recognises two discrete states: on and off (0 & 1). Documents that are generated or stored in a computer is referred to Digital Documents.

Benefits of digital documents are:

- They are automatically entered
- It can update existing data
- It can reduce data entry errors

A drawback to digital documents is that backup's are usually required.

Portable Document File (PDF)
PDF was invented by Adobe system. It has been perfected for over 15 years (Adobe Systems Incorporated, 2010). PDF is a means of distributing independent documents to a wide range of people. It can be opened regardless of the operating system. A PDF file is rich in file integrity meaning that it can preserve the information file and can contain images, drawings, 3D, maps, hyperlinks, text, photos, different fonts and full colour graphics regardless of the application used to create them.

Use of portable document file
Using Portable Document File is a user friendly option. Bailey (2010) suggests that we use PDF's for a number of reasons:

- They reduce the size of the document making it easier to open and download.
- They are great for long term storage because it was designed to be self contained and can keep data integrity
- It provides a wide range of security options
- Acrobat readers can be downloaded for free from the Adobe site which allows anyone to view the document.

Examples of Software Packages for the Application and its use in Information and Software Technology Years 7-10

There are many software packages that can be used for digital documents. The packages that have been chosen include:

Microsoft office
Microsoft Office enhances student learning with its variety of tools. Microsoft Office has the elements of creating documents, spreadsheets, power points, and databases. The software plays a vital role towards the students' learning by integrating the capabilities of Microsoft Office which in turn will be able to meet the course outcomes.

Adobe Acrobat Pro 9

Adobe Acrobat Pro 9 protects documents and accelerates information exchange with PDF. It has strong security features, high-end production support and easy-to-manage electronic document reviews. The features of this software include ways to:

- Convert documents that printed to PDF
- Unify a wide range of content in a single organised PDF Portfolio
- Collaborate through electronic document reviews
- Create and manage dynamic forms
- Help protect sensitive information

The use of the application in Information and Software Technology in Years 7-10 allows student participation. This appeals to students through practical activities and their enjoyment of learning about and using computers.

Relationship with option topics and core topic

The core topic allows students' to develop information and software technology solutions through individual project work. The Option topics provide opportunities for the contextualisation of the core and allow the choice in the area of interest (Board of Studies, June 2003, p. 8). Option Topic 4 states that Digital Media provides integration and application of the core content by examines and analyses different types of media products and their uses across a variety of contexts (Board of Studies, June 2003, p. 31). The outcomes in Digital Media allow students' to meet some of the requirements in the Core Topic 1: Design, Produce and Evaluate outcomes.

These outcomes that are met in both topics are:

- Describes and elucidates problem-solving processes when creating solutions
- Designs, produce and evaluates appropriate solutions to a range of challenging problems
- Critically analyses decision-making processes on the basis of information and software solutions

For the students' to meet the required outcomes, they must show the competence in completing the task at hand to a quality standard. The task that is set is reinforced with what the students need to learn which is listed in digital media.

The technical requirements of software

The software that has been used is Microsoft Office Word. However this is packaged together in a service pack. The technical requirements are in the table below referencing for table is from (Microsoft Corporation, 2010). Online there is also an option to look at the other packages of Microsoft Office such as professional.

5.3 Corporate Data Warehouses

Data warehouse is used to store information of the organisation. Data warehouse is needed as enterprise wide to increase data in volume and complexity.

Characteristics of data warehouse are:

- An information-based approach to decision making
- Involvement in highly competitive & rapidly changing markets
- Data stored in many systems and represented differently

Functions performed by data warehouse are:

- Allow existing transactions and legacy systems to continue in operation.
- Consolidates data from various transaction systems into a coherent set.
- Allows analysis of virtual information about current operations of decision support.

Types of data warehouses

There are four types of data warehouses:

- **Physical data warehouse**: It gathers corporate data along with the schemas and the processing logics.
- **Logical data warehouse:** It contains all the Meta data and business rules.
- **Data library**: This is sub set of the enterprise wide data warehouse.
- **Decision support system (DSS):** These are the applications but make use of data warehouse.

Managing data

To manage data following steps are needed:

- Translation
- **S**ummarising
- Packaging
- Distributing
- Garbage collection

Advantages of data warehouse

The advantages are:

- Timely and accurate information become an integral part of the decision-making process.
- User can manage and access large volumes of in one cohesive framework.
- Data warehousing has wide spread applicability.
- It provides point-of-sales reports instead of end-of –day reports.

Summary

- Data-base oriented warehouses are a central repository for combining and storing vast amount of data from diff sources.
- The term document is used to denote all non data records i.e. books, reports, e-files, videos and audios.
- Digital library is simply a distributed network of interlinked information.
- Letters, finance reports, manuals are called ad hoc documents, which are prepared by managers and professionals.
- Knowledge-oriented documents are technical documents, catalogue of product information, and design documents.
- Document imaging emulates microfiche and microfilm.
- A structured document provides clear description of document content.
- Document data is anything printed, written or kept as a record in a specific medium. However, it can be processed in one of two ways, digital or analog.
- Digital media is usually electronic media that works on digital codes.
- PDF is a means of distributing independent documents to a wide range of people. It can be opened regardless of the operating system.
- Microsoft Office enhances student learning with its variety of tools.
- Adobe Acrobat Pro 9 protects documents and accelerates information exchange with PDF.
- Data warehouse is used store information of the organisation.

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Self Assessment

1. _____ is simply a distributed network of interlinked information.
   a. Digital library
   b. Data-base oriented warehouses
   c. Digital media
   d. Document imaging

2. _____ emulates microfiche and microfilm.
   a. Digital library
   b. Data-base oriented warehouses
   c. Digital media
   d. Document imaging

3. Which is an electronic media that works on digital codes?
   a. Digital library
   b. Data-base oriented warehouses
   c. Digital media
   d. Document imaging

4. _____ is used to store information of the organisation.
   a. Digital library
   b. Data warehouse
   c. Digital media
   d. Document imaging

5. _____ enhances student learning with its variety of tools.
   a. Microsoft Office
   b. Data warehouse
   c. Digital media
   d. Adobe Acrobat Pro 9

6. The term _____is used to denote all non data records i.e., books, reports, e-files, videos and audios.
   a. document
   b. digital library
   c. data warehouse
   d. digital media

7. Which of the following statements is false?
   a. Digital library is used store information of the organisation.
   b. Data warehouse is needed as enterprise wide to increase data in volume and complexity.
   c. Physical data warehouse gathers corporate data along with the schemas and the processing logics.
   d. Logical data warehouse contains all the Meta data and business rules.

8. Which of the following statements is false?
   a. Data library is sub set of the enterprise wide data warehouse.
   b. Decision support system (DSS) is the applications but make use of data warehouse.
   c. Data warehouse enhances student learning with its variety of tools.
   d. Adobe Acrobat Pro 9 protects documents and accelerates information exchange with PDF.

9. Which of these is not a function performed by data warehouse?
   a. Data warehouse allow existing transactions and legacy systems to continue in operation.
   b. Data warehouse consolidates data from various transaction systems into a coherent set.
   c. Data warehouse allows analysis of virtual information about current operations of decision support.
   d. Data warehouse enhances student learning with its variety of tools.

10. Match the following.

1. Document imaging	A. Microfiche
2. Digital library	B. Catalogue of product information
3. Knowledge-oriented document	C. Interlinked information
4. Ad hoc document	D. Finance reports

   a. 1-A, 2-B, 3-C, 4-D
   b. 1-B, 2-A, 3-D, 4-C
   c. 1-D, 2-C, 3-B, 4-A
   d. 1-A, 2-C, 3-B, 4-D

Chapter VI

Advertising and Marketing

Aim

The aim of this chapter is to:

- discuss information based marketing
- define micromarketing
- enumerate the types of micromarketing

Objectives

The objectives of this chapter are to:

- discuss on-line marketing process
- explain the concept of direct marketing
- enlist the steps in interactive marketing process on the internet

Learning outcome

At the end of this chapter, you will be able to:

- compare retailers and manufacturers
- describe on-line advertising paradigms
- enlist the areas of new age of information-based marketing

6.1 Information Based Marketing

Misunderstandings about the nature of marketing in electronic markets are rampant. Many think that online marketing is equivalent to publishing a World Wide Web page with product information that shopper can browse through. Marketers are learning that valuable information can be collected from the customers on line with minimum effortsand low cost that otherwise would take months.(Kalakota &Whinston, 1996)The New Age of Information Based Marketing The interactive marketing brought on the electronic commerce will change the role of small business, retailers, manufacturers and media companies.

Retailers vs manufacturers

The roles of retailers and manufacturers are fast reversing in electronic commerce. Nowadays retailers have an advantage over manufacturers because they can measure the customer response and get first crack at the broadest range of information. Indeed, Point of Sale (POS) scanning system have played a major role in shifting power from manufacturer to retailers, as large innovators like Wal-Mart have amply proven. The attraction of POS system is that they record each sale in a central database using as canner, which reads the bar code on the product, so that retailers no longer have a wait for periodic inventory check to find out what they need to record. Through centralised buying that ensures lower prices through volume purchasing and efficient distribution chains.

Information based marketing can offer manufacturer and retailers a means to do market research and customer prospecting; to establish brand loyalty, market presence and distribute redeemable coupons and to create customised product bundles. Product or Service Bundling is a classic marketing strategy in which two or more complementary products and or services are offered as a package at a discounted price. Example of bundling include two for the price of one airline tickets, computer hardware and software combinations, season tickets for sport and meals specials in restaurants.

Target and micromarketing

In electronic commerce, technology has put target and micromarketing within the reach of small business. Computers have armed micromarketing with more knowledge not only about their own business but also about the customer, to develop and exploit niche markets. Customer targeting is one way to get closer and to create and sustain a two-way flow of communication between the seller ad the buyer. Direct mail and telemarketing are two fast growing ways to micro markets. Both methods are able not only to find prospects but also to qualify them. Because both direct mail and telemarketing can be easily measured and quickly adjusted to appeal to the needs and expectations of customers, they have proven to be very effective sales tools. There are two main types of micromarketing:

Direct relationship micromarketing is aimed at simulating sales at retail establishments through direct contact with consumers in their homes. Direct order micromarketing is focused on selling products directly to consumers in their homes or businesses. Catalogs are in this segment of marketing. Online Pull based advertising includes:

- **Billboards:** an example of pull-based advertising is the web pages set up by many different commercial ventures.
- **Catalogs or yellow pages directories:** these directories are searchable or browsable databases of advertising.
- **Endorsement:** specific posting are made to subject Internet discussion forums. Often recommendations from users are offered in other types of communications such as product oriented or service oriented Internet discussion forums. (Kalakota & Whinston, 1996)

Interactive marketing process on the internet

- Step 1: Segment and identify potential customers
- Step 2: Create promotional, advertising and educational material (WWW page with multimedia effects-audio and video) (Product information and complementary products, order forms and questionnaires)
- Step 3: Put the material on customer computer screens Push based marketing –direct marketing using newsgroup and emails.
- Step 4: Interacting with customers, dialogue with the customers, interactive discussion among customers about various features offering endorsements, questions and answers.

- Step 5: Learning from customers Incorporating feedback from customer in advertising and marketing strategy Identifying new market using experience in new product development.
- Step 6: Online customer service

Improving direct marketing

Traditional direct marketing is done by mail order (catalogs) and telephone (telemarketing). In 1998, $75billion in sales were estimated in US. In 1998, direct marketing via computer reached about $2 billion in the US. This figure is small, but it grew more than 1,000 percent in less than four years. E-commerce Impact Bloch suggests the following EC impacts:

- **Product Promotion:** Electronic commerce enhances promotion of products and services through direct, information rich, and interactive contact with customers.
- **New sales channels:** Electronic commerce creates a new distribution channel for existing products, thanks to its direct reach of customers and the bi-directional nature of communication.
- **Direct saving:** The cost of delivering information to customers over the Internet results in substantial saving to senders (when compared with non electronic delivery or delivery via VAN systems). Major savings are also realised in delivering digitalised product such as music and softwares versus physical delivery.
- **Reduced cycle time:** The delivery of digitalised products and services can be reduced to seconds. Also the administrative work related to physical delivery, especially across international border can be reduced significantly, cutting the cycle time by more than 90 percent. One example is Trade net in Singapore, which reduces the administrative time of port related transactions from days to minutes.
- **Customer service:** Customer service can be greatly enhanced by enabling customer to find detailed information online (for example, FedEx allows customer to trace the status of their packages). Also intelligent agents can answer standard e-mail questions in seconds.

The new age of information-based marketing

The new age of information-based marketing differentiate interactive marketing into four areas:

Retailers vs manufacturers

The role of Retailers and manufacturers are fast reversing in electronic commerce. Retailer's vs Manufacturers have the following methods:

- Market research and customer prospecting
- Market presence method
- Product or services building method
- Information-based products pricing and priority method

Target and micromarketing

Electronic commerce, technology has put target and micromarketing within the research of small business. It gives information to the micro marketers not only about its own business but also consumer's information. Consumer target is two-way flow of communication between seller and buyer. Direct mail and telemarketing are two fast growing ways to micro market. Technology is an essential tool in micromarketing. There are two main types of micromarketing:

- Direct-relationship micromarketing is aimed at stimulating sales at retail establishments through direct contacts with consumers.
- Direct-order micromarketing is focused on selling products directly to consumers in their homes or businesses.

Small business vs large business
The key distinction between small and large business remains access to national and international marketing for advertising purposes.

Regulatory and legal implications of cyberspace marketing
Today, exorbitant advertising cost represents the barrier to reaching the customer effectively. Internet and other networks plays good role in advertising. The major difference between the internet and other I-way advertising media are ownership and membership fees. Due to the empowering effect of internet-facilitated advertising however, the balance of power between large and small companies may change in future.

6.2 Advertising on Internet

In terms of efficiency, the advertising industry is now starting to rise out of its century-long infancy. The new era of innovative advertising can be called as "the new Wanamaker era". John Wanamaker was a devoutly Christian merchant from Philadelphia, who in the 1870s not only invented department stores and price tags but also became the first modern advertiser. He was the first advertiser who bought space in newspapers to promote his chain of stores. He brought a much needed revolution in the advertising world. A few years ago, when the Internet hit the market, advertising industry got a new medium. And soon whole advertising world was taken by storm in capitalising on this media.

According to a recent advertising industry survey, it was revealed that Internet advertising will be generating $428 billion revenues this year. This is a whooping amount in comparison to the last year's $220 billion. It has been now proved that approximately 21 percent of Internet users consider online advertising to be the most relevant advertising system. Internet advertising has overtaken other traditional advertising media such as newspapers, magazines, and radio.

With new platforms for advertising evolving on a continual basis, it can be complicated to choose the right medium. By having a solid understanding of certain aspects of Internet advertising, companies can find the right media mix that works. To achieve success in Internet advertising, you ought to have a clear knowledge of the basics of Internet functioning. Additionally, you should try to understand that some media can work for you better than others depending on your type of customers and the products you offer. Internet advertising would work wonders if your customer base can be from any part of the world and transaction can be handled well over the Internet. It also works well with certain types of products and services and also depends on certain regions. While Internet advertising can directly relate to sales, it can have huge effectiveness on exercises of brand awareness, recognition and networking.

Majority business owners worldwide know that the Internet has now become an essential tool when it comes to running their businesses successfully. However, you should also understand the role played by the Internet in the lives of their customers. You should be capable to locate people who are using the Internet; their key interests in the time spend on the Internet and their preferences to purchase products and services on a daily basis.

Business owners now have got various ways and websites to advertise about their company and offered products and services. Exchange4Media is a leading company that supports and specialises in providing services related to Internet advertising. Exchange4Media is a single stop information platform for Internet based advertising providing the latest news, views, analytical information, and in depth analysis of events. For updated news about Internet advertising, marketing and advertising, or Indian advertising agencies visit www.exchange4media.com.

On-line advertising paradigms
Two different advertising paradigms are emerging in the on-line world, they are:

Active or push-based advertising
Active or push-based advertising is of two types they are:

- **The broadcast model:** Broadcasting message provides a means for reaching a great number of people in short period of time. It mimics the traditional model, in which customer id exposed to the advertisement during TV programming. It basically uses direct mail, spot television, cable television. Text-based broadcast messages also used in advertising in Usenet news groups.

- **The junk mail model:** Disadvantage of the direct mail include relatively high cost per contact. Junk mail is the just poorly targeted direct mail. It is most intrusive of all forms of internet advertising, because it is easily implemented using electronic mail. Junk mail creates unwanted expense as well as an annoyance.

Passive or pull-based advertising

Pull-based advertising provide a feedback loop, company and customers. On-line pull-based advertising includes the following:

- Billboards
- Catalogs or yellow pages directories
- endorsements

Based on the above three, we have the following models:

- **The billboards or www model:** Billboard advertising is often used to remind the customer of the advertising messages communicated through other media. The advantage of this model is no customer charges. In this message must be simple, direct.
- **Catalog and yellow pages directory model:** Traditionally, the most visible directory service of advertising is the yellow pages. Catalog model is the least intrusive model but requires active search on the part of customer. Yellow pages are low in cost in terms of production and placement. Disadvantage of yellow page include lack of timeliness and little creative flexibility.
- **Customer endorsement model:** In endorsements people tell their experiences with products and services. These are in question and answer format.

Niche marketing involves putting strategies in place to attract a certain demographic cluster to buy a certain product or service. Online niche markets are normally set aside from the major intended market so as to concentrate on making profit from a small section of the market. Basic research will make the marketers know what need is there in the general market and narrow it down, say to women or men or even children and see how they can be able to capitalise on these needs in order to make profits. What the common Internet guru says about online niche markets is that they can be able to make faster profits as opposed to the mainstream businesses.

An internet guru will ensure that you are able to maintain consistency in the message you are passing across to your customers. A customer needs to know that in the future they will still be able to access the products and services that are being advertised to them at the present. Depending on the new needs of people in the society, a manufacturer can make themselves a solution. The need is an opportunity to create a niche market and make profits that the mainstream businesses may over look.

A professional niche marketer will be able to advice you on the available opportunities to invest in a business. With the right marketing strategies, this kind of business will be able to grow bigger and even create greater opportunities for other niche markets.

There are some basic things that will attract any customer be it for the general market or a specific target market. If you are working online, it is obvious that you will need an attractive website to attract any client to it. Using different colours, animations and written content is what will make a particular group of people to see it relevant to continue surfing your website beyond the homepage.

The internet is the most affordable and also most effective way to carry out niche marketing. This is because you will be able to reach thousands of people from across the globe without spending a fortune. It will enable you to get the most recent feedback from your customers and potential customers. There are programs that an internet leader can use to help you know what your visitors are looking for and enable you to put the appropriate strategies in place.

Blogs are the most affordable and easiest to use research tools to gather information from your niche market. The blogs will contain information that will grasp the attention of the reader and make them want to visit your website. Colourful animations and strategically placed hyperlinks will increase the traffic to your website. More traffic means that you have increased the chances of making more online sales. Ensure that you place images to advertise your product or service on the blog. Your contact information should also be included in case the customers want to contact you for one reason or another. What the common Internet guru says about online niche markets may not necessarily apply to your kind of market segment. However, getting ideas from different sources may help to improve your profit margins.

6.3 On-Line Marketing Process

The goals of marketing may remain the same, but in electronic commerce they must adapt to new means. This six-step guide suggests ways to accomplish the challenge.

Contrary to the hype, marketing on the Internet is neither as easy nor as straightforward as it appears at first glance. Understanding how this process works can help to unravel the "mystery" of Internet marketing. It includes creating a marketing plan, distributing an advertisement and interacting with customers in a clear step-by-step manner.

Creating a successful marketing plan that fulfills expectations under the given financial, time and human resource constraints are a monumental task. The primary goal is to design a marketing campaign up front that leads to cost savings and revenue increases downstream.

Early Internet marketing efforts were oriented toward technology and consequently emphasised the product and its associated information. In recent years there has been a shift in Internet marketing from only complex, information-heavy products, such as software and hardware with their multitude of features, to more commodity-like items like stock quotes, newsletters or flowers. This has resulted in the emphasis shifting from the product focus to the marketing process of reaching and getting close to the customer. It is this elusive transition from product to process that firms must understand and adapt to in the emerging marketplace.

The unique characteristics of the Internet environment can assist in this monumental task. The ability to reach global markets at no extra cost alone has the potential to break down the prevailing cost barrier separating small businesses from large corporations. Exorbitant advertising costs have traditionally represented the final barrier to growth for small businesses that could not afford national, let alone international, advertising. With no hyperbole intended, the development of effective methodologies for using the Internet as an international marketing tool could well revolutionise the new product introduction process.

However, in the nascent world of electronic commerce, traditions and norms are few and far between, and the basic issues are just beginning to be addressed. A totally new approach is required to address the fundamental marketing issues that need to be resolved for success in the electronic marketplace. These issues are far-ranging. How to position and differentiate the product in the eyes of the growing Internet population estimated at 20 to 30 million with a 10 percent monthly growth rate? How to generate pull forces emanating from the company that attract and lure the potential customer into visiting the company's server? How to effectively communicate online with the interested customer? How to innovate continuously so the customer returns? To address these basic issues and others, we present the following six-step interactive marketing process (outlined in "The Interactive Marketing Process on the Internet").

Step 1: Segment and identify the audience

Market segmentation is the process of dividing the market into separate and distinct customer groups. Its purpose is to determine differences among customers that may be of consequence in choosing whom to target and how--a prerequisite for product positioning.

Segmentation allows companies to identify their target audience, all of whom need to know about the existence of a better product and still need to be convinced that they need one!

Typical segmentation approaches that need to be reengineered and carried out on the Internet include the following:
Demographic approaches categorise the market in terms of population characteristics such as age, sex, income, occupation, family size or religion. The goal is to find the relationship between profits or volume and the identifiable demographic characteristics, and to use those characteristics for formulating the marketing programs. How do we do this without a centralised directory or organisation keeping tabs on Internet users?

Benefit or behavioural approaches divide the market according to how people behave, their attitudes or the benefits they seek. One type of Internet behavioural segmentation is based on differentiating between people who use online firms primarily for transactions versus those who use them primarily for prospecting and discovering information.

Volume approaches distinguish heavy, medium, light or nonusers of a product category and, after determining the profitability of the product and whether its users differ in some special way, focus product sales on the right volume target. For example, marketing programs focused on business users are a response to volume segmentation.

Business specialisation approaches categorise the market by type or sise of industry or institution. This form of segmentation applies primarily to business or institutional markets.

The key question remains: How to accomplish all these segmentation strategies on the Internet's 20 million to 30 million users? Because the interactive marketing strategy hinges on customer satisfaction, careful identification and segmentation of the population on the Internet is vital. Segmentation analysis is based on the premise that large markets such as the Internet that appear to be heterogeneous can actually be divided into smaller homogeneous segments. These smaller segments provide opportunities for developing highly customised marketing strategies designed to elicit particular responses from the target audience.

Newsgroups on the Internet provide a convenient starting point. An estimated 6,000 newsgroups are organised into a hierarchy that provides a loose form of a priori segmentation. It is very important to further reduce these newsgroups into segments that are interested in specific areas and thus could benefit from target products. Advertisers should start by reading the frequently asked questions (FAQ) files associated with many newsgroups to determine the exact nature of the forum and acceptable use policies. Within some Internet forums, commercial activity, no matter how subtle, is considered inappropriate and will be met with strong disapproval. The next step for advertisers is to understand the selected newsgroups in order to tailor the product information.

Sorting through the hundreds of newsgroups is extremely labor intensive. For the immediate future, at least, the costs of Internet-facilitated marketing will most probably be a function of the labor involved in the segmentation phase, especially as Internet growth pushes the number of forums to the tens of thousands.

In sum, segmentation means "picking your spots," focusing more on business in one part of the market than another to gain a more profitable mix. Success will depend on selecting the right segment and creating an appropriate package with the image, products and services required to meet those needs. This last step creates perceived extra value and institutional distinctiveness in electronic markets.

Differentiation and positioning
Central to all businesses is product differentiation--success in appealing to desirable market segments so as to maintain visibility and create defensible market positions. Differentiation is based on the view that charging a better price or achieving higher profit on products or services is dependent on the ability to differentiate oneself from the pack and forge an institutional identity. As the blurring of distinctions among firms in electronic markets increases, survival requires that you identify your unique role in the marketplace in terms of value to the customer.

Although there is relatively little differentiation among online firms today, most will have to choose a niche in the market rather than try to be all things to all people. This implies that there should be some extra value in doing business with the online firm. Thus differentiation is the process of focusing on the identification of tangible and intangible customer needs (for both consumer and corporate markets) and creating an appropriate superior cluster of products, value-added services and image to meet those needs.

While the notion of differentiation is easy to articulate, it is often difficult to execute. Added to that, there is much confusion about what differentiation really means in the context of electronic markets and how to go about finding your best market niche. Segmentation is only one technique for creating value-added differentiation. Differentiation goes beyond segmentation to other techniques--product bundling and packaging, price, service quality, delivery systems and organisation, and strategic themes like rewarding customer loyalty-that create perceived extra value in the eyes of the customers and thereby establish the institutional distinctiveness required for survival.

Step 2: Create a coherent advertising plan

The product differentiation plan should carefully lay out the advertising campaign. Online advertising is a form of investment similar to other investments to improve and expand business. The returns depend on the planning and thought that precede the actual commitment and expenditure of advertising dollars. By first developing an effective advertising plan, firms increase the likelihood of a positive return on the advertising investment.

The first step in developing your advertising plan is to specify your advertising goals. Why are you advertising online? What do you want to achieve? Everyone wants advertising to increase business, but for your advertising plan to work you must be precise. Goals for your advertising include increasing awareness of your business, attracting competitors' customers, increasing the likelihood of keeping current customers and developing their loyalty, and generating immediate sales or sales leads.

You may want your advertising to achieve all of these goals plus some others. What is important is that you prioritise your goals. Keep in mind that advertising works best when it is developed to meet one specific goal at a time.

Once you have determined your advertising goals, select the target audience for your message. Advertising that tries to reach "everyone", rarely succeeds. Successful advertising is written with a specific customer in mind. Try to picture the customer you must reach in order to achieve your advertising goals.

Once you know who your target audience is and what they are looking for in terms of the product or service you offer, you can decide what your advertising will say. Your advertising should "speak" convincingly to your target audience, explaining the important benefits your product or service offers.

New advertising options are becoming increasingly available. In the online approach, you can place ads in newsgroups, bulletin boards, Yellow Page directories and Web pages. Where you place your advertising should be guided by a simple principle: Go where your target audience will have the highest likelihood of seeing or hearing it. As you consider media choices, look for one that fits your advertising goals, reaches your target efficiently and cost-effectively, and is within your budget.

Traditional advertising copy tends to be linear in nature and typically assigns the customer a passive role. Interactive advertising, in which the customer has control over what he or she sees, is known as nonlinear advertising and is made possible through the use of hypermedia that allow the reader to click on specially highlighted items to immediately access more information. The challenge in this new environment is the creation of appropriate interactive content that is compelling, informative and nonlinear. Several variations of hypermedia documents need to be developed and experimented with to determine overall guidelines for the development of effective promotional materials tailored specifically for this medium.

Interactivity alone is not enough. To support it, value-laden content is essential. The Internet community appreciates quality information that adds value, since nothing is more obvious than empty promises. So do not expect product advertising alone to be sufficient. To support content-oriented marketing, companies often publish or mail electronic newsletters that report relevant innovations or news. This way, each customer can quickly learn about and assess the comparative advantages of various products in the news.

Content-oriented marketing requires a company to master a broad range of knowledge: the technology in which it competes, its competition, its customers, new sources of technology that can alter the competitive environment, and its own organisation, capabilities, plans and way of doing business. Armed with this mastery, companies can put it to work in three essential ways: integrate the customer into the process to guarantee a product that is tailored not only to the customer's needs and desires but also to the customer's strategies; generate niche thinking to use the company's knowledge of channels and markets to identify segments of the market that the company can own; and develop the infrastructure of suppliers, vendors, partners and users whose relationships will help sustain and support the company's reputation and technological edge.

Step 3: Get the content to the customer

Dissemination of information about the company and its products via newsgroups, listservs and e-mail will constitute a cost-effective method to reach large numbers of individuals in various target audiences. Although on the surface this closely resembles a traditional push strategy, an important difference lies in the ability to build in valuable feedback loops.

Alongside this approach, however, a strong pull-based marketing (marketing by invitation, not intrusion) is a more effective method of marketing on the Internet. One of the essential ingredients of pull-based marketing is the skilled management of customer information and their activities on the Internet so that the most responsive customers can be identified through the use of predictive models. These models will enable you to send the right message, at the right time, to the right people in the right form.

Feedback loops should be incorporated in the strategy to help continuously drive the marketing program to greater and greater efficiencies and productivity. These loops will capture and store respondent names, response rates to various mailings, and customer activity in terms of access logs of the interactive content stored on the Web page.

Companies must explore the accumulation of customer data through nonintrusive means. Under traditional circumstances, it is difficult for most companies, particularly for start-ups where contact costs are high, to obtain data on their customers, their interests and demographic variables. In contrast, once acquired and analyzed, online information can be immediately used to feed the modeling process and change the interactive content for greater effectiveness. The expected results of this vastly increased flexibility are greater market share, cross-selling successes, and improved customer retention and satisfaction.

Step 4: Correspond and interact with customers

One of the most powerful features of Internet-facilitated marketing is the variety of potential interactions possible. Among them are four levels of interaction with potential customers:

- **Passive interaction via anonymous FTP sites:** A broad variety of information about the company, product and other related material can be placed in a public area accessible by any interested party by simply dialing in and using the user name: anonymous and password: guest. The goal of this well-known method is to provide a channel where the customer is completely unfettered to do as he or she pleases with no sales pressure.
- **Direct interaction (one-on-one) via e-mail or chat facility:** The goal of direct interaction is to answer questions, answer requests for more information and follow up on a customer.
- **Group dialog between company and customers through bulletin boards, newsgroups and other forums:** The goal of group interaction is to encourage discussion among customers, provide an easy way to answer questions about unanticipated problems that may occur during product usage and simply build a database of long-term, experience-based knowledge about the product and its usage. To do this, create a Usenet news group for discussion of your products. By creating your own forum, moderating the submissions (filtering out irrelevant postings) and providing high-quality information, not only about your products but about your particular commercial sector, you can establish a growing readership in much the same way that newsstand magazines function. Video conferencing on the Internet using the Multicast Backbone (MBone) facility where several distributed parties can actively participate and monitor product-related activities. MBone allows the digital broadcast of live audio, video and text with interaction among the participants through a common whiteboard. MBone is a relatively new tool and shows the potential of digital video broadcasts to subscribing audiences.

Step 5: Learn from customers

Since good ideas are often a company's scarcest resource, efforts to encourage and reward their generation, dissemination and application in the further development of products will build both relationships and profits. One part of learning is evaluation. A real-world test of the marketing plan will provide estimates of marketing-plan productivity, suggestions for improving its productivity and a disaster check.

The market provides measures of consumers' responses to those elements that have been pretested--the product, the price and the communication plan. It also measures the acceptance of these measures. By measuring levels of consumer awareness, product trial, repeat purchase, market share and sales volume, the market gives some indication of the productivity of the elements of the marketing plan.

The information regarding the tracking of accesses to the company's materials over the Internet can be compared with any tangible results obtained through other channels (inquiries, contacts with distributors, end sales, references in literature). This analysis will be used to determine how the company's promotional and marketing strategy and materials can be altered to better suit the needs of the target groups they are reaching as well as to determine how best to reach the target groups not yet responding.

Step 6: Provide customer service and support

Online customer service is an essential part of the electronic commerce chain, where people are more in touch with one another than in any other type of market. This has both good and bad consequences. Word about a new product from a small company can spread quickly and widely if there is excitement; conversely, problems can be reported with equal speed and breadth. Thus companies must be constantly on their toes when it comes to customer service.

When problems confound users, good vendors know the support they provide must run the gamut of phone, fax, CD-ROM, third-party and online services. Online services can include bulletin boards and knowledge bases provided directly by the vendor, public forums or special interest groups (SIGs) on commercial services, or newsgroups and archives on the Internet. Increasingly, however, vendors and users alike are turning to online support over other options for a variety of reasons. Going online may seem impersonal, but it's often less hassle than phoning up a technician who may or may not be there, explaining your problem to a voice-mail machine, providing documentation for your symptoms and then waiting for a reply.

Brand loyalty through customer service needs to be cultivated among online customers so that they can come back for repeat purchases. Few consumers seem to demonstrate lack of brand loyalty quite like those online. When information is needed, the customer is more interested in the source than in a particular brand or even small variations in price. So there is a definite need to develop loyalty-building methods in the electronic marketplace. The question is how and in what form.

Loyalty and service quality are often interrelated and involve several questions: What does service quality mean in online environments? What are the dimensions of it? Is it based on the quality and speed of delivery, presentation and interface clarity and ease of usage, organisation of various products on electronic shelves, and speed of transaction and settlement?

Clearly, marketing strategies and processes must undergo significant modifications to succeed online. Both marketing personnel and the IS people who support their activities will have learn about each other's skills to achieve the results that their organisation desires.

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6.4 Market Research

Market research is an important tool for any organisation seeking a commercial opportunity, particularly for small firms looking to grow their business. From discovering a gap in the market to ensuring customer satisfaction and planning effective marketing campaigns, research can provide the market intelligence needed to encourage success, enhance competitiveness and maximise profits.

Online research has revolutionised research, providing both opportunities and challenges to researchers and users of research.

On the positive side, the growth of online technology has enabled researchers to offer clients a fast and cost effective method for reaching their target audiences. Online research as a proportion of the whole market is growing rapidly, with the establishment of specialist online agencies and new methodologies coming into the fore ever year that passes.

According to Richard Windle, spokesperson for MRS, "Internet research offers many opportunities, most of which are currently unexplored. This is an exciting time for companies to consider the possibility of online surveys and a definite growth area for the future. However, it is important that its significant potential is harnessed correctly."

Advantages

There are a number of benefits to commissioning online research, including:

- large numbers of respondents can be researched at one time
- international boundaries no longer need to be an obstacle to research – worldwide research can be conducted at the click of a button
- it can be an inexpensive way to conduct large research projects - it is possible to get thousands of responses for just a few thousand pounds
- Pre-screened panels. Most large research suppliers have access panels which provide an easily accessible, reliable respondent base which can respond promptly to online questionnaires
- It allows for a very rapid turnaround – research can be undertaken and results received within a few days. Many research suppliers now offer same-day delivery of results

For a business which needs to gain a general view from a large cross-section of the population, and in as short a time as possible, there is no doubt that online research offers a viable benefit.

Commissioning an online research

As with any other form of market research, there are certain guidelines which organisations are advised to follow when commissioning online research. Three key considerations are:

- Provide the researcher with a detailed brief. It is essential that both parties understand exactly what you are hoping to achieve from the research to avoid confusion and disappointment later on
- Focus on the important issues. Is getting your results quickly more important than gaining in-depth information? Decide what is most important to you for this exercise
- Make certain that the researcher has the necessary resources to interview a representative sample. This is essential for achieving accurate results. There is a concern that internet research could allow for greater levels of deception from respondents. Pre-screened access panels greatly reduce this risk and allow agencies fast access to a representative audience

A word of warning

Despite its convenience, online research should not be undertaken lightly, nor should it be regarded as a substitute for traditional research methods. Online research has limitations which need to be considered from the outset. It may be that, in some instances, these outweigh the benefits. These include:

- DIY surveys (where the clients put the questions directly to the respondent without a researcher as an intermediary) compromise objectivity of questioning and impartial interpretation
- The internet is a limited medium from which to draw a truly representative sample. Research conducted via the internet can only target internet users and, more specifically, it can only target internet users who are prepared to answer online questionnaires – still a small percentage of some populations, especially in the developing world
- Due to its rapid evolution and the huge growth potential of the online research market, there is still limited guidance governing the practise of internet research. However, MRS' Code of Conduct and specific guidelines on online research are a valuable source of information

These considerations are not intended to denigrate the valuable role that online research has to play in today's fast-paced business environment. If a business opts for online research then the research should be undertaken with the same degree of responsibility that would accompany a more traditional method of market research. For instance, the respondent interface must be designed with social expertise and sensitivity to the technology users; the questions should be meticulously planned to minimise misinterpretation; and care should be taken that the right audience is targeted.

Combining research techniques

Although the potential for higher speed and lower costs involved in online research makes it an attractive method for interviewing a large sample of people, care should be taken that over reliance on the internet does not allow your business to lose its human touch.

With online research, possibly more than with any other variety, there is a strong need for creativity. Grafting old ways onto new technologies will not assist the development of online research and will result in the internet losing its value to businesses as a research tool. Companies looking to take advantage of the benefits that new technology allows must ensure that they are pushing for the highest professional standards and constantly challenging the norm.

Potentially, the most valuable use of online research is in conjunction with a more traditional form of market research, whether it be quantitative or qualitative. Completing a questionnaire on the internet could be offered as a substitute to telephone questionnaire. Alternatively, a business can conduct a broad-brush online research, and follow up the outcome with more targeted, personal interviews. One result of the evolution of online research is clear – market research is now accessible to most businesses and provides them with yet another route for seeking the opinions of their customers.

Richard Windle concluded, "Internet surveys are one of the most exciting new techniques to be introduced into the market research mix in the last decade. How they will progress is uncharted territory. Online research is already replacing traditional techniques in many sectors, but we have yet to see how its role will evolve as we progress further into the 21st century."

Summary

- The roles of retailers and manufacturers are fast reversing in electronic commerce.
- Point of Sale (POS) scanning system have played a major role in shifting power from manufacturer to retailers, as large innovators like Wal-Mart have amply proven.
- Product or service bundling is a classic marketing strategy in which two or more complementary products and or services are offered as a package at a discounted price.
- In electronic commerce, technology has put target and micromarketing within the reach of small business.
- Direct relationship micromarketing is aimed at simulating sales at retail establishments through direct contact with consumers in their homes.
- Direct order micromarketing is focused on selling products directly to consumers in their homes or businesses.
- Catalogs or yellow pages directories are searchable or browsable databases of advertising.
- Traditional direct marketing is done by mail order (catalogs) and telephone (telemarketing).
- Customer service can be greatly enhanced by enabling customer to find detailed information online (for example, FedEx allows customer to trace the status of their packages).
- In terms of efficiency, the advertising industry is now starting to rise out of its century-long infancy.
- Broadcasting message provides a means for reaching a great number of people in short period of time.
- Online niche markets are normally set aside from the major intended market so as to concentrate on making profit from a small section of the market.
- The goals of marketing may remain the same, but in electronic commerce they must adapt to new means.
- Market research is an important tool for any organisation seeking a commercial opportunity, particularly for small firms looking to grow their business.

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Self Assessment

1. What refers to the searchable or browsable databases of advertising?
   a. Catalogs
   b. Billboards
   c. Endorsement
   d. Micromarketing

2. Traditional direct marketing done by telephone is _____.
   a. telemarketing
   b. direct-order micromarketing
   c. information-based marketing
   d. direct-relationship micromarketing

3. _____ is aimed at stimulating sales at retail establishments through direct contacts with consumers.
   a. Telemarketing
   b. Direct-order micromarketing
   c. Information-based marketing
   d. Direct-relationship micromarketing

4. _____is focused on selling products directly to consumers in their homes or businesses.
   a. Telemarketing
   b. Direct-order micromarketing
   c. Information-based marketing
   d. Direct-relationship micromarketing

5. Which is the final step of interactive marketing process on the internet?
   a. Online customer service
   b. Segment and identify potential customers
   c. Create promotional, advertising and educational material
   d. Interacting with customers

6. Electronic commerce creates a new _____channel for existing products, thanks to its direct reach of customers and the bi-directional nature of communication.
   a. distribution
   b. production
   c. marketing
   d. retailing

7. Which is the first step of interactive marketing process on the internet?
   a. Online customer service
   b. Segment and identify potential customers
   c. Create promotional, advertising and educational material
   d. Interacting with customers

8. Which of the following statements is false?
   a. In electronic commerce, technology has put target and micromarketing within the reach of small business.
   b. Customer targeting is one way to get closer and to create and sustain a two-way flow of communication between the seller ad the buyer.
   c. Direct mail and telemarketing are two fast growing ways to micro markets.
   d. Direct order micromarketing is aimed at simulating sales at retail establishments through direct contact with consumers in their homes.

9. Which of the following statements is false?
   a. Electronic commerce detoriates the promotion of products and services through direct, information rich and interactive contact with customers.
   b. The delivery of digitalised products and services can be reduced to seconds.
   c. Customer service can be greatly enhanced by enabling customer to find detailed information online.
   d. The intelligent agents can answer standard e-mail questions in seconds.

10. Match the following.

1. Product or service bundling	A. Classic marketing strategy
2. Yellow pages directories	B. Telephone marketing
3. Telemarketing	C. Searchable or browsable databases
4. Mail order	D. Catalogs

   a. 1-A, 2-B, 3-C, 4-D
   b. 1-B, 2-A, 3-D, 4-C
   c. 1-D, 2-C, 3-B, 4-A
   d. 1-A, 2-C, 3-B, 4-D

Chapter VII

Consumer Search and Resource Discovery

Aim

The aim of this chapter is to:

- define the term information search
- explain the purchase consummation phase
- enlist different types of consumer search activities

Objectives

The objectives of this chapter are to:

- describe the post purchase interaction phase
- illustrate the commerce catalogue
- discuss the information filtering system

Learning outcome

At the end of this chapter, you will be able to:

- understand the concept of information retrieval
- talk about the mail-filtering agents
- define electronic white pages

7.1 Information Search

Consumer information search is defined as the degree of care, perception and effort directed toward data related to the decision problem. It is of two types.

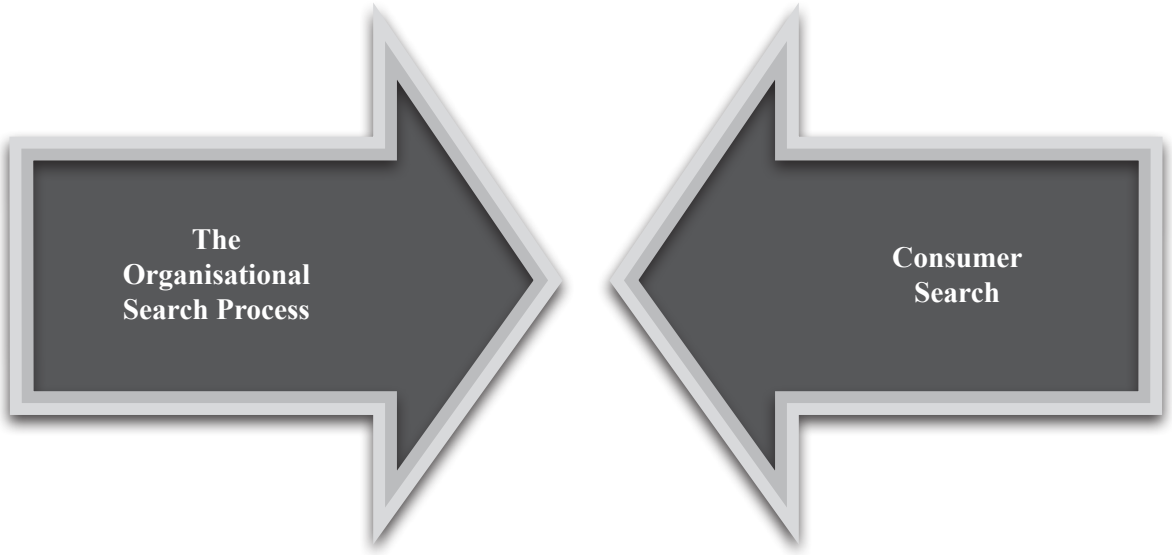

Fig. 7.1 Types of information search

- **The organisational search process:** It can be viewed as a process through which an organisation adapts to change in its external environment as new suppliers, new products, and new services. It is an activity designed to balance the cost of acquiring information with the benefits of improved final decisions. This process can be determined in part by market characteristics.
- **Consumer search:** Needs to examine how particular aspects of the buyers' situation and the shopping experience that is being sought affects the search process.

7.1.1 Purchase Consummation Phase

It includes mercantile protocols that specify the flow of information and documents associated with purchasing and negotiation with merchants for suitable terms like price, availability and delivery dates. The buyer and seller must interact to provide mercantile transaction. Mercantile transaction is the exchange of information between the buyer and seller followed by necessary payment. It requires the following transactions:

- Buyer contacts to purchase product or service and it performed through online - www, email
- Vendor states price
- Buyer and vendor may or may not engage in negotiation
- If satisfied buyer authorises payment to the vendor
- Vendor contacts his/ her billing service to verify it

Merchantile's process using Digital Cash includes the following protocol:

- Buyer obtains anonymous electronic cash from the issuing bank
- Buyer contacts the seller to purchase or buy a product
- Seller states the price
- Buyer sends the e-cash to the seller
- Seller contacts his bank to verify the validity of the e-cash
- Bank gives positive signal to the seller after ensuring authentication
- Seller delivers the product to the buyer
- Customer gets the product delivery

7.1.2 Post Purchase Interaction Phase

It includes customer service and support to address customer complaints, products returns and product defects. In this, we have three issues:

- **Inventory issues:** To serve a customer properly company should inform the right way when an item is ordered and sold out.
- **Database access and compatibility issues:** The customer can access required data from the large amount of information managed by the vendors. It is supported to the customer in the information super highway.
- **Customer service issues:** Here customer questions about the product and other details in their mind regarding to product can be resolved.

It consists of eight different activities that are grouped into three phases:
Presale phase: Consists of two activities namely:

- Customer enquiry and order planning and order generation: Once the merchant receives the order enquiry they need to plan the products by sales forecast with the help of people close the customer either in the sales force or in the marketing group at company level and at the same time a group of in manufacturing function details.
  - A capacity plan that specify how much money spend, how many people will be hired and how inventory will be created.
  - Order planning leads to order generation and orders are generated by different ways like sales force broad cast, sends emails to customers, create www web pages etc.
- Cost estimation and price of product services
  - Pricing is the bridge between the customer needs and company capabilities.
  - Company does not understand how to execute order based pricing in online markets.
  - Pricing at individual order levels depends on understanding the value to the customer. Although order based pricing is difficult to work that requires meticulous thinking and deliberate execution.

Product service/delivery: It consists of four activities:

- Order receipt and entry: After acceptable price code the customer enters the order receipt and entry phase of order management cycle (OMC). This was under the purview of departments title customer service, order entry and the inside sales desk. These departments are staffed by customer service representatives.
- Order selection and prioritisation: The customer service representatives are responsible for choosing which orders to accept and which orders to decline. In fact all customer orders are created equal but some are simply better than others. The desirable orders are those that fit the capabilities and offer healthy company put efforts into order selection link it their business strategy to make more money regardless of production capacity. Company gain by order prioritisation.
- Order scheduling: In this phase, the prioritised orders get started into actual production or Operation sequence. It is difficult because various functional departments like marketing, sales, customer service and production. Due to this differentiation they may have conflicting goals. Compensation systems and communication between the systems is not existent. For example, the customer service reporting to sales department they may separated from physically (long distances) or production scheduling which Reports to manufacturing unit which is far away.
- Order full fillness and distribution: Here actual service /product are made where details vary from industry to industry and it involves order fulfillment that requires multiple functions in multiple locations. The different parts of the order may be created in different manufacturing units and are merged at another site.

Post sale interaction phase: It consists of two different activities namely:

- Order billing and account payment management: After the product distribution, billing is handled by the finance staff who view their job is getting the bill out efficiently, collectively and quickly. Billing is designed to ensure the needs and interests of the company but not the interest of the customers.
- Customer services and support: It plays an important role in the company profit equation. It includes elements like physical installation of products, repair, maintenance and Customer training and equipment upgrading and disposal.

7.1.3 Types of Consumer Search Activities

For our purposes here, information may be considered to be knowledge obtained about some fact or circumstance. And in the context in which we are dealing within this article such knowledge is to be used in a consumer behavior situation.

The term search refers to mental as well as physical information seeking and processing activities which one engages in to facilitate decision making regarding some goals object in the marketplace. Consequently search may be undertaken in order to find out about products, prices, stores, and so on, related to the product. Search may be categorised as pre-purchase or ongoing (based on the purpose of search) and as internal or external (based on its source).

Pre-purchase search

This is typical form of search we associate within the purchasing context. If the consumer has recognised a problem, then pre-purchase search would be engaged in.

Ongoing search

This is characterised as search activities independent of specific needs or decisions; it does not occur in order to solve a recognised and immediate purchase problem. Thus, if a consumer were searching with an interest in a product but with no demand for the product the search would be ongoing rather then pre-purchase.

Ongoing search for automobiles may include regularly reading automotive magazines. Pre-purchase search, however, might involve use of the same magazines but only reading them every few years when a new car purchase is about to occur Notice that these search purposes are different but they involve the same activities consequently they are difficult to separate in practice. Table offers a summary of the similarities and differences between these two types of search in terms of determinants, motives, and outcomes.

Internal search

This is the first stage to occur after the consumer experiences problem recognition. It is a mental process of recalling and reviewing information stored in memory that may relate to the purchase situation. For instance a consumer may recall that a friend made very negative comments about a particular brand of coffee maker (which the consumer is now considering buying) while playing bridge several months ago. Notice that these derogatory comments were stored in the consumer's memory and now have some into play by affecting her attitudes unfavourably toward the brand. Thus, the consumer relies on any attitudes information, or past experiences that have been stored in memory and can be recalled for application to the problem at hand. The recall may be immediate or may occur slowly as a conscious effort is made to bring the information to mind. Once recalled the information may be used in the evaluation process as the consumer seeks to resolve the purchase decision confronting her.

The reliance on internal search may be a very important part of shoppers' strategies. For instance one study showed that most shoppers rely on experiential information sources in retail shopping trips. That is, they run inward tot heir previous shopping experiences for making decisions about where to shop. Only a limited number of people engage in any external information search (whether from family, friends or advertisements prior to making a major shopping trip. This situation makes especially difficult to overcome a negative image or mistaken impression that people in the market may have of a retail stores. Once the store has been removed from the consumer's mental set of acceptable alternatives it may be quite difficult to get that consumer to reconsider or re-experience the store.
The term pre-search decision making has been used to denote the decisions consumers make before actively engaging in external search for information on product and store alternatives. Because consumers have been exposed to advertising messages over a long period and had previous purchase experience with a brand, there is likely to be considerable information stored in their memories. When the decision process is initiated consumers will rely on this stored information to help them make a variety of decisions before engaging in external information seeking. Thus, a considerable amount of decision making may be done prior to external search. Note that consumers who have already made pre-search decisions are ready to buy and may require minimal amount of persuasive selling effort.

7.2 Information Retrieval

An information retrieval system is designed to analyse, process and store sources of information and retrieve those that match a particular user's requirements [Chowdhury, 2004]. Modern information retrieval systems can either retrieve bibliographic items, or the exact text that matches a user's search criteria from a stored database of full texts of documents.

While many features of conventional text retrieval systems are equally applicable to multimedia information retrieval, the specific nature of audio, image and video information have called for the development of many new tools and techniques for information retrieval. Thus, modern information retrieval systems deal with storage, organisation and access to text, as well as multimedia information resources.

The concept of information retrieval pre-supposes that there are some documents or records containing information that have been organised in an order suitable for easy retrieval. The documents or records that we are concerned with contain bibliographic information which are quite different from other kinds of information or data. We may take a simple example. If we have a database of information pertaining to an office, or a company, all we have are the different kinds of records and related facts, like names of employees, their positions, salary, and so on, or in the case of a manufacturing company, names of different items, prices, quantity, and so on.

The following situation clearly reflects the purpose of information retrieval systems:

- a writer presents a set of ideas in a document using a set of concepts
- somewhere there will be some users who require the ideas but may not be able to identify those or there will be some persons who lack the ideas put forth by the author in his/her work
- information retrieval systems serve to match the writer's ideas expressed in the document with the users' requirements or demands for those

Thus, an information retrieval system serves as a bridge between the world of creators or generators of information and the users of that information. The information resources are processed, indexed and stored in an appropriate way. The users interact with the system through a user interface. The user queries, submitted through the interface are matched with the index and the matching items are retrieved.

The retrieval process begins with a user query. A user with an information need interacts with the information retrieval system through the user interface and submits a query. A search query may contain a simple keyword or a phrase, or may contain more than one keyword or phrase combined with some search operators. The retrieval system matches each search term with the inverted index file, and retrieves the matching items. The major characteristics of this type of online information retrieval system are as follows:

- Users get access to remote databases that are often many in number and large in sise;
- Many databases can be searched using a single search interface;
- Database records mainly contain bibliographic details of records with abstracts, and sometimes with additional information, such as citations, etc.; only some databases contain full text information;
- Service providers have their own search interface with good search and retrieval capabilities;
- Users need to register with the service providers;
- Users are charged for searching as well as for the content; and
- Modern online service providers have web interfaces with good search features and hyperlinked records/ information

Although each online search service provider, such as Dialog, Ovid, STN, etc., has its own proprietary retrieval engine and user interface, the commonly available search and retrieval features are as follows [Chowdhury and Chowdhury, 2001a]:

- Users can select one or more databases to search
- Novice and expert search modes are available
- A search can be conducted with one or more keywords or phrases
- Common search facilities include: Boolean search, truncation (some systems also allow users to search for the variant forms of a word), proximity search, and field search (number of fields that can be searched depends on the chosen database)
- Searches can be limited by applying certain restrictions, such as language, date, type of material, etc.
- A search can be conducted for a range of period (date of publication, for example)
- Some systems show the frequency of occurrence of the search terms in the output
- Dialog provides a unique facility of searching through a common index file that allows users to select databases appropriate for a search topic
- Some systems provide access to thesauri through the search interfaces
- Search results can be sorted and sometimes ranked by selected criteria

7.3 Commerce Catalogue

A directory performs an essential support function that guides customers in a maze of options by enabling the organisations of the information space. Directories are of two types:

- **The white pages:** used to people or institutions
- **Yellow pages:** used to consumers and organisations

Electronic white pages

Analogues to the telephone white pages, the electronic white pages provide services from a static listing of e-mail addresses to directory assistance. White pages directories, also found within organisations, are integral to work efficiency. The problems facing organisations are similar to the problems facing individuals. A white pages schema is a data model, specifically a logical schema, for organising the data contained in entries in a directory service, database, or application, such as an address book.

A white pages schema typically defines, for each real-world object being represented:

- What attributes of that object are to be represented in the entry for that object?
- What relationships of that object to other objects are to be represented?

One of the earliest attempts to standardise a white pages schema for electronic mail use was in X.520 and X.521, part of the X.500 a specification that was derived from the addressing requirements of X.400.

In a white pages directory, each entry typically represents an individual person that makes the use of network resources, such as by receiving email or having an account to log into a system.

In some environments, the schema may also include the representation of organisational divisions, roles, groups, and devices. The term is derived from the white pages, the listing of individuals in a telephone directory, typically sorted by the individual's home location (e.g. city) and then by their name.

White pages through x.500: One of the first goal of the X.500 project has been to create a directory for keeping track of individual electronic mail address on the internet.
X.500 offers the following features:

- Decentralised maintenance
- Each site running X.500 is responsible only for its local part of the directory.

- Searching capabilities: X.500 provides powerful searching capabilities i.e. in the white pages; you can search solely for users in one country. From there you can view a list of organisations, then departments, then individual names. This represents the tree structure.
- Single global name space: X.500 provides single name space to users.
- Structured information framework: X.500 defines the information framework used in the directory, allowing local extensions.
- Standards-based directory: X.500 can be used to build directory applications that require distributed information.

7.4 Information Filtering

An information filtering system is a system that removes redundant or unwanted information from an information stream using (semi) automated or computerised methods prior to presentation to a human user. Its main goal is the management of information overload and increment of the semantic signal-to-noise ratio. To do this the user's profile is compared to some reference characteristics.

A notable application can be found in the field of email spam filters. Thus, it is not only the information explosion that necessitates some form of filters, but also inadvertently or maliciously introduced pseudo-information. On the presentation level, information filtering takes the form of user-preferences-based newsfeeds, etc.

Recommender systems are active information filtering systems that attempt to present to the user information items (movies, music, books, news, webpage) the user is interested in. Information filtering describes a variety of processes involving the delivery of information to people who need it. This technology is needed as the rapid accumulation of information in electronic databases.

Information filtering is needed in e-mails, multimedia distributed system and electronic office documents. The features of the information filtering are:

- Filtering systems involves large amounts of data (gigabits of text).
- Filtering typically involves streams of incoming data, either being broadcast by remote sources or sent directly by other sources like e-mails.
- Filtering has also been used to describe the process of accessing and retrieving information from remote database.
- Filtering is based on descriptions of individual or group information preferences, often called profiles.
- Filtering system deal primarily with textual information.

7.4.1 Email Filtering

It is the processing of e-mail to organise it according to specified criteria. Most often this refers to the automatic processing of incoming messages, but the term also applies to the intervention of human intelligence in addition to anti-spam techniques, and to outgoing emails as well as those being received. Email filtering software input email.

For its output, it might pass the message through unchanged for delivery to the user's mailbox, redirect the message for delivery elsewhere, or even throw the message away. Some mail filters are able to edit messages during processing. Common uses for mail filters include removal of spam and of computer viruses. A less common use is to inspecting outgoing e-mail at some companies to ensure that employees comply with appropriate laws. Users might also employ a mail filter to prioritise messages, and to sort them into folders based on subject matter or other criteria

7.4.2 Mail-Filtering Agents

Users of mailing-filtering agents can instruct them to watch for items of interest in e-mail in-boxes, on-line news services, electronic discussion forums, and the like. The mail agent will pull the relevant information and put it in the users' personalised newspapers at predetermined intervals. Mail filters can be installed by the user, either as separate programs, or as part of their e-mail program (e-mail client). In e-mail programs, users can make personal, "manual" filters that then automatically filter mail according to the chosen criteria.

Most e-mail programs now also have an automatic spam filtering function. Internet service providers can also install mail filters in their mail transfer agents as a service to all of their customers. Corporations often use them to protect their employees and their information technology assets.

7.4.3 News-Filtering Agents

These deliver real-time on-line news. Users can indicate topics of interest, and the agent will alert them to news stories on those topics as they appear on the newswire. Users can also create personalised news clipping reports by selecting from news services. Consumers can retrieve their news from through the delivery channel of their choice such as fax, e-mail, www page, or lotus notes platform.

Summary

- Consumer information search is defined as the degree of care, perception and effort directed toward data related to the decision problem.
- The organisational search process can be viewed as a process through which an organisation adapts to change in its external environment as new suppliers, new products, and new services.
- Purchase consummation phase includes mercantile protocols that specify the flow of information and documents associated with purchasing and negotiation with merchants for suitable terms like price, availability and delivery dates.
- Post purchase interaction phase includes customer service and support to address customer complaints, products returns and product defects.
- The term search refers to mental as well as physical information seeking and processing activities which one engages in to facilitate decision making regarding some goals object in the marketplace.
- An information retrieval system is designed to analyse, process and store sources of information and retrieve those that match a particular user's requirements
- A directory performs an essential support function that guides customers in a maze of options by enabling the organisations of the information space.
- Analogues to the telephone white pages, the electronic white pages provide services from a static listing of e-mail addresses to directory assistance.
- An information filtering system is a system that removes redundant or unwanted information from an information stream using (semi)automated or computerised methods prior to presentation to a human user.
- Users of mailing-filtering agents can instruct them to watch for items of interest in e-mail in-boxes, on-line news services, electronic discussion forums, and the like.

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Self Assessment

1. _____ needs to examine how particular aspects of the buyers' situation and the shopping experience that is being sought affects the search process.
   a. Organisational search
   b. Information search
   c. Consumer search
   d. Knowledge search

2. State which among the following statement is true?
   a. Mercantile transaction is the exchange of information between the buyer and seller followed by necessary payment.
   b. Mercantile transaction is the exchange of payment between the buyer and seller.
   c. Mercantile transaction is the exchange of information between the producer and seller followed by necessary payment.
   d. Mercantile transaction is the exchange of information between the buyer and seller without any payment.

3. Which among the following is not a protocol of Merchantile's process using digital cash?
   a. Buyer contacts the seller to purchase or buy a product
   b. Vendor states the price
   c. Seller states the price
   d. Buyer sends the e-cash to the seller

4. _____ phase includes customer service and support to address customer complaints, product returns and product defects.
   a. Purchase consummation
   b. Pre purchase interaction
   c. Post sale interaction
   d. Post purchase interaction

5. Which among the following is not an issue of the post purchase interaction phase?
   a. Purchase issues
   b. Inventory issues
   c. Database access and compatibility issues
   d. Customer service issues

6. Match the following:

1. Presale phase	A. Cost estimation and price of product services.
2. Product service/delivery	B. Order selection and prioritisation
3. Post sale interaction phase	C. Customer services and support
4. Consumer search activity	D. Internal search

   a. 1-D, 2-B, 3-A, 4-C
   b. 1-A, 2-B, 3-C, 4-D
   c. 1-B, 2-D, 3-C, 4-A
   d. 1-c, 2-A, 3-B, 4-D

7. In which activity under product service/ delivery, the customer service representatives are responsible for choosing which orders to accept and which orders to decline?
   a. Order selection and prioritisation
   b. Order fulfilness and distribution
   c. Order receipt and entry
   d. Order scheduling

8. _____ retrieval systems can either retrieve bibliographic items, or the exact text that matches a user's search criteria from a stored database of full texts of documents.
   a. Conventional
   b. Conventional text
   c. Modern information
   d. Database

9. A _____ pages schema is a data model, specifically a logical schema, for organising the data contained in entries in a directory service, database, or application, such as an address book.
   a. white
   b. yellow
   c. black
   d. green

10. What does OMC stand for?
   a. Old Management Cycle
   b. Order Maintenance Cycle
   c. Overall Management Circumstances
   d. Order Management Cycle

Chapter VIII

Multimedia

Aim

The aim of this chapter is to:

- explain key concepts of multimedia
- elucidate digital video and e-commerce
- discuss desktop video conferencing

Objectives

The objectives of this chapter are to:

- explain the concept of securing multimedia e-commerce
- describe consumer devices
- enlist the benefits of desktop video conferencing

Learning outcome

At the end of this chapter, you will be able to:

- understand multimedia e-commerce formats
- identify video delivery and management
- describe the benefits of desktop video conferencing

8.1 Key Multimedia Concepts

Online multimedia e-commerce implies a transfer of multimedia data achieved securely (or within the requirements of the participants) over the Internet (via wire line or wireless network infrastructure). The transferred data has some intrinsic value to the buyer and so a payment to the seller follows or precedes the data transfer in some secure fashion. Buying and activating a new ringtone from a mobile cellular phone or buying digital audio (a song) from a desktop PC is the two quintessential examples.

At the time of writing, digital multimedia e-commerce is on the rise. Digital audio, video, ringtones, and imagery lead the way. The International Federation of the Phonographic Industry (IFPI) and Jupiter Research estimate the digital music market at around $330 million in 2004 (with over 200 million tracks downloaded) and expect that to double in 2005. While this may represent the market peak, it is unlikely; and the industry is serious. Elsewhere, Sony, Matsushita, Samsung and Phillips will attempt to jointly develop common standard Digital Rights Management technologies for their devices. Meanwhile, some say ringtone e-commerce revenue is reaching $2-$3 billion worldwide and the pages of Billboard Magazine now track best-selling ringtones beside best-selling CDs. Online multimedia e-commerce has the following main use-cases:

- Find multimedia of interest on the network
- Secure its delivery and payment
- Display the media on the device
- Manipulate the media via other E-Commerce applications

The remainder of this chapter describes aspects of these main use-cases with details and examples from current prevalent technologies. As this topic is very broad and touches many aspects of technology, this chapter is intended to be a non-exhaustive high-level introduction to the concepts – technical and commercial – related to this domain.

Securing multimedia e-commerce

Secure data transactions over the Internet must generally meet the following requirements: authentication, authorisation, confidentiality, integrity, and accounting.

- Authentication is the notion of identifying the buyer and/or seller.
- Authorisation refers to the permissions of the participants with respect to the transaction and the data.
- Integrity refers to the process of ensuring that transaction data remains in an untampered-with form, agreed upon by all parties.
- Confidentiality is the notion that the details of both the transaction and the data remain known only to the parties involved.
- Accounting is the process by which trustworthy billing, reporting, and auditing information is reliably created. These requirements are not always met in all cases, and note that some technologies (described below) help to meet more than one requirement.

Digital certificates play a key underlying role in securing multimedia e-commerce. Certificates, issued by trusted 3 rd parties called Certificate Authorities (CA), verify the holder's identity in an unforgeable way (for example, CREN. net grants "campus" certificates). A certificate is generally either a client certificate (to authenticate in individual's identity, restrict access, etc.), server certificate (to allow visitors to an e-commerce site to authenticate the site's identity), institutional certificates (allowing institutions to grant further certificates), or a root certificates from a CA. Certificates are used in the Secure Sockets Layer (SSL) (see next section) as well as Secure MIME, Internet Protocol Secure Standard (IPSec) and Secure Electronic Transactions (SET) protocols. The combination of certificates, CA's, clients, and servers, together with the related policies and human roles, comprise a Public Key Infrastructure (PKI). Managing PKI's in deployment remains a challenge for many reasons, including costs of ownership.

Single sign-on

Single Sign-On (SSO) is an increasingly important enabler for online multimedia ecommerce. SSO alleviates the need for online users to have a user name and password for each Service Provider (SP) – that is, the need to be authenticated at each e-commerce site. Instead, a user with SSO technology can be authenticated only once for a circle of SP e-commerce sites. For example, once signed-on, the user can go to an airline web site and book tickets, and to a car rental web site for a car. At each site the user's credentials and authorisation (e.g. credit card number) are accessible to the SP via SSO technologies. The user is authenticated by a third party Authentication Service Provider (ASP) who has a special relationship with the SP's in the 'circle'. The user may have many identities with the ASP, and one or more may be associated with any of the SP's. The ASP necessarily communicates user updates and identity information to SP's in a secure fashion. At the time of writing, the Liberty Alliance (see projectlibery.org) and Microsoft Passport are two prevalent SSO technologies. The OASIS 1 Security Assertion Markup Language (SAML) defines an XML schema allowing authentication, authorisation, and attribution assertions to be represented, and can serve as representation syntax for SSO-related assertions. In the example above, the SSO provider sends SAML assertions to both the airline and car rental e-commerce sites.

Multimedia e-commerce formats

Digital audio and video – movies and music – are two very important multimedia commodities (i.e., types), with respect to e-commerce. Online music and movie downloads comprise a large part of Internet multimedia revenue. For both of these there exist many digital formats, some of which are proprietary, while others are open standards; others still are grass-roots formats gathering community support (or losing it as the case may be). This section informally outlines some of these technologies. Due to the lossy nature of the Internet, maintaining quality while delivering these multimedia types across the Internet to users is a challenge. Most audio and video playback tools rely on buffering to help 'smooth out' losses; some utilise a dynamic view of the current application bit rate to maintain quality.

In general, audio and video codecs intended for Internet use should compensate for anticipated packet losses (and subsequent retransmits) to optimise the end-user Quality of Experience (QoE). Codecs sample analog music and create a digital format. The sample length (in bits) and rate (number of samples per sec) essentially determine the resulting quality. As an example, audio CD's are sampled in 16 bits at 44.1 kHz.

The audio encoding formats MP3 (MPEG-1/2 Layer 3) and AAC (MPEG-2 Advanced Audio Coding) are two of a small handful of dominant Internet audio formats. There are several reasons for this, including these standards' open nature, availability of codecs/decoders, and their performance in audio quality tests. AAC is the more recent of the above two technologies and is widely seen as a successor to MP3. Both are lossy perceptual encodings, meaning that the file recovered by uncompressing the audio is not a bit-for-bit replica of the original. However, the algorithms have been designed to get close to the threshold at which these bit losses are inaudible to the human perception system (hence the coding is therefore referred to as perceptual encoding).

Some of the differences are pointed out below (see for more detailed explanations, and for block diagrams of MP3 and AAC encoder functionality):

- Compressed file size – Given equal bit rates, AAC-encoded audio's superior compression will yield a smaller file
- Joint Stereo Coding – More flexible mid/side and intensity AAC coding algorithm (yields better compression)
- Huffman Coding – in MP3, the coding of quantised samples occurs mostly in pairs (rarely quadruples). AAC uses quadruples coding more often.
- High Freq. Resolutions – MP3: 576 frequency lines, AAC: 1024 frequency lines
- Perceived Audio quality – AAC encoded audio fares better than MP3 (at the same bit rate). Note that such perceptual tests are difficult to administer and subjective

Multimedia formats enable content to be experienced on various hardware devices.

Consumer devices

The target destination of online multimedia content, apart from the home computer, is a variety of consumer devices. With declining memory prices, shrinking hard drive sizes, and significant advances in compression technologies, there is wide array of consumer devices available for the public. Consumer devices come packaged with software to directly connect to an online store and allow the user to transfer, store, and catalog content. Content can then be synchronised with a PC over USB/FireWire/Bluetooth links. The end consumer devices fall in various categories:

Mobile music players – In this scenario an individual user performs the following step:

- Uses an application (for example, iTunes from Apple) on his computer to access an online music store
- Browses, samples, and selects the music he wants
- Purchases the music through a secure encrypted channel such as SSL
- The user can, then, listen to the music on his home computer, burn it to a CD, or transfer it to a mobile device.

Mobile audio players come in various sizes and flavours – the storage capacity ranges from 16MB (flash) to over 60 GB (hard disk – space equivalent to around 15,000 songs). These devices are capable of playing music in various formats including AAC, MP3, WAV, and WMA. Popular vendors include: Apple, Creative Zen Micro, iRiver, and Yepp.

Cell phones

- **Music:** At the time of this writing, newer models of phones come equipped with over two gigabytes of disk space with optional memory. Stereo audio is supported wirelessly over Bluetooth technology. Handsets support MP3, WMA, RealAudio/Video, MIDI, WAV, AAC and a range of others formats -providing wide-ranging industry compatibility.
- **Images/ Video / TV:** Camera cell phones with photo and video capture capabilities along with media players are increasingly popular. Streaming video along with TV for cell phones (e.g., MobiTV from Idetic) is on the rise. Content providers such as sports and news channel tailor their content for display on cell phones. Current configurations support video encoded in 3GPP2 (MPEG-4 and H.263), video can be captured at QCIF (176×144 pixel) or Sub-QCIF (128 × 95 pixel) with resolution of 15 frames per second.

Home entertainment

With current audio and video compression techniques and streaming technologies there is a drive to integrate multimedia content from the web with home entertainment devices such as television and home stereo. This combines the capabilities of PC software to search, purchase, and catalog content with more sophisticated playback capabilities of home entertainment equipment. Wireless networking is one of the most attractive options to connect home equipment together. Competing technologies are:

- IEEE802.11 is a family of evolving standards – 802.11b/g operates at 2.4GHz and provides data rates of 11Mbs and 54Mbs respectively. 802.11a operates at 5GHz and provides data rates of up to 54Mbs.
- Home RF is specifically designed for connecting home devices operates at 2.4GHz and provides data rates of around 10Mbs.
- Bluetooth designed for short range devices operates at 2.4GHz and provides data rates of about 1Mbs.
- Ultra wideband (UWB) still under approval process from FCC operates between 3.1GHz and 10.6 GHz and can potentially have higher data rates than IEEE802.1l based networks.

Use of mobile devices for e-commerce is constantly evolving. Standardised in ISO 18092 and operating in the 13.56-MHz range, NFC is an interface technology for exchanging data between consumer electronic devices at a distance of about 10 cm. An example is an NFC-enabled mobile phone that reads a smart tag embedded in a concert poster to download information about the artist and can initiate transactions to purchase songs or order concert tickets from the web.

8.2 Adapting Retrieval and Authoring Technologies

A very practical adaptation of old technologies is what we call computer alignment. For practical E-Commerce applications, most Multimedia Information Retrieval (MMIR) tools are still in their primitive state and thus cannot derive accurate information. Queries which are based on text media are far more mature than queries that ask to find an image "like this" or a sound "like this". There are many unsolved technical questions. For example, while one can search for a textual segment from the library of congress using a textual query, one cannot search the same library for a photograph "like this," or for a particular face, or for a particular voice without prior training.

A computer cannot be made to find a certain object or understand what it is seeing or hearing, only in limited and specially constructed cases. Instead, a query must be translated into low-level attributes that the system can recognise and mechanically search for. These parameters, in multimedia information retrieval, are a combination of color, shape, texture, object size, audio amplitude, motion pattern, etc. Computed Alignment is a method that allows the automatic alignment of two diverse media streams of information so that one may query an easier media type, such as the textual transcript of a court deposition, and retrieve the corresponding audio segment.

The speech audio and the transcript came from two separate sources during the court proceedings. They both are representations of what happened, the same content, but in different media. This technique of computed alignment is an intermediate solution to the difficult problem of retrieving information from multimedia databases. While most information retrieval work has been doing "mono media" retrieval, i.e., retrieving content from same-media databases, the computed alignment framework allows one to query "across modalities," and thus the name Cross Modal Information Retrieval. Computed Alignment works with diverse media "streams" and computes functions which automatically align these streams both temporally and spatially. While the underlying framework is the same for different types of alignment, the particular functions (mappings) vary depending on the application. This means that if one queries one stream, since the two are aligned, one can find information in the other streams. Thus, Cross Modal Information Retrieval is useful in querying large corpora of information.

For example, one can query CNN news for a particular audio or video segment by querying the textual equivalent which has been provided through a different source and aligned to the audio. This new framework has been demonstrated in different applications of CMIR which include text to speech retrieval, text to text retrieval, image to audio or image to video retrieval and other. Three potential E-Commerce applications of Computed Alignment are given below: TEXT TO SPEECH RETRIEVAL: This is a set of tools which can query speech content by using the textual transcript of the speech audio that has been derived from a separate source and synchronise it with the corresponding speech audio. This gives us the ability to use simple text queries to search the textual transcript of a given speech audio stream in order locate the particular audio segment that corresponds to a given phrase. Text to speech retrieval has huge applications.

It is particularly important in commercial and government applications that may need to access vast amounts of speech content (such as, video/audio court proceedings or language audio tapes, or entertainment materials, courses, and other). One example of a commercial application might be having the ability to query vast amounts of speech-based content that is part of a training series corpus.

8.3 Digital Video and E-Commerce

Video is a vital medium for e-commerce because it can dramatically increase a website's conversion rate. From realtors to retailers, online businesses have found that video increases the stickiness of their websites, improves their search engine rankings and helps close more deals. This report is a reflection of research that measures the actual status of video in the e-commerce market. Which top online retailers utilise video? To what extent do they do it? Which key players affect this industry in terms of supplying and delivering videos? And, finally, what can online retailers do in order to better capitalise on their videos?

Methodology

The research in this report is focused on the top 50 North-American online retailers as published by Internet Retailer's 2010 guide, with segments relating to search engine indexing in which the top 200 North-American retailers were considered. As such it focuses on the US online retail market but we believe its findings are relevant to worldwide retailers as well. The research was conducted using a mix of manual and automatic methods to formulate the underlying data. The dataset measured many aspects of the videos being used on the top 50 e-commerce sites, including estimating the number of videos on each website, how they are managed and delivered, and who provides those videos. Additionally, the research shows how search engines index those videos, what strategies e-retailers employ regarding YouTube syndication and how effective those strategies are in terms of user traction.

Key findings

More than 65 percent of retailers use videos The e-commerce industry is absorbing the concept of online video as an important value-add for any online shopping site. In fact, more than 65 percent of top retailers have more than one video on their website. This is in line with a Forrester report dated November 2009 that reported 68 percent of retailers had deployed video.

However, those that do have video often do not maximise the potential impact those videos can have on search engine results, which is the next step in the evolution of online video. At this stage, the main focus of online video infrastructure vendors is on educating retailers regarding the various aspects of the vast potential video entails for their businesses.

Retailers not reaping video potential: fewer than 10 percent have more than 10 videos indexed Currently, e-commerce videos are not represented evenly on search engines. Only 12 percent of the top 50 retailers manage to get more than 100 videos indexed by Google. When the top 200 retailers are considered, the facts are staggering: only 4 percent pass the 100 videos bar, and fewer than 10 percent get more than 10 videos indexed. Such low numbers are in complete contrast with the importance of search-engine based traffic for those retailers who typically report that such traffic accounts for around 30 percent of their total traffic on average. It is important to stress that although a small minority, there are vendors who perform well in terms of search engine indexing of their videos. Amazon, Overstock and NFL.com all have tens of thousands of videos indexed on Google, and we are certain that implementing common video SEO guidelines can boost indexing figures across many retailers.

Twenty-four percent of retailers are not present on YouTube, while 30 percent have more than 1 million video views. As for the syndication of videos in YouTube, we found that 24 percent of top retailers have a limited presence on YouTube, meaning they are without a channel or their channel is inactive, while 34 percent of top retailers have a large number (more than 100) of videos on their channels. Companies that leverage the marketing potential of YouTube can receive significant exposure, as we see with 30 percent of top retailers that garner more than 1 million views for their channels' videos.

As you can see, there is still a lot of work to be done by retailers, and many still need to catch up. However, the initial market awareness exists, and some companies already reap the benefits of their investments in video.

How many videos are there on e-commerce sites?

E-commerce merchants must find new and inventive ways to engage and convert customers. For those companies embracing online videos, they are beginning to demonstrate their value against their competitors who do not share the video model.

Currently, 24 percent of online retail sites have more than 1,000 videos. Those sites often partner with vendors (i.e., Webcollage, Sellpoint, SundaySky, etc.) or are built around video (i.e., QVC, HSN, etc.). These retailers continue to build a strong online community and enhance the customer experience.

Remarkably, 42 percent of the top retailer sites have no significant video presence. On the other end of the scale, we estimate that there are only 8 percent with massive video presence (at least one video per 10 website pages). Leading the list are QVC and HSN with roughly one video per three pages, followed by Overstock with one video per five pages. Naturally, as more videos are deployed, the benefits of increased conversion and higher SEO ranking apply to larger percentages of the retailer's catalog.

Top 10 online retailers by number of videos

The SEO effect

As e-commerce companies take the next steps to realise the potential, impact and results of their online marketing efforts, they are realising that search engines drive much of the traffic to e-commerce sites. The top 100 retailers report an average of about 30 percent of their traffic is search-engine based. In light of that figure and of the growing use of online videos as a driver of online retail revenue, it comes as no surprise that the field of video SEO is getting a lot of traction recently.

According to a Forrester Research report from November 2009, "Online retailers are committed to making product videos central to their merchandising and marketing strategies because of the positive return on investment (ROI) that this visual feature generates."

The statistics presented in previous sections are testament to retailers' realisation of the importance of deploying videos in large numbers across their websites. We know that videos contribute to search-engine based traffic for two complementing reasons:

Pages with video are, on average, ranked much higher than those without: "Video stands about a 50 times better chance of appearing on the first page of results than any given text page." [Forrester, Jan 2009].

Google presents video-powered search results as part of its universal search result pages (the standard search that most people use). Those searches are much more appealing and eye-catching than their textual counterparts because they have video properties and a video thumbnail attached, taking up more page real estate. Heat-map depiction of human interaction with search result pages shows that video-powered results draw users' attention even when those are not the highest ranked result (though often they are).

To illustrate that, consider the following example: Entering "18-inch throw pillow" into Google results in the below search results page. The video result (from Overstock.com) stands out above results from other retailers such as Amazon due to the weight that Google's ranking algorithms assign to having a video on the page. Additionally, Amazon only offers textual results that are less intriguing to click for the searcher.

At the time of this writing, 52 percent of the top 50 retailers do not have any video indexed in Google, and 24 percent have 10 or fewer videos indexed, amounting to a staggering 76 percent with no tangible video presence on Google. As we show below, the situation isn't different when other major search engines are considered.

As we already noted that approximately two-thirds of retailers do deploy videos on their website, it is evident that it is not enough to just place videos on one's site; one need to also ensure those videos are picked up by search engines to enjoy the search-engine ranking and traffic benefits. There are only a few companies that truly understand that "doing it" is much different than "doing it right." For the mere 8 percent of companies that have more than 1,000 videos indexed, leading the list by a huge margin are Amazon (with more than 67,000 videos indexed, mainly due to Amazon on-demand trailers), and Overstock (with more than 56,000 videos and SEO-optimised videos for a large portion of their catalog). The next two on the list (Apple and Sony) have fewer than 5,000 videos combined.

There is a large void in the number of e-commerce companies that understand the true connection between video in e-commerce and search-engine based traffic. The next step for retailers is to educate themselves on the importance and proven results of effectively deploying video for successful indexing results and subsequent traffic increases. Implementing proven SEO strategies will help retailers to harvest this potential.

Top 10 retailers by number of videos indexed by Google

What is interesting about the table above is the large margin by which two of the retailers lead the list, as well as the video-driven sites that are entirely missing from it. Take, for example, QVC, an online shopping site built around tens of thousands of videos from its TV channel. Search engine traffic accounts for 22.67 percent of its shoppers, so it clearly has the motivation to promote its videos on search engines. And yet, only seven of its videos are indexed on Google, Bing and Yahoo! altogether.

Another interesting aspect of search-engine indexing of videos that was apparent from our collected data is that there are significant variations between the indexing of the same site on different search engines. It is common for websites to have many videos indexed on one engine and far less on others. For example, Newegg has approximately 4,000 videos on its website, and Yahoo! reports 3,927 videos indexed. However, Bing and Google together report only 30 videos. The main lesson to be learned is that video SEO techniques should cater to the preferences of all major search engines.

In terms of the variation between indexing rate on different search engines, there are no dramatic differences between Google, Yahoo! and Bing. Yahoo! does seem to index a broader range of retailers: 70 percent have at least one video indexed versus about 50 percent on Google and Bing. It also reports 20 percent of retailers with more than 100 videos indexed versus 12 percent for Google and Bing.

E-commerce companies that educate themselves about the nuances of SEO as it relates to online video will gain valuable advantages over their competitors who are just beginning to understand the differences between the search engines and how to best exploit their potential worth.

Who provides the videos?

The effort and required expertise involved in creating video content for websites often makes it impractical or not cost-effective for retailers to generate videos themselves. This has been a fertile ground for a variety of vendors, an ecosystem around online retail videos that focuses on providing online retailers with high-quality, effective video content to use on their websites. Considerations when choosing a video production service include: cost, flexibility, ability to scale and keep up with catalogue updates, and quality of video.

Retailers are immediately presented with three, often complementary, options for video production:

- **Manual production**: Retailers can produce videos that are tailored to best fit the product. However, they will find that these cost hundreds to thousands of dollars per video. For a smaller product catalogue with few changes, this method will be effective. Additionally, some retailers may choose to manually produce video for their top selling products and use automatic video generation solutions as a complementary method to turn the rest of significantly sized catalogues into video.
- **Syndication of manufacturer videos**: This refers to syndication services of videos that are made by the manufacturers and provide additional insight into the product. They are typically free, but the downside is that they are not customised to the retailers' needs, such as:
  - Catering to their target audience
  - Adhering to branding and look-and-feel as the rest of their websites
  - Keeping the information up-to-date (price, etc.)
  - Emphasising the competitive advantages of the retailer (e.g., "free shipping on this product")
  - Having an embedded call-to-action (e.g., having an "add to cart" link in select points within the video)
- **Automatic video generation**: The benefits of this method overweigh the concerns. While some retailers may be concerned with the quality of the video, solutions are available that are tailored to the audience, adhere to branding, are dynamic and scalable, and have calls to action that manual videos may not. In fact, automatic video generation achieves most of what manual production offers at a fraction of the cost, with added ability to scale and always remain up to date.

The market for video syndication is more established than newer methods for deploying video. In fact, most of the top 50 retailers have embraced some level of video syndication. However, recently we see increased adoption of automatic video generation services, as well, harvesting the benefits of both approaches.

Video delivery and management

Producing online videos is only one part of what online retailers need to consider when deploying videos. After videos are produced, there have to means to manage those assets and deliver them to site visitors properly. Those, again, are not usually the core competencies of online retailers and therefore they resort to using third-party solutions.

In terms of video delivery, there is a pretty clear ecosystem in place. Our research indicates that the vast majority of videos are being delivered from a content delivery network (CDN) and not hosted onsite. Additionally, Akamai dominates the top 50 retailers list by a large margin, and we also see videos being served from Amazon's cloud services (Either S3 or CloudFront), LimeLight and CDNetworks

As far as video management goes, the market seems less mature. Our research only identifies two video management platforms in the top 50 list, and they include Brightcove (which has three deployments) and Liveclicker (two deployments).

As the market matures and more retailers have site-wide video deployments, we expect the demand for video management platforms to become significantly higher as the need for conveniently and cost-effectively managing those video assets will become a focus for retailers. As with video delivery and obtaining video content, the realm of video management will be dominated by third-party providers.

8.4 Desktop Video Conferencing

Desktop video conferencing can be defined as the use of video conferencing software on a personal computer, or more generally without the need of additional dedicated equipment. It contrasts with "room video conferencing" where participants have to move to a dedicated conference room equipped for video conference.

In the last few years, desktop video conferencing emerged as part of daily processes and communication routines within companies and organisations of any size and industry, all over the world, complementing (and in some cases replacing) traditional room systems.

Gartner says that more than 200 million workers worldwide will run corporate-supplied video conferencing from their desktops by 2015, compared to 7 million in 2008. Spending on corporate-sanctioned video conferencing to the desktop will grow from 13.9% of IT budgets, to account for one-third of corporate spending on video conferencing1.

This white paper analyzes the latest trends in desktop video conferencing, highlighting the best practices for its deployment. The primary focus will be on Enterprises bearing anyway in mind that all the features/benefits described can be adapted to any specific need of other scenarios such as Education and Telehealth environments.

Scenario and benefits

Even if the need to reduce cost and increase productivity strengthened by the economic downturn pushed companies towards more affordable video communication solutions, the growth of desktop video conference has been mainly driven by other factors. On one side, the transformation of workspaces due to the rise of mobile and remote workers combined with the comfort of having video conference software directly on your laptop, and on the other side the dramatic improvements in video and audio quality that enable an amazing experience quality.

Though enrichment of user experience impacted other video communication solutions, such as telepresence, desktop video conferencing provides unique benefits in terms of:

- Flexibility
- Cost effectiveness

Scalability and manageability
Desktop video enables people to meet on the fly, collaborate when they need, fasten decision making and increase business agility without need to schedule resources or require IT support, while centralised management and deployment allow IT managers to maintain control over their infrastructure.

Driving a successful deployment
As desktop video conferencing offers grows, it becomes essential to focus on what makes it a high-value choice and key asset for the company.

Making the most out of existing infrastructure
New generation solutions should be designed to integrate with existing infrastructure, which means they should interoperate with any standard based device (H.323 or SIP), be available for multiple platforms (PC or Mac OS X) and being able to integrate with existing company directories (for example, LDAP).

Solve network related issues
The need of connecting with mobile workers, customers and partners that is outside company network makes essential the ability to solve Firewall/NAT traversal issues.
Another key factor, with the increased number of people given the opportunity to use Full-HD video conferencing inside the organisation, is bandwidth shaping, supported by the ability to automatically adapt to changing network condition.

Manage and scale
Depending on company structure and number of users, different needs arise in terms of manageability. Key aspects include centralised management, a suitable licensing model, tracking and reporting.

End user adoption
What employees want is to collaborate with their colleagues whenever they need to. On the other hand many of them might be sceptical about video conferencing thinking of it as it was years ago: working one time out of three, requiring IT support and providing rough audio and video quality.

In order to increase employee adoption and justify the investment in a new solution, IT managers should offer their colleagues an easy to use software solution with collaboration, multi-party conferencing and session recording features.

Architecture description
It includes the essential building-blocks for the proposed architecture. These are:

- **Centralised provisioning and management:** This is the core of the architecture. Here IT Administrators are able to centrally manage all aspects of the solution.
- **Firewall/NAT Traversal solution:** Provides seamless connectivity amongst users inside and outside of company LAN.
- **SIP-H.323 Gateway:** Most of the deployed rooms systems worldwide are based on the older H.323 protocol, while the newer SIP protocol is gaining momentum. It is fundamental being able to communicate with both protocols.
- **MCU (Multipoint Control Unit):** An MCU is needed to connect three or more participants in the same conference.
- **Video IVR:** A video IVR unit greatly simplifies the user experience, as acting as a centralised guided directory can help connecting to other users by means of simple numeric extensions.
- **Software client:** Installed on PCs, MACs and mobile devices provide a consistent video communication experience across different devices.

Summary

- Online multimedia e-commerce implies a transfer of multimedia data achieved securely (or within the requirements of the participants) over the Internet (via wire line or wireless network infrastructure).
- Authentication is the notion of identifying the buyer and/or seller.
- Authorisation refers to the permissions of the participants with respect to the transaction and the data.
- Integrity refers to the process of ensuring that transaction data remains in an untampered-with form, agreed upon by all parties.
- Confidentiality is the notion that the details of both the transaction and the data remain known only to the parties involved.
- Accounting is the process by which trustworthy billing, reporting, and auditing information is reliably created. These requirements are not always met in all cases, and note that some technologies (described below) help to meet more than one requirement.
- Single Sign-On (SSO) is an increasingly important enabler for online multimedia ecommerce.
- Digital audio and video – movies and music – are two very important multimedia commodities (i.e. types), with respect to e-commerce.
- The audio encoding formats MP3 (MPEG-1/2 Layer 3) and AAC (MPEG-2 Advanced Audio Coding) are two of a small handful of dominant Internet audio formats.
- Video is a vital medium for e-commerce because it can dramatically increase a website's conversion rate.

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Self Assessment

1. Which one of the following requirements adheres to secure data transactions over the Internet must generally meet?
   a. Authentication
   b. Flexibility
   c. Reliability
   d. veracity

2. _____ is the notion of identifying the buyer and/or seller.
   a. Authorisation
   b. Authentication
   c. Integrity
   d. Confidentiality

3. Which of the following refers to the permissions of the participants with respect to the transaction and the data?
   a. Integrity
   b. Authentication
   c. Authorisation
   d. Reliability

4. Which of the following statements is true?
   a. Authorisation refers to the process of ensuring that transaction data remains in an untampered-with form, agreed upon by all parties
   b. Variability refers to the process of ensuring that transaction data remains in an untampered-with form, agreed upon by all parties
   c. Authentication refers to the process of ensuring that transaction data remains in an untampered-with form, agreed upon by all parties
   d. Integrity refers to the process of ensuring that transaction data remains in an untampered-with form, agreed upon by all parties.

5. _____ is the notion that the details of both the transaction and the data remain known only to the parties involved.
   a. Confidentiality
   b. Authorisation
   c. Variability
   d. Reliability

6. _____ is the process by which trustworthy billing, reporting, and auditing information is reliably created.
   a. Confidentiality
   b. Accounting
   c. Variability
   d. Reliability

7. _____ certificates play a key underlying role in securing multimedia e-commerce.
   a. Static
   b. Display
   c. Digital
   d. Data

8. Which of the following is an increasingly important enabler for online multimedia ecommerce?
   a. Digital certificates
   b. Advanced Audio Coding
   c. MPEG
   d. Single Sign-On

9. A/ An _____is needed to connect three or more participants in the same conference.
   a. MCU
   b. AAC
   c. MPEG
   d. MP3

10. _____ can be defined as the use of video conferencing software on a personal computer.
   a. Audio conferencing
   b. Desktop video conferencing
   c. Speech recognition
   d. Image processing

Application I

SONY MUSIC INDIA (E-Commerce Solution)

Sony Music India (SMI), a wholly owned subsidiary of Sony Music Entertainment started operations in India in 1996-97 to market both national and international titles in India. SMI is one of the most progressive music companies in India using state-of-the-art technologies and constantly endeavouring to provide value added services to its customers

Solution Overview

The rapid development of technology in India and the increasing penetration of internet had increased channels of selling and had given a boost to E-commerce in India. The need for the music industry was to be as omnipresent to its customers, and to entice them with a variety of choices that were packaged innovatively and with value added services. In order to bring efficiencies to its business processes and add value to its relationships with its trade partners and customers, Sony Music India embarked on this e-initiative.

- The solution enabled music lovers and other users visiting the site www.sonymusicindia.com to access information, interact and buy music online.
- It enabled Sony Music India personnel to administer the cyber mall through a web based administration module.

The e-Commerce application developed for Sony Music India has been architected to provide a scalable, reliable and completely automated system for order processing using Microsoft Commerce Server 2000. The architecture incorporates the 'n-tier' technology which enables the system to seamlessly integrate and interoperate between heterogeneous systems. Some of the features of the e-Commerce initiative are as below:

- **Secured online buying:** The site provides a secured online credit card payment system through integration with a payment gateway.
- **Order management and processing:** The site integrates with a third party agency for order fulfilment. All orders placed on the web site are routed to the order fulfilment agency and once the orders have been dispatched the same is updated on the website.
- **Catalog management:** The dynamic catalog management system enables Sony Music personnel to update the catalog on a regular basis. Moreover the web based interface allows anytime – any where update of the catalog. The catalog management system also allows Sony Music to update information relating to the availability of inventory through a easy batch upload of a flat file.
- **Site administration:** The entire process right from updating the stock availability status up to the order processing and tracking is managed through this Administration Module. This module also adds dynamism to the information layout of sonymusicindia.com, for instance, the albums that should be displayed on the Home Page and the priority of these items, the banners that should be displayed, etc,
- **Listening post:** The listening post on the site gives the users a chance to listen to their favourite music online – both Hindi as well as international. At the same time it protects the interest of Sony Music and does not allow the users to download the music, thus preventing piracy of music.

Technology used:

- Microsoft Commerce Server 2000
- ASP with SQL server 2000

(Source: www.sonymusicindia.com, *Case Study – Sony Music India (E-Commerce Solution)* [Online] Available at: <http://www.idealake.com/include/downloads/casestudies/sony.pdf> [Accessed 24 November 2011].)

Questions

1. How e-commerce did widen the path of progress for Sony BMG music?

   Answer

   The need for the music industry was to be as omnipresent to its customers, and to entice them with a variety of choices that were packaged innovatively and with value added services. In order to bring efficiencies to its business processes and add value to its relationships with its trade partners and customers, Sony Music India embarked on this e-initiative.

   - The solution enabled music lovers and other users visiting the site www.sonymusicindia.com to access information, interact and buy music online.
   - It enabled Sony Music India personnel to administer the cyber mall through a web based administration module.

2. What are the qualities of application developed for Sony music?

   Answer

   The e-Commerce application developed for Sony Music India has been architected to provide a scalable, reliable and completely automated system for order processing using Microsoft Commerce Server 2000. The architecture incorporates the 'n-tier' technology which enables the system to seamlessly integrate and interoperate between heterogeneous systems.

3. What are the features of application developed for Sony music?

   Answer

   Some of the features of the e-Commerce initiative are as below -

   - **Secured Online Buying:** The site provides a secured online credit card payment system through integration with a payment gateway.
   - **Order management and processing:** The site integrates with a third party agency for order fulfilment. All orders placed on the web site are routed to the order fulfilment agency and once the orders have been dispatched the same is updated on the website.
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   - **Listening post:** The listening post on the site gives the users a chance to listen to their favourite music online – both Hindi as well as international. At the same time it protects the interest of Sony Music and does not allow the users to download the music, thus preventing piracy of music.

Application II

Ignify eCommerce

Based in Woodridge, Illinois, the SchoolKidz company (in US) – a subsidiary of the world-renowned office products supply company, Staples - provides pre-made school supply kits to thousands of schools across the nation. SchoolKidz believes in providing the highest quality materials and educational tools to children through three different online ordering programs – Teacher Tailored Kits, Build-A-Kit, and Kits for Kidz – with each of the programs operating as its own business function. With three different online stores needing to be overseen, SchoolKidz wanted a one-stop solution that could run all of their school supply programs on a single platform, fully integrated with their Microsoft Dynamics GP system, that could provide their customers with a rich user experience. Ignify eCommerce proved to be the answer, enabling SchoolKidz to efficiently manage and oversee its online stores with an end-to-end Web-based system that provides the necessary ecommerce capabilities and Microsoft Dynamics GP integration.

Situation

SchoolKidz's three separate online programs all primarily revolve around school supplies, but each provides services that cater to slightly different audiences. Through the Teacher Tailored Kits program, the core program of the company, SchoolKidz takes the school supply list that the teacher sends home every year and then creates a custom quote for the school. If the school agrees to participate, they print up order forms to give to parents, who then decide to purchase a kit or go out to a retail store to get the supplies. "We find that approximately 30 percent of parent units end up participating," said Jim Mulder, director of SchoolKidz. "They return the order form to the school, the school consolidates the orders, and then they send them to us." Build-A-Kit was founded to work alongside the Teacher Tailored Program, allowing parents who miss the Teacher Tailored order deadlines to go to the site and build their own kits. Kits for Kidz is a program that caters to low-income families and communities, offering kits containing a pre-established assortment of items that are sold primarily through relief organizations and care agencies.

SchoolKidz recognized the trend of schools pushing parents toward an online path, but the software they chose to help them keep up with this trend was problematic. "Five years ago, SchoolKidz chose the most affordable solution, but we experienced many problems," said Mulder. "Joe Grlica [the IT/IS manager] spent much of the time troubleshooting- trying to find out why the site was down, why the data that came through was inaccurate. It forced us to act."

Their software program also was not integrated with the Microsoft Dynamics ERP and back office system, causing business operations to run with less efficiency. "We were doing a lot of manual entry prior to Ignify with regards to orders coming into our ERP and Microsoft Dynamics GP system," said Joe Grlica. SchoolKidz desired software that would allow them the ability to run all of their school supply programs on one platform; richer functionality with their online product catalogs and stores; seamless integration with their Microsoft Dynamics GP system; and an online credit card transaction solution that was secure and trusted by the customer.

Solution

Because Ignify eCommerce provides a comprehensive system containing all the necessary ecommerce capabilities in addition to complete integration with Microsoft Dynamics GP, SchoolKidz determined that it was the best software for its business needs.

SchoolKidz leveraged Ignify eCommerce's advanced merchandising capability, superior marketing functionality, and Business to Business functionality to provide a powerful and personalized user experience to their customers by tailoring the catalog to their unique needs. For example, SchoolKidz now has the ability to offer custom templates to Kits for Kidz customers who wish to run fundraising promotions for a certain school. "The customer can create a template with their own logos and call-outs specific to the organization," said Grlica. "Ignify gave us the ability to have these custom templates for the customer through the site."

Through the Merchandising Management Module, SchoolKidz is able to efficiently organize and manage the product catalogs for its three stores using a single interface, as well as utilize important features that significantly impact the company's day-to-day operations. Features like product catalog import utilities help the company immediately refresh school supply kits and products for thousands of schools, offering an instant insight into inventory needs and availability, and the opportunity to quickly address product demands. "With data import, we can create catalogs within the shopping cart, and create and import a Microsoft Excel template that automatically creates everything in the cart," said Grlica. "Without that functionality, we wouldn't be where we are right now."

In addition to product catalog import utilities, features such as the Multi-Store Order Management Desk and Marketing Campaign Management are valuable in assisting SchoolKidz with running the inventory and sales processes across all three of their online programs, further enhancing the company's business resources and remedying their previously disjointed and ineffective inventory and order processing system. "Before Ignify eCommerce, I had to commit three or four employees to processing and to making sure that the data we were providing to customers was accurate," said Mulder. "But now with Ignify we only need one employee as opposed to four. We appreciate not having to get bogged down with this process any more."

Revitalizing the site with a fresh, new design was crucial for SchoolKidz, and SchoolKidz team member Anthony LaPorte, the company's E-Business IT/IS specialist, provided Ignify sharp site designs that were successfully turned into code. "Our customers are seeing a brighter, sharper image with our website compared to prior years," said Grlica. "With our new, sharp site, customers are impressed not only with the appearance but with the functionality. The overall user experience was what we were striving for to begin with, and it has been a major benefit that we received going with Ignify."

Fulfilling another important efficiency requirement, Ignify eCommerce's integration with the Microsoft Dynamics GP system through the ERP Integration Module allowed SchoolKidz to keep track of and maintain all order and processing information without the need of manual intervention. "With our Teacher Tailored site we are able to run reports based off of live order data coming to our side through integration," said Grlica. "It's valuable information when you know it's 100 percent reliable, and you can also be more strategic when looking at data because it's residing on your side. Data is basically at your fingertips."

Benefits

Separate Programs Running Smoothly

Because Build-A-Kit, Teacher Tailored Kits, and Kits for Kidz offers school supply products to users with different purposes, these three online programs are essentially three separate business entities. With these three programs operating essentially as three different business functions, SchoolKidz needed software that would not only offer each individual program an efficient management system, but would also give SchoolKidz an overarching system that would effectively maintain the operations of all three stores simultaneously. "Before, we had to manage each of our three programs on three different databases," said Grlica. "But now, Ignify's Software as a Service (SaaS) model allows all three programs on one database and management section." By uniting the three stores on a single platform, Ignify eCommerce provided SchoolKidz with the solution toward creating more coherent and effective organization.

Hosted and Secure

With all of the different business operations that require the attention of the company,having to focus on the maintenance of their computer software and hardware infrastructure would not be an optimal use of their time and resources. Recognizing the importance of delivering a fully functional, straightforward software model, the SchoolKidz Ignify eCommerce is implemented on Software as a Service (SaaS) model. The Software as a Service offering frees up SchoolKidz to focus on running its business without having to worry about IT and PCI compliance issues. "Hosting on the Ignify cloud has allowed us to not have to dedicate resources on our end to server maintenance and day-to-day server operations," said Grlica. "They've taken away that headache by hosting everything."

Another headache that SchoolKidz does not need to be concerned about is PCI compliance, which was one of their foremost requirements when searching for a solution. Ignify eCommerce software is not only PCI complaint but also PCI certified on the PA DSS 1.2 Standard by the PCI Standards council, thus providing SchoolKidz the highest security level of security possible from an ecommerce platform.

Easier Query and Reporting Activities

Since the different online stores receive many users seeking to order from the company's extensive selection of products, SchoolKidz required software that would make searching and organizing orders by category quick and effortless. Ignify enabled SchoolKidz to automatically create a catalog category for its Teacher Tailored Kit store by uploading a spreadsheet containing the items for the custom catalog/category, and when the catalog category is created SchoolKidz can query by category/school for reporting purposes. This ensures that when orders for a particular school are being tallied, SchoolKidz can run a report that specifies exactly which product and how many were ordered for that school.

Streamlining Operations

By integrating SchoolKidz with their Microsoft Dynamics GP system, Ignify eCommerce allowed the company to abandon the time-consuming process of manually entering sales orders and customer information. Everything is tied together through the ERP Integration: customer account information, sales orders, invoices, inventory, and inventory price. When a customer chooses to buy a product on one of the online stores, the customer's credit card is charged automatically, and the order is shipped directly from the warehouse. SchoolKidz no longer needs to charge the customer's credit card individually, or manually integrate the customer's information. Because all of this information is connected together, it saves SchoolKidz time and allows their order flow management to run with increased efficiency.

(Source: www.Ignify.com/eCommerce, 1999. *School Supply Company Turns to Ignify to Help Make the Grade* [Online] Available at: <http://www.ignify.com/SchoolKidz_eCommerce_Case_Study.html> [Accessed 24 November 2011].)

Questions

1. How Ignify eCommerce helps the "SchoolKidz" company to make a grade?
2. What was the situation of the company "SchoolKidz", to approach "Ignify eCommerce"?
3. What are the benefits to "SchoolKidz" by approaching "Ignify eCommerce"?

Application III

Walmart.com

Wal-Mart's online experience is proof that success in the brick and mortar world doesn't create corresponding success in e-commerce.

Offline, Wal-Mart is a sprawling giant, the world's largest retailer. Its U.S. stores number 3,300 and it employs more than one million workers, which means about one out of every 300 Americans is a Wal-Mart employee.

"It's a real category killer," claims Gartner research director Geri Spieler, who says that that Wal-Mart's success is "what everyone is trying to compare to." Leveraging that success, Wal-Mart insists that any company that wants to be a supplier use the Wal-Mart EDI (electronic data interface). So Wal-Mart can replenish its stock - straight from wholesalers - faster than you can say "discount retail."

And the giant is getting bigger, Spieler says. Wal-Mart is expanding its line to include designer clothes like those sold in Old Navy, and building its new stores with the capacity to offer more groceries. Wal-Mart plans on opening 70 new supercenters in 2003.

The company markets like the behemoth it is. According to Wal-Mart spokesperson Cynthia Lin, the company mails 90 million copies of its ad circular every month - meaning it's probably one of the most widely circulated publications in America.

But online...

Wal-Mart's dominant place in offline retail might be expected to provide it with top dog e-commerce status. But analysts say Walmart.com is distinctly back of the pack in terms of total online sales, and a list of traffic figures for leading e-commerce sites released by comScore Media Metrix for September supports this.

At the top is e-commerce wunderkind eBay, with 34.4 million visitors, followed closely by Amazon (the site most closely resembling Walmart.com) with 25.6 million visitors. Working down the list, Yahoo Shopping had 24.5 million, Dell had 11.4 million, Barnes and Noble had 8.2 million, and MSN Shopping had 7.3 million. Down at #13, with 6.5 million visitors, is Walmart.com. A respectable showing, to be sure, but anaemic considering that the company has been a household name for decades, and that Walmart.com has been selling online since July 1996.

Different customer base

Wal-Mart's offline retail success isn't replicated online because, says Spieler, "that's not where their customer base is." She notes the typical online shopper is a very different creature than the typical Wal-Mart customer. "People who shop at Wal-Mart likes to go to the store," she says. "Wal-Mart caters more to people with large families and people who aren't in much of a hurry."

The average online shopper tends to have greater expendable income and place more emphasis on saving time, she says. Many online shoppers fall into the "time-stressed" category of baby boomers that like having items delivered.

As for the other reason that Walmart.com isn't an online leader, Spieler echoes a sentiment voice by many e-commerce analysts. In general, she says, the members of the retail segment are "technology laggards." "They're not as techno savvy as their Web sites would have you believe."

The spin off returns

Indeed, Wal-Mart, like many companies, has had its share of challenges in its online operations. In the 1999 holiday season, it had to warn consumers that it could not guarantee delivery of orders placed after December 14th - unusual for a retailer with such well developed infrastructure.

Wal-Mart, seeking greater online expertise, spun Walmart.com off as a separate company, selling a minority stake to tech-savvy Accel Ventures in January 2000, moving the site's headquarters to Silicon Valley.

But, in what was widely seen as an unusual tactic, Walmart.com shut down for a month in the fall of 2000 to revamp the site. That a major e-tailer would shut down its site in a holiday ramp-up period, instead of readying a platform beforehand, left some industry observers puzzled. (And the site still had numerous hour-long black outs after it came back online.)

In 2001, Wal-Mart bought back Accel's minority stake, so Walmart.com is once again a wholly owned subsidiary of Wal-Mart. Lin explains that the buy back was due to Wal-Mart's desire to focus on integrating its online and offline sales channels.

Gartner's Spieler is of the opinion that Accel wasn't doing a good job with it. But, whatever the reason, Walmart.com, with or without outside help, appears to have a strategy for moving the site forward.

A hint of hipness

Certainly, the Walmart.com site would never be described as high tech. It still lacks the customer personalization features used by Amazon, and its straightforward blue and white design gives it a dowdy look.

Yet it does have a touch of trendiness. Walmart.com recently launched a Netflix-style DVD rental plan. Users order DVDs through the site and receive them in the mail, keeping them as long they want with no late fees.

Considering that Netflix itself has yet to make turn a profit, Walmart.com's new venture is forward looking. And in true discount fashion, Walmart.com is undercutting Netflix's price by about a dollar.

The site also offers Internet access. For $9.94 a month, you can buy unlimited dial-up service through Wal-Mart Connect, which is AOL service offered with the Wal-Mart brand. But the site slashes AOL's price in half by offering a bare bones ISP client without bells and whistles like instant messaging and e-mail filters.

The real secret

The giant discounter's true strength online is in its bricks 'n clicks integration, tying its Web site into its real world stores. "We recognized that one of the greatest values is in integrating the online and offline channel," says Wal-Mart's Lin.

You can, for example, chose replacement tires at Walmart.com and have them installed at a local Wal-Mart. The site's pharmacy section lets you place an order to be picked up locally; you can also view your prescription history online and set up e-mail reminders for refills. The site's vision center offers a similar service for contact lenses.

You can drop off photos to be developed at Wal-Mart and see the finished prints at Walmart.com, where you can e-mail them to friends or make them into gift cards. If you buy an item at Walmart.com, you can return it at a local Wal-Mart.

If there's an item your local Wal-Mart is out of, it's likely that the site has it. Walmart.com stocks 500,000 books and 80,000 CDs, not to mention replacement lawn mower blades, hot tubs, women's shoes, and Harry Potter Lego sets. Though the site doesn't release inventory figures, it's probable that it has the largest inventory of any retailer, online or off.

With the power of this integration, leveraging its massive offline presence to compliment its e-commerce operation, it may not matter that Walmart.com lags its online rivals. It is, after all, an effective part of an overall retail operation that is expected to generate $218 billion in revenue in 2002 (to put that in perspective, Microsoft's expected revenue is a paltry $28 billion). With a jaw-dropping revenue figure like that, Wal-Mart can afford to take its time in growing its online market share.

(Source: Maguire, J., 2002. *Walmart.com* [Online] Available at: <http://www.e-commerceguide.com/article.php/1501651> [Accessed 24 November 2011].)

Questions

1. How it becomes fruitful to advertise on Internet?
2. What are the on-line marketing processes?
3. How market research on Internet can enhance the models of e-commerce?

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Self Assessment Answers

Chapter I

1. a
2. d
3. b
4. d
5. a
6. d
7. c
8. d
9. d
10. a

Chapter II

1. d
2. d
3. a
4. b
5. c
6. a
7. b
8. a
9. b
10. b

Chapter III

1. a
2. d
3. b
4. a
5. d
6. a
7. b
8. a
9. a
10. c

Chapter IV

1. a
2. a
3. a
4. c
5. b
6. a
7. b
8. b
9. b
10. b

Chapter V

1. a
2. d
3. c
4. b
5. a
6. a
7. a
8. c
9. d
10. d

Chapter VI

1. a
2. a
3. d
4. b
5. a
6. a
7. b
8. d
9. a
10. d

Chapter VII

1. c
2. a
3. b
4. d
5. a
6. b
7. a
8. c
9. a
10. d

Chapter VIII

1. a
2. b
3. c
4. d
5. a
6. b
7. c
8. d
9. a
10. b