Syllabus

E-Commerce

Paper 305

Question Paper pattern for Main University Examination   Max. Marks : 100

Part-I (very short answer) consists 10 questions of two marks each two questions from each unit.

Maximum limit for each question is up to 40 words.

Part-II (short answer) consists 5 questions of four marks each with one questions from each unit.

Maximum limit for each question is up to 80 words.

Part-III (Long answer) consists 5 questions of twelve marks each with one question from each unit with internal choice.

UNIT -I

Introduction to Electronic Commerce : Definition of Electronic Commerce, The scope of Electronic Commerce.

Business Strategy in an Electronic Commerce : The value chain, Competitive advantage.

Business strategy. Business to Business Electronic Commerce : Inter-organizational transactions, Electronic markets, Electronic data interchange (EDI), EDI: the nuts and bolts, EDI and Business Inter organizational E-Commerce.

1

Introduction to Electronic Commerce

Throughout History, International trade has been facilitated by all manner of technical advances. In this country perhaps the most significant of these influence has been mode by the telecommunications revolution, from telephone to fax and now the "Internet" and it is offshoot ... electronic commerce, or as it is referred to, "e-commerce", which is expected to have a major impact on trade in the coming years. The emergence of these new and powerful technologies is has been of major significance for the economy in particular; they herald what is commonly referred to as the "Information Age". These are the technologies of computers, hardware and software, and the new and powerful modes of communication that are being linked up world – wide in even faster and easier ways.

"E-Commerce is a business environment in which information of selling, buying and transportation of the goods and services move electronically."

Electronic commerce looms large on the horizons of tomorrow, and it promise to transform trade and Industry in ways not yet imagined or comprehended.

- Electronic commerce speed up and simplifies communications and transaction between parties involved, in goods, services and financial/monetary dealings.

- It makes information accessible world-wide, include on the verity and pricing of goods and services, this makes possible "Shopping" world-wide, with little effort and in a time/cost effective manner;

- Electronic Commerce makes it possible to diffuse and make, assailable one's own information to those potentially interesting including advertising;

- Electronic Commerce makes possible direct dispatch and delivery of certain services and products, which can be transmitted, inditized form via the Internet.

2

There is going to be a fundamental transformation in international trade with the telecommunication revolution and it's convergence with other leading edge technologies (such as Electronic Data Interchange (EDI), 'Smart' Phone, digital video and audio, In-line Chat, Internet telephony, Interactive TC etc.)

The Impact of e-commerce is expected to go far beyond commerce to affect the lives of millions of Internet users.

"E-commerce is understood to mean the production, distribution, marketing, sale of delivery of goods and services by electronic means. A commercial transaction can be decided in to three main stages.

- The advertising a searching stage
- The ordering and payment stage
- And the delivery stage.

Any or all of these may be carried out electronically and may therefore be covered by for concept of 'Electric Commerce'

The two major uses of e-commerce are –

a. To reduce transaction costs by increasing efficiency in the use of time and lowering costs.

b. Both as a marketing tool to increase sales as well as to create new business through it.

E-commerce and its impact on all business:

E-commerce is by no means limited to the information Technology industry, e-commerce, besides IT and digital commerce, infect can (and may overtime) encompass all trade and commerce and there fore it has an impact on the entire economy. As e-commerce extends across the global economy, it will become more and more necessary for existing industry and trade to switch to and use the potential of this medium not only to grow but even to survive. To day this may not seem to be the case as total e-commerce transaction, still account for only a small percentage of world wide trade and commerce, but the message for the future is clear.

Definition and Scope of E-Commerce

Scope of E-Commerce :

Stories about E-Commerce in the media could lead some one to conclude that there's little more to the subject than selling products online. But the scope of E-Commerce takes in everything and anything that the Internet can do to enhance the financial performance of your business. E-Commerce can help your business expend, while cutting costs and increasing profitability.

It's been shown that the cost of generating a new customer can be greatly reduced through the Internet. Before online marketing was available, business had to design and print brochures. Not to mention distribute them, now, customers simply

click on your site and read all about you and your product lines, saving you time and money. A good site stands ready any time to answer questions, provide solutions, and motivate people to purchase your products.

But cost reduction goes beyond immediate sales activity. Never forget that your website may also be seen by a wide array of other interested parties, sources of financing (banks, venture, capitalists, business associates); newspaper and other media; industry analysts; potential employees (including recruitment agencies); and share holders and business partners among them.

Our site like a corporate report, can serve as a link to a wide variety of individuals and organizations. For instance, when contacting a source of financing, you can refer to your site to provide instant information about your company, products, pricing, customer service, way of doing business, etc. when giving an interview to reporters, connecting with prospective employees or business partner, or providing information to share holders, you can speed the information process by referring the site and creating content, adding special sections and payees as required.
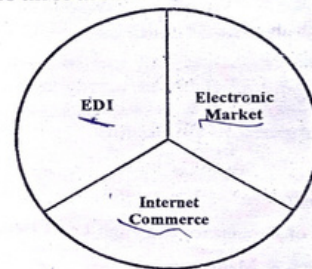
E-Commerce covers three areas :

Fig. 1.1 The three area of E-Commerce

Electronic Markets (EM) :

Electronic market provides the wide range of goods & service, so customer can compare the price, quality, and other attribute and helps in purchase decision. The best example of electronic market is an airline booking system.

Electronic Data Interchange (EDI) :

EDI is the electronic exchange of structured business information, In standard format between computers. EDI eliminates the need for a paper based system by providing an electronic link between companies. This reduces data entry tasks and improves business cycle times.

EDI is the electronic transfer of structured business documents in an organization internally among groups of departments or externally with its suppliers, customers and subsidiaries. The documents and used in EDI are invoices, purchases orders, acknowledgements and payments.

Internet Commerce :

Information and communication technologies are used in e-commerce to make once off sales of a wide range of products.

E-commerce can use internet commercially. For example – we can purchase goods is services on internet and payment is made after their delivery.

Definition of Electronic Commerce

So what does e-commerce mean? E-commerce is the pre-eminent buzzword of the online business revolution. It captures the excitement and focus of this fact emerging market It develop concept for doing business online.

Electronic : commerce is the paperless exchange of business information using electronic data interchange (EDI), email, electronic bulleting boards, fax transmissions and electronic funds transfer. It refers to internet shopping, on line stock and bond transactions, the downloading and selling of "Soft Merchandise" (Software, documents, graphics, music, etc.) and business – to business transactions.

The concept of e-commerce is all about using the internet to do business better and faster. It is about giving customers controlled access to your computer systems and letting people serve themselves. It is about committing your company to a serious online effort and integrating your website with the heart of your business.

Think of the way you communicate with people in business. The best way is face to face body language, tone of voice, and facial expressions all help you understand what the other person is trying to say. When you can't meet face to face, you may use any of a number of different means to communicate a telephone, a fax machine, federal express, the u.s. postal serving or authorization, even shipments of goods and merchandise.

The internet is a reasonable alternative to all of those means of communication, From any place and any way that your business communications with your customers can be don. You should think about how you could have done it online. That is the power of e-commerce.

There are number of definitions which define the e-commerce an 1997 'Seddon' gives a definition, according to that "The world has just entered a third new phase in the emulation of IT capabilities. The internet era. Evolution of information technologies (IT) can be divided as –

- 1955-1974   The Electronic Data processing (EDP) era.
- 1975-1994   The management information system (MIS) era.
- 1995-2014   The Internet era.

The third steps are dusting unshed by number of companies or individuals that 'e-commerce is commerce enabled by Internet – era technologies.'

In 1997 another definition of e-commerce given by Wigand according to him :

"Business transaction is done electronically from starting point to ending paint. These processes are done according to value chain of business process."

Firstly value chair is introduced by this definition. Another definition provided by Esprit in 1997. This is a European web site according to this site –

'E-commerce is a general concept in which business transaction or information exchange between companies, customer, or retailer etc. by using ICT (Information Communication Technology)

Electronic Commerce and the Trade Cycle:

A trade cycle is the series of exchanges, between a customer and supplier, that take when a commercial exchange is executed. General trade cycle consist of–

Presales :   Finding a supplier and agreeing the terms.
Execution :   Selecting goods and taking delivery.
Settlement :   Invoice (If any) and payment.
After Sales : Following up complaints or providing maintenance.

E-commerce can be applied to all different phases of the trade cycle. The trade cycle varies depending on–

- The nature of the organization (or individual) in valued.
- The Frequency of trade between the partners to the exchange.
- The nature of the goods or services being exchanged.

The trade cycle has to support:

- Finding goods & services appropriate to the requirement and agreeing the terms of trade (search and negotiation)
- Placing the order, taking delivery and making payment (execution and settlement),
- After sales activities such as warrantee, service etc.

  There are number of trade cycles depending in the factors which is listed above and for many transactions, further complicated by the complexities of international trade. The generic trade cycle can be identified as –

- Regular, repeat transaction between commercial trading partners (repeat trade cycle)
- Irregular transaction between commercial trading partners where execution and settlement are separated (credit transaction)
- Irregular transactions in once off trading relationship where execution and

settlement are typically combined ("Cash transaction")

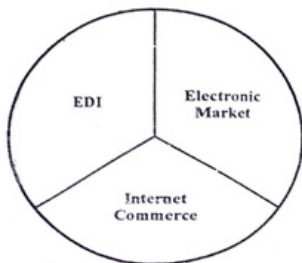The trade cycles for these three categories are show in **figure. 1.2**

Fig. 1.2 The three area of E-Commerce

For B to B transaction the trade cycle typically involves the provision of credit with execution preceding settlement where as in C to B these two steps are typically co-incident.

The nature of the trade cycle can indicate the e-commerce technology most suited to the exchange. Commercial transaction that are repeated in a regular basis, such as supermarkets replenishing their shelves, is one category of trade cycle. EDI is the e-commerce technology appropriate to these exchanges.
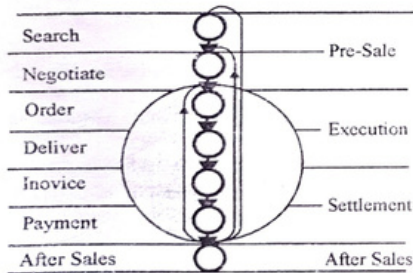

Fig. 1.3 EDI and the Trade Cycle

Consumer transactions tend to be once off (or at least very each time) and payment is made at the time of the order. Internet e-commerce is the technology for these exchanges.
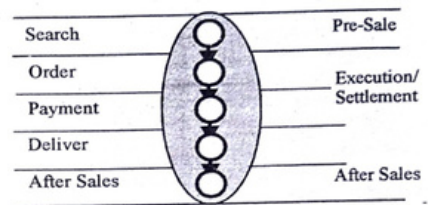

Fig. 1.4 Non-repeating commercial trade cycle

The third generic cycle is the non-repeating commercial trade cycle and internet e-commerce or an electronic market is the appropriate e-technology.

Type of e-commerce :

E-Commerce is of four types –

I   Business to Consumer (B to C)

II   Business to Business (B to B)

III   Consumer to Business (C to B)

IV   Consumer to Consumer (C to C)

Business to Consumer: In this type of e-commerce. "A consumer is motivated by a business".

Let's say you want buy a new music system. Instead of going Physically to ten different shops, you log on to Internet. Or in other words you dial through your PC to connect to the computers of your Internet service provider, which in turn is plugged in to the Internet.

You search for websites, "libraries" that offer information and (or "electronic stores" that also sell music system. After comparing a few, you choose one that sells your favorite brand. You go through the electronic catalogue - - a huge database of information and pictures made available by the company. You select one model that fits your budget and requirements. You choice on the colors of your choice, the type of sealers, and other options. You type in your name, address and your credit card number, information that is protected by high security software. You then click on the buy button on the screen to confirm the purchase.

The company records your purchase; let's call it E-Music. To do business electronically, E-Music has connected all the computers in all its departments and location. Even suppliers far away are linked to their network, which has a lot of customized e-com software. Your order is processed and sent on to the factory computer, and to the suppliers who know to which party they have to dispatch to e-music. A message is sent to the credit card company to transfer the amount from your account to it's account. At the factory electric tag identifies the model that's being built for you. Marketing mean while analyses your choices, along with thousand others to trade the popularity of different models. Another message is sent to the finance department, which processes the purchase and sends out a bill to dispatch, which packs it along with your music system - - - without having visited a single showroom!

Business to Business : In this type of e-commerce. "A business is motivated by another business". The Electronic transaction between E-music and it's suppliers comes under this head soon every company in every industry will be moving towords doing e-business with it's customers and suppliers. Creating a huge global electronic community.

Consumer to Business : In this type of e-commerce. "A business is motivated by a consumer". www.priciline.com is a good example. It allow prospective airline travelers to visit the website and name their price for travel between only pair of city. If an airline is willing to issue a ticket at there arrested price, the passenger is obligated to buy. Priciline.com issues thousand tickets a day, and the number's growing every day.

Consumer to Consumer : In this type of e-commerce. "A consumer motivated by another consumer". The last type of e-commerce takes place on the internet, without any business as middleman. You put up an announcement at any of the 'consumer exchange' website that you are selling, say a 1990's motorbike' others with similar interests then "bid" against each other for the object, so you get a price you normally couldn't dream of one of the most successful online auctioneers is eBay (www.ebay.com)

Selling & Buying on the Net:

Payment gateway is responsible for selling & buying the product, & services on the Internet Payment gateway is a medium that plays a role as a mediator between the customer, web portal (which provide e-commerce), and bank.

Why necessary or require Payment Gateway:

A company or web site want to sale own products & service on-line or electronically, than it should be capable in accepting payment by using the credit card all over the world. In the E-commerce world all-important banks, credit card agency

& company play a vital role in the electronic transaction. But it is not easy to provide e-commerce facilities and security. All this work can be done by payment gateway.

What is a payment Gateway?

Payment Gateway are server based transaction processing system which enclose business to authorize, process, and manage credit card transaction securely in a real-time, online environment from any computer within internet connection and a web browser.

Payment Gateway is a separate service which acts as an intermediate between the merchants shopping cart and all the financial network involved with the transaction, including the customers, credit card issuer and your merchant account.

During this process customer do not directly interact with the gateway : as data is forwarded to the gateway via your shopping cart and a secure SSL (Secure Socket Layer) connection. The shopping card is configured via playing to send information in a format that is acceptable to the particular gateway. This "Payment Gateway" is specifically designed to accommodate the increasing demand by e-commerce companies for sophisticated multi currency payment solutions to top the enormous opportunities for global internet transactions. Payment Gateway also includes several exciting new technologies that enable e-commerce businesses to display pricing in a customer's local currency while providing back end settlement and reporting to the merchant in the currency of it's own choice.

The selection of proper payment gateway is another vital element which will contribute to your success or failure as an online business.

Payment Gateway services are offered by Banks like Citibank, HDFC, ICICI, HSBC, etc. and the companies like world pay, planet payment etc. Who are authorized to accept credit card online. Payment Gateway acts as the heart of E-commerce which enables online transaction. They provide you a merchant ID No. which helps to manage and maintain your accounts. Most popular payment Gateway are Card Service International, Verisign, Payflow etc.
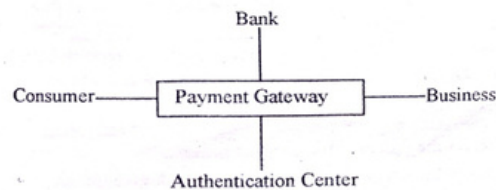

Fig: 1.5: Block Diagram of Payment Gateway

Working of the Payment Gateway:

Companies and websites which provides own products as services and consumers who purchase products from the sites and companies, credit card issuer, payment gateway providers and those government which approve all those activities, all these parties are involved in e-commerce.

But in e-commerce, all these party should be approved by the government and should inform to the standard organization or society such as in India, Reserve Bank of India. We can understand all these process in five steps –

I First Step –

Customer visit the e-commerce website and decide to purchase a product and this site display a page which is very important because of security, because customer provide own credit card details. This page is provided by the payment Gateway on the particular website where customer visit the site. The information of this page is encrypted by payment Gateway. This information is also hide from e-commerce site. If this safe page is available by own website then it send all these information to the payment gateway with own merchant – Id. Payment Gateway check this merchant – Id from own database and check this information comes from which websites. Now thousand companies have the membership of the payment Gateway.

II Second Steps –

In this stpes the payment Gateway send this information to the Credit Card processor by using own private network. This Information is not send by internet because of passward hacking.

III Third Steps –

Credit card processor system of gateway send the credit card information to the bank from where this credit card is issued.

The bank and card issuer company first check or identify that the card is not theft by some one or not listed in lost card lists. If the card theft by some one or lost card, then this information send to the payment Gateway and this information is be forwarded to the related site which tells that "decline the credit card order"–

The second priority of the bank is that check the account of the credit card owner which have the fund, in own account, this information is not send to the gateway.

Bank provides this information to the Gateway only that, customer have the sufficient fund the purchase the product or not.

If account have the sufficient fund then bank give the green signal. But if did not mean that bank reduce the credit card amount of the customer. And green signal also not prove that person is legal.

IV Fourth Step –

Now payment gateway mode this message available to the website. If card processor is separate part of the payment gateway, In this case card processor provide own decision to the payment gateway. And gateway send this in formation to the website which tell the customer's order is given and he can provide goods.

V Fifth Steps –

This is the last steps in which seller's website supplies the products. After that it request from the payment gateway that available all the due payment through the related bank. Gateway sends all the related information of the website to the related bank, which deposit the money in the merchant account of the seller.

What is merchant Account :

Website or any company open own account in any authorized bank which is used only for online selling & buying.

Benefit of Electronic Commerce :

1. Improve Productivity
2. Cost Saving
3. Streamlined business process
4. Better customer service
5. Opportunities for new Business
6. Reduce transmission cost by increasing efficiency in the use of time and lowering cost.
7. Marketing tool to increase sale as well as to create new business.
8. "Speed Up" & simplifies communications.
9. Market Information accessible "World-Wide
10. Reduction of paper storage.
11. It improves the quality of standard goods and services and to offer a verity of new services.
12. Increase accuracy through automated order Processing Inventory Control, Billing, Shipping etc.
13. Better for casting of customer needs for goods and services.
14. Reduce labor costs. Etc.

Questions

Very Short Questions :

1. B to B Stand for ?
2. EDI Stand for ?
3. EDP Stand for ?
4. Nane the type of E-Commerce

Short Questions :

1. What do you mean by Electronic Markat ?
2. What is Internet Commerce ?
3. What do you mean by Trade Cycle ?
4. What is E-commerce ?

Long Question :

1. What is E-Commerce ? Explain all type of e-commerce & it's benefits.
2. What is the Payment Gateway ? And explain the working of the Payment Gateway.
3. What is Interned ?
4. What is Merechant Account ?
5. Write a short note on internet in contrast to E-Commerce.
6. Define E-Commerce. Explain advantages and limitation of E-Commerce.
   (Raj. Univ. Examination 2005)
7. Define E-Commerce and it's functions ? Mention it's significance.
   (Raj. Univ., Examination2007)
8. What is the scope of the E-Commerce ?
9. What is the E-Commerce ? Explain in details by all suitable defination ?
10. How electronic Data Interchange (EDI), Electronic Marlat (EM), Internet Commerce (IC) helps in e-commerce explain in details.
11. How trade cycle is suitable for E-Commerce ?
12. Define E-Commerce. Explain advantages limitation of E-Commerce.

□ □ □

2

The Value Chain

Introduction

The idea of the value chain is based on the process view of organisations, the idea of seeing a manufacturing (or service) organisation as a system, made up of subsystems each with inputs, transformation processes and outputs. Inputs, transformation processes, and outputs involve the acquisition and consumption of resources - money, labour, materials, equipment, buildings, land, administration and management. How value chain activities are carried out determines costs and affects profits.

The Value Chain

The value chain is a systematic approach to examining the development of competitive advantage. It was created by M. E. Porter in his book, Competitive Advantage (1985). The chain consists of a series of activities that create and build value. They culminate in the total value delivered by an organisation. The 'margin' depicted in the diagram is the same as added value. The organisation is split into 'primary activities' and 'support activities.
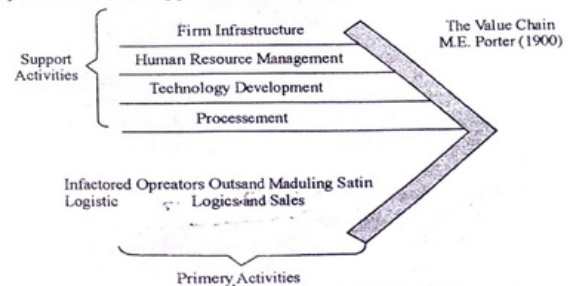

Fig : 2.1 Porter's Generic Value Chain

Primary Activities.

Inbound Logistics.

Here goods are received from a company's suppliers. They are stored until they are needed on the production/assembly line. Goods are moved around the organisation.

Operations.

This is where goods are manufactured or assembled. Individual operations could include room service in an hotel, packing of books/videos/games by an online retailer, or the final tune for a new car's engine.

Outbound Logistics.

The goods are now finished, and they need to be sent along the supply chain to wholesalers, retailers or the final consumer.

Marketing and Sales.

In true customer orientated fashion, at this stage the organisation prepares the offering to meet the needs of targeted customers. This area focuses strongly upon marketing communications and the promotions mix.

Service.

This includes all areas of service such as installation, after-sales service, complaints handling, training and so on.

Support Activities.

Procurement.

This function is responsible for all purchasing of goods, services and materials. The aim is to secure the lowest possible price for purchases of the highest possible quality. They will be responsible for outsourcing (components or operations that would normally be done in-house are done by other organisations), and ePurchasing (using IT and web-based technologies to achieve procurement aims).

Technology Development.

Technology is an important source of competitive advantage. Companies need to innovate to reduce costs and to protect and sustain competitive advantage. This could include production technology, Internet marketing activities, lean manufacturing, Customer Relationship Management (CRM), and many other technological developments.

Human Resource Management (HRM).

Employees are an expensive and vital resource. An organisation would manage recruitment and s election, training and development, and rewards and remuneration. The mission and objectives of the organisation would be driving force behind the HRM strategy.

Firm Infrastructure.

This activity includes and is driven by corporate or strategic planning. It includes the Management Information System (MIS), and other mechanisms for planning and control such as the accounting department.

CREATING A COST ADVANTAGE BASED ON THE VALUE CHAIN

A Firm may create a cost advantage:

- by reducing the cost of individual value chain activities, or
- by reconfiguring the value chain.

Note that a cost advantage can be created by reducing the costs of the primary activities, but also by reducing the costs of the support activities. Recently there have been many companies that achieved a cost advantage by the clever use of Information Technology.

Once the value chain has been defined, a cost analysis can be performed by assigning costs to the value chain activities, Porter identified 10 cost drivers related to value chain activities:

1. Economies of scale.
2. Learning.
3. Capacity utilization.
4. Linkages among activities.
5. Interrelationships among business units.
6. Degree of vertical integration.
7. Timing of market entry.
8. Firm's policy of cost or differentiation.
9. Geographic location.
10. Institutional factors (regulation, union activity, taxes, etc.).

A firm develops a cost advantage by controlling these drivers better than its competitors do. A cost advantage also can be pursured by "Reconfiguring" the value chain. "Reconfiguration" means structural changes such as : a new production process, new distribution channels, or a different sales approach.

Normally, the Value Chain of a company is connected to other Value Chains and is part of a larger Value Chain. Developing a competitive advantage also depends on how efficiently you can analyze and manage the entire Value Chain. This idea is called : Supply Chain Management. Some people argue that network is actually a better word to describe the physical form of Value Chains : Value Networks.

Value Chains Opportunities and Risks

One may identify four areas of opportunity and risk for stakeholders in the above described scenario:

1. Benefits to the consumer. The consumer will have free market access to all suppliers willing to pay an interconnection cost. The consumer will have maximum choice at lower price. If and when interactive agents are feasible, the consumer will have access to a market price without market-maker profits attached, but with the more efficient levels of market pricing from single channel suppliers.

2. Lower coordination costs throughout the industry value chain. Electronically linked producers and retailers will be able to lower their costs by reducing intermediary transactions and unneeded coordination because of electronic transactions directly with the consumer.

3. Lower physical distribution costs. Delivery costs will be minimized in two ways. Firstly, information will be transmitted electronically and much lower electronic distribution costs will be substituted. Secondly, as each element of the industry value chain is bypassed, a physical distribution link and related inventory carrying costs will be eliminated.

4. Redistribution and potential reduction in total profits. The lesson of the airline reservation systems, the initial behavior of Schwab's One Source, and market economics indicate that many companies will need to face smaller profit margins. Such smaller profit margins may be compensated for by increased volume.

Example – 1

Value Chain Analysis. Fen Side Golf Course
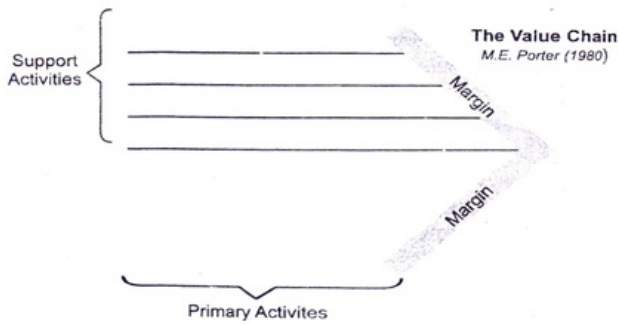
Fen Side Golf Course is an internationally known Scottish golf facility. It is not just an eighteen hole world-class golf course, it has a five star hotel with 250

luxury rooms, and private leisure centre, indoor tennis courts, as well as a series of top class restaurants.

Below are a series of nine activities that add value to the Fen Side experience. Print out the value chain above and place the appropriate letter (below) onto the value chain.

(A) All staff are trained to the highest industry standards.

(B) The hotel management team focus on goals set out in their strategic plan.

(C) All golf course fairways are trimmed and watered daily.

(D) Fresh fruit and vegetables are delivered and prepared every day.

(E) The hotel has an advanced room reservation system.

(F) Fen Side is promoted through magazines targeted at the weathly and influential.

(G) The whole experience is based upon high quality, professional service at every stage.

(H) Limousines are available to take guests to airports as they finish their stay.

(I) Fen Side has a series of contracts with suppliers of meat and fish,
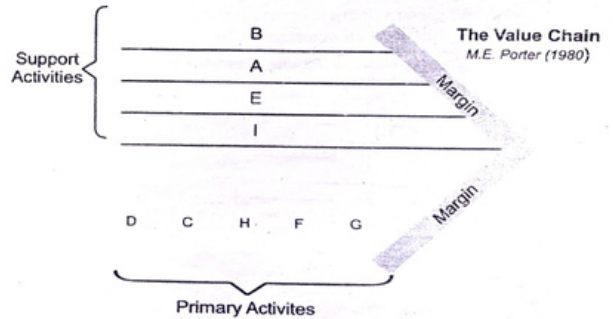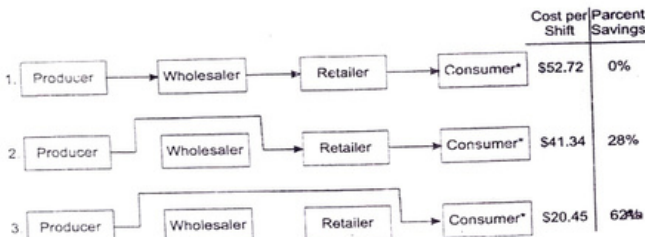
Answer-Value Chain Analysis.

Fig. 2.2 : Fen Side Golf Course.

Example : 2

Industry Value Chains

It is important to explore how purchasing and selling transaction patterns are likely to change and how selling prices will be affected. Figure 1 depicts three variants of traditional value-added chains and the resulting growth in value added and selling price. It should be noted that the authors consider here only industry value chains terminating with the consumer, as opposed to intermediate goods value chains. The example used here i e., the purchase of a high-quality shirt, is based on actual data (Thornton, 1994) not even involving electronic sales channels. It is highly likely that actual costs savings to the consumer may even be higher than depicted here. The first chain in Figure below depicts the traditional chain of market hierarchies, i.e., producer, wholesaler, retailer and consumer. An alterative chain, the second chain, bypasses the wholesaler, resulting in a lower purchase price or the consumer. When appropriate information technology can reach the consumer directly, as shown in the third chain, the manufacturer can utilize the NII (National Information Infrastructure) and leap over all intermediaries. In reality, the manufacturer is likely to retain as high a portion of the savings enjoyed by the consumer, unless, of course, market forces make this impossible.

A. Three Variants of Alternate Value Added Chains

			Cost per Shift	Parcent Savings
1. Producer → Wholesaler → Retailer → Consumer*			$52.72	0%
2. Producer → Wholesaler → Retailer → Consumer*			$41.34	28%
3. Producer → Wholesaler → Retailer → Consumer*			$20.45	62%

B. Growth in Value Added and Selling Price

	Producer	Wholesaler	Retailer	Consumer*
Value Added	$20.45	$11.36	$20.91	
Selling Price	$20.45	$31.81	$52.72	$52.72

*Consumer transaction costs are not considered.

Figure 2.3 : Value Added Chains in the Shirt Industry

Example : 3

Stake Holders Value Chain

Figure 2 depicts various stakeholders and their linkages to the NIL This figures shows not only the electronic linkages, but the physical distribution chains for goods and services which are assumed to exist.
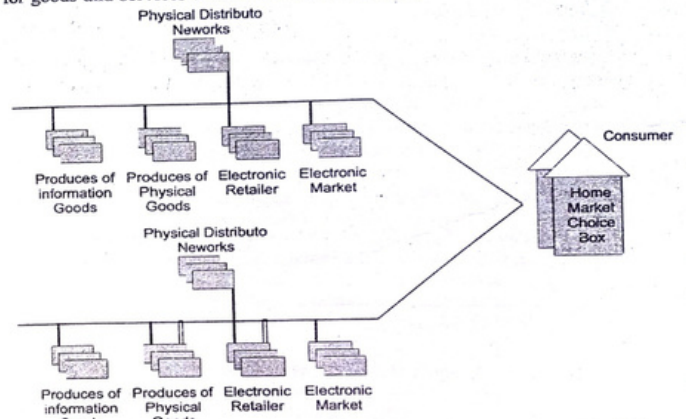

Fig. : 2.4 Stakeholders in the Value Chain Connected to the NII

The evolving information superhighway infrastructure links:

- Producers of information, including computer software, books, movies, music, etc.
- Producers of physical goods, including all manufactured goods now sold through catalogues and those in which computer technology can simplify product complexity and reduce asset specificity.
- Electronic retailers, differentiated into speciality retailers like Blockbuster or multi-product retailers like Lands' End, Sears, Macy's, etc.
- Electronic markets, expanded by market makers to include the travel and financial industries and specialty niches (e.g., shirts, personal computer software, or baseball cards).
- Physical distribution networks, simplified to move from the manufacturer to the consumer directly, or coordinated by electronic retailer or market

maker transactions. The future delivery system might resemble the process that catalogue vendors use now, mostly via Federal Express or United Parcel Service. When next-day delivery is satisfactory, such companies can provide the desired service. When faster delivery is required, such as when ordering the week's groceries, variants like picking them up at the supermarket depot may emerge.

- Electronic channels, *i.e.*, cable, telephone, cellular and electric utility industries that can provide access to the home. Although a choice of electronic channel is still limited, market dynamics are unfolding rapidly (e.g., wireless channels).

Questions

Very Short Questions :

1. How many activities are in Primary activity ?
2. What is inbound log istic ?
3. What is margin ?
4. How many Supportive activity ?

Short Questions :

1. What is value chain ?
2. What about Intrinlic value ?
3. What do you mean by pocurement ?
4. Explain out born of logistics ?

Long Question :

1. Write an essay on porter's value chain model and describe how ICT can help in this direction.   **(Raj. Univ., Examination 2005)**

2. Write short note on Value Chain.   **(Raj. Univ., Examination 2005)**

3. Explain value chains Opportunities and Risks by using any suitable example.

4. Can you creste Cost Advantage based on the value chain ? If possible then explane it.

□□□

3

Competitive Advantage

Competitive Advantage – Definition

A competitive advantage is an advantage over competitors gained by offering consumers greater value, either by means of lower prices or by providing greater benefits and service that justifies higher prices.

Competitive Strategies

Following on from his work analyzing the competitive forces in an industry, Michael Porter suggested four "generic" business strategies that could be adopted in order to gain competitive advantage. The four strategies relate to the extent to which the scope of businesses' activities are narrowing versus broad and the extent to which a business seeks to differentiate its products.

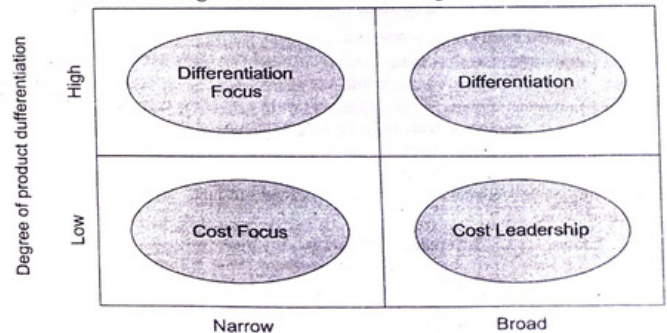The four strategies are summarized in the figure below :

Fig. 3.1 : Scope of Business Activities

The differentiation and cost leadership strategies seek competitive advantage in a broad range of market or industry segments. By contrast, the differentiation focus and cost focus strategies are adopted in a narrow market or industry.

Strategy – Differentiation

This strategy involves selecting one or more criteria used by buyers in a market - and then positioning the business uniquely to meet those criteria. This strategy is usually associated with charging a premium price for the product - often to reflect the higher production costs and extra value-added features provided for the consumer. Differentiation is about charging a premium price that . more than covers the additional production costs, and about giving customers clear reasons to prefer the product over other, less differentiated products.

Examples of Differentiation Strategy: Mercedes cars; Bang & Olufsen

Strategy - Cost Leadership

With this strategy, the objective is to become the lowest-cost producer in the industry. Many (perhaps all) market segments in the industry are supplied with the emphasis placed minimizing costs. If the achieved selling price can at least equal (or near) the average for the market, then the lowest-cost producer will (in theory) enjoy the best profits. This strategy is usually associated with large-scale businesses offering "standard" products with relatively little differentiation that are perfectly acceptable to the majority of customers. Occasionally, a low-cost leader will also discount its product to maximize sales, particularly if it has a significant cost advantage over the competition and, in doing so, it can further increase its market share.

Examples of Cost Leadership: Nissan; Tosco; Dell Computers

Strategy - Differentiation Focus

In the differentiation focus strategy, a business aims to differentiate within just one or a small number of target market segments. The special customer needs of the segment mean that there are opportunities to provide products that are clearly different from competitors who may be targeting a broader group of customers. The important issue for any business adopting this strategy is to ensure that customers really do have different needs and wants - in other words that there is a valid basis for differentiation - and that existing competitor products are not meeting those needs and wants.

Examples of Differentiation Focus: any successful niche retailers; (e.g. The Perfume Shop); or specialist holiday operator (e.g. Carrier)

Strategy - Cost Focus

Here a business seeks a lower-cost advantage in just on or a small number of market segments. The product will be basic - perhaps a similar product to the

higher-priced and featured market leader, but acceptable to sufficient consumers. Such products are often called "me-too's".

Examples of Cost Focus: Many smaller retailers featuring own-label or discounted label products.

Michael Porter Five Forces Model

Wanting to incorporate Michael Porter's Five Forces Model into your marketing strategy? Business Insight® will do this for you automatically.

Michael Porter described a concept that has become known as the "five forces model" This concept involves a relationship between competitors within an industry, potential competitors suppliers, buyers and alternative solutions to the problem being addressed We used the five-forces model as a basic structure and built on it with concepts from the works of many other authors. The result was a model with over 5,000 relational links.
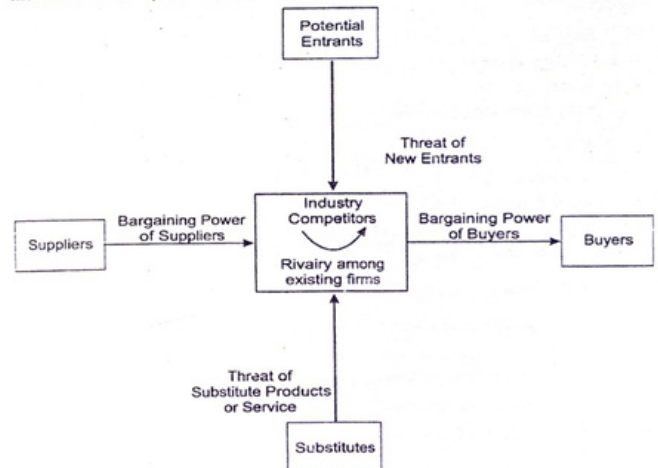

Fig.3.2 : Porter's Model of Competitive Force

The Competitive Forces analysis is made by the identification of 5 fundamental competitive forces:

1. **Entry of competitors :** How easy or difficult is it for new entrants to start competing, which barriers do exist.
2. **Threat of substitutes :** How easy can a product or service be substituted, especially made cheaper.
3. **Bargaining power of buyers :** How strong is the position of buyers. Can they work together in ordering large volumes.
4. **Bargaining power of suppliers :** How strong is the position of sellers. Do many potential suppliers exist or only few potential suppliers, monopoly?
5. **Rivalry among the existing players :** Does a strong competition between the existing players exist? Is one player very dominant or are all equal in strength and size. Sometimes a sixth competitive force is added:
6. **Government :** Porter's Competitive Forces model is probably one of the most often used business strategy tools. It has proven its usefulness on numerous occasions. Porter's model is particularly strong in thinking Outside-in.

THREAT OF NEW ENTRANTS DEPENDS ON :

- Economies of scale.
- Capital / investment requirements.
- Customer switching costs.
- Access to industry distribution channels.
- Access to technology.
- Brand loyalty. Are customers loyal?
- The likelihood of retaliation from existing industry players.
- Government regulations. Can new entrants get subsidies?

THREAT OF SUBSTITUTES DEPENDS ON :

- Quality. Is a substitute better?
- Buyers' willingness to substitute.
- The relative price and performance of substitutes.
- The costs of switching to substitutes. Is it easy to change to another product?

BARGAINING POWER OF SUPPLIERS DEPENDS ON :

- Concentration of suppliers. Are there many buyers and few dominant suppliers?
- Branding. Is the brand of the supplier strong?
- Profitability of suppliers. Are suppliers forced to raise prices?
- Suppliers threaten to integrate forward into the industry (for example: brand manufacturers threatening to set up their own retail outlets).

- Buyers do not threaten to integrate backwards into supply.
- Role of quality and service.
- The industry is not a key customer group to the suppliers.
- Switching costs. Is it easy for suppliers to find new customers?

BARGAINING POWER OF BUYERS DEPENDS ON :

- Concentration of buyers. Are there a few dominant buyers and many sellers in the industry?
- Differentiation. Are products standardized?
- Profitability of buyers. Are buyers forced to be tough?
- Role of quality and service.
- Threat of backward and forward integration into the industry.
- Switching costs. Is it easy for buyers to switch their supplier?

INTENSITY OF RIVALRY DEPENDS ON :

- The structure of competition. Rivalry will be more intense if there are lots of small or equally sized competitors; rivalry will be less if an industry has a clear market leader.
- The structure of industry costs. Industries with high fixed costs encourage competitors to manufacture at full capacity by cutting prices if needed.
- Degree of product differentiation. Industries where products are commodities (e.g. steel, coal) typically have greater rivalry.
- Switching costs. Rivalry is reduced when buyers have high switching costs.
- Strategic objectives. If competitors pursue aggressive growth strategies, rivalry will be more intense. If competitors are merely "milking" profits in a mature industry, the degree of rivalry is typically low.
- Exit barriers. When barriers to leaving an industry are high, competitors tend to exhibit greater rivalry.

STRENGTHS OF THE FIVE COMPETITIVE FORCES MODEL. BENEFITS

- The model is a strong tool for competitive analysis at industry level. Compare: PEST Analysis
- It provides useful input for performing a SWOT Analysis.

LIMITATION OF PORTER'S FIVE FORCES MODEL

- Care should be taken when using this model for the following: do not underestimate or underemphasize the importance of the (existing) strengths of the organization (Inside-out strategy). See: Core Competence

- The model was designed for analyzing individual business strategies. It does not cope with synergies and interdependencies within the portfolio of large corporations. See: Parenting Advantage
- From a more theoretical perspective, the model does not address the possibility that an industry could be attractive because certain companies are in it.
- Some people claim that environments which are characterized by rapid, systemic and radical change require more flexible, dynamic or emergent approaches to strategy formulation. See: Disruptive Innovation
- Sometimes it may be possible to create completely new markets instead of selecting from existing ones. See: Blue Ocean Strategy

Sustainable competitive advantage

'Sustainable Competitive Advantage (SCA) not reach in its competitive landscape. Michael Porter posits that a competitive advantage, sustainable or not, exists when a company makes economic rents, that is, their earnings exceed their costs, especially including cost of capital. That means that normal competitive pressures are not able to drive down the firm's earnings to the point where they cover all costs and just provide minimum sufficient additional return to keep capital invested. Most forms of competitive advantage cannot be sustained far any length of time because the promise of economic rents drives competitors to duplicate the competitive advantage held by any one firm.

A firm possesses a Sustainable Competitive Advantage when it has value-creating processes and positions that cannot be duplicated or imitated by other films that lead to the production of above normal rents. An SCA is different from a Competitive Advantage (CA) in that it provides a long-term advantage that is not easily replicated. But these above-normal rents can attract new entrants who drive down economic rents. A CA is a position a firm attains that lead to above-normal rents or a superior financial performance. The processes and positions that engender such a position is not necessarily non-duplicable or inimitable. It is possible for some companies to make profits for a time above the cost of capital without sustainable competitive advantage.

A key difference between CA and SCA is that the processes and positions a firm may hold are non-duplicable and inimitable when a firm possesses a SCA. Hence a sustainable competitive advantage is one that can be maintained for a significant amount of time even in the presence of competition. This brings us to the question what is a "significant amount of time". A CA becomes SCA when all duplication and imitation efforts have ceased and the rival firms have not been able to create the same value that the said firm is creating.

Analysis of the factors of profitability is the subject of numerous theories of strategy including the five forces model pioneered by Michael Porter of the Harvard Business School.

In marketing and strategic management, sustainable competitive advantage is an advantage that one firm has relative to competing firms. The source of the advantage can be something the company does that is distinctive and difficult to replicate, also known as a core competency — for example Procter & Gamble's ability to derive superior consumer insights and implement them in managing its brand portfolio. It can also be an asset such as a brand (e.g. Coca Cola) or a patent, such as Viagra. It can also simply be a result of the industry's cost structure — for example, the large fixed costs that tend to create natural monopolies in utility industries. To be sustainable, the advantage must be:

1. Distinctive, and
2. Proprietary

Building Sustainable Competitive Advantage

There are basically three types of assets that help build an SCA. These categories are exhaustive and include all of the company's SCAs :

1. Organization and managerial process

I.   **Coordination and integration:** Coordination among teams in organization is key to organizational success. Interdepartmental coordination and resource sharing to reach a common goal is fundamental to creating "value". Integrating resources is key to the success of firms. Firms that are able to integrate resources see synergistic effects of resources coming together.

II. **Learning:** Organizational learning is key to the success of a firm. It determines how a firm collects, distributes, interprets and responds to market based information collection and changes in the environment. These changes in the environment could be customer based changes, technological developments, legal and government restrictions. Firms have to develop robust market sensing and spanning capabilities to effectively collect information. Once they collect info they have embed this knowledge in the products they produce.

III. **Reconfiguring and transformation:** The environment for firms is constantly changing and constant reconfiguring and transformation is key to forming SCA. A double loop learning and transformation is key to producing innovative products. Innovative capacity of a firm determines how it reacts and learns from market information.

2. **Positions:** market positions are the assets of a company. Most of them are self-explanatory:

    I.   Technological assets

    II. Financial assets

    III. Reputational assets

    IV. Structural assets: The structure of a company can determine how it performs. The hierarchy of a company can influence its-culture, procedure and routines.

3. **Paths:**

    I.   **Path dependencies:** At the birth of a company usually accompanied with certain orientations. The progenitor brings certain orientations and attributes that stay with the company for a long time. The path the company takes then determines the development of its competencies.

    II. **Technological opportunities:** technology development at a time can determine how a firm can exploit opportunities to form SCA. Very often we see the advent of several technological factors converging into a capability that forms a SCA. An example would be the rise of companies such as Genentech at the turn of the previous century with the advent of gene mapping, significant developments in target selection and databases of previous studies and gene pools.

Competitive Advantage using e-Commerce

The discussion of competitive advantage in this chapter has been illustrated with a number of examples including e-Commerce systems. The possible competitive use of e-Commerce, together with these examples are summarized in Figure below:

Focus	System	Competitive
New Entrants/Substitution	Internet e-Commerce	• Reduce entry costsl • New sales channell • New service opportunities
Suppliers (& Trade Buyers)	e-Commerce Logistics (EDI/IeC)	• Cost reductionsl • Quick responsel • Customer Information
Buyers (Consumers)	Internet e-Commerce	• New sales channell • Dis-intermediarisationl • Customers Information
Competitive Rivalry	e-Commerce	• Cost leadershipl • Differentiationl • Focus

Fig. 3.3: *e-Commerce for Competitive Advantage.*

Questions

Very Short Questions :

1. What is the full formation SCA ?
2. What is Co-ordination ?
3. What is path dependencis ?
4. List the type of assets.

Short Questions :

1. What do you mean by Differentiation ?
2. What do you mean by Cost Leadership ?
3. Write the factors on which new extrants depends.
4. What do you mean by Cost Focous

Long Question :

1. What is ment by competitive strategy ? Discuss porter's model of competitive forces and role of ICT.
2. Short note on competitive advantage of E-Commerce.

                                          (Raj. Univ. Examination 2007)

3. Describe all staps of building sustainable competitive advantage.
4. Explain all factor which effect porter's five forces.
5. What is the benefits & limitation of porters five forces model ?

□□□

4

Business Strategy

Introduction to Business Strategy:

Many organizations have a business strategy. It is a formal plan. Andrews (1971) define the corporate strategy as –

"Corporate strategy is the pattern of major objectives purpose or goals and essential policies or plans for achieving those goals, stated in such a way as to define what business the company is in or is to be in and the kind of company it is or is to be."

Johnson and Scholes (Exploring Corporate Strategy) define strategy as follows:

"Strategy is the direction and scope of an organization over the Ions-term: which achieves advantage for the organization through its configuration of resources within a challenging environment, to meet the needs of markets and to fulfill stakeholder expectations". In other words, strategy is about:

- Where is the business trying to get to in the long-term (direction)
- Which markets should a business compete in and what kind of activities are involved in such markets? (Markets; scope)
- How can the business perform better than the competition in those markets? (Advantage)?
- What resources (skills, assets, finance, relationships, technical competence, facilities) are required in order to be able to compete? (Resources)?
- What external, environmental factors affect the businesses' ability to compete? (Environment) ?
- What are the values and expectations of those who have power in and around the business? (Stakeholders)

Type of Strategy:

Strategies exist at several levels in any organization - ranging from the overall business (or group of businesses) through to individuals working in it.

Corporate Strategy - is concerned with the overall purpose and scope of the business to meet stakeholder expectations. This is a crucial level since it is heavily influenced by investors in the business and acts to guide strategic decision-making throughout the business. Corporate strategy is often stated explicitly in a "mission statement".

Business Unit Strategy - is concerned more, with how a business competes successfully in a particular market. It concerns strategic decisions about choice of products, meeting needs of customers, gaining advantage over competitors, exploiting or creating new opportunities etc.

Operational Strategy - is concerned with how each part of the business is organised to deliver the corporate and business-unit level strategic direction. Operational strategy therefore focuses on issues of resources, processes, people etc.

How Strategy is Managed - Strategic Management

In its broadest sense, strategic management is about taking "strategic decisions" - decisions that answer the questions above.

In practice, a thorough strategic management process has three main components, shown in the figure below:
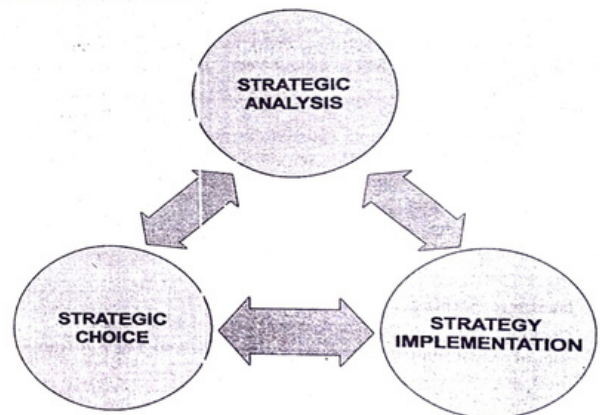

Fig. 4.1 Components of Strategic Management Process

Strategic Analysis

This is all about the analyzing the strength of businesses position and understanding the important external factors that may influence that position. The process of Strategic Analysis can be assisted by a number of tools, including:

PEST Analysis - a technique for understanding the "environment" in which a business operates

Scenario Planning - a technique that builds various plausible views of possible futures for a business

Five Forces Analysis - a technique for identifying the forces, which affect the level of competition in an industry

Market Segmentation - a technique which seeks to identify similarities and differences between groups of customers or users

Directional Policy Matrix - a technique which summaries the competitive strength of a businesses operations in specific markets

Competitor Analysis - a wide range of techniques and analysis that seeks to summaries a businesses' overall competitive position

Critical Success Factor Analysis - a technique to identify those areas in which a business must outperform the competition in order to succeed

SWOT Analysis - a useful summary technique for summarizing the key issues arising from an assessment of a businesses "internal" position and "external" environmental influences.

Strategic Choice

This process involves understanding the nature of stakeholder expectations (the "ground rules"), identifying strategic options, and then evaluating and selecting strategic options.

Strategy Implementation

Often the hardest part. When a strategy has been analyzed and selected, the task is then to translate it into organizational action.

E-Commerce Strategy Formulation:

I   Business Strategy :

Needle suggests a four-stage process of strategy formulation – .

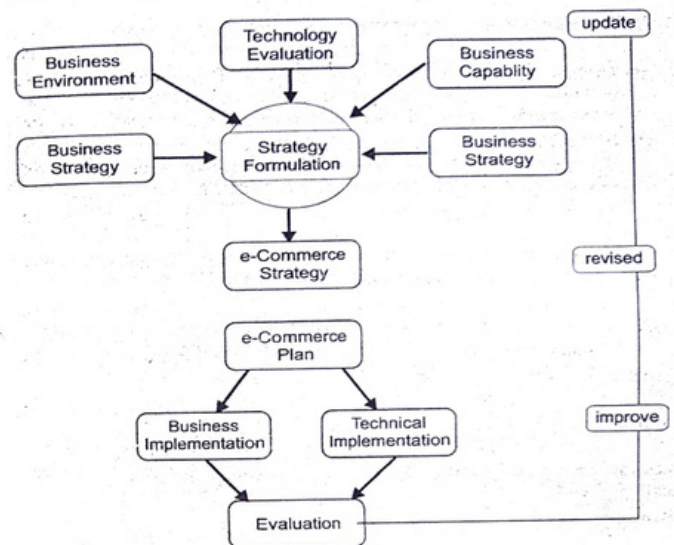- Identify environmental changes, which bring about new opportunities and pose new threats.

Fig. 4.2 e-Commerce Strategy formulation

- Examine the internal strengths and weaknesses of the institution and in particular its ability to respond to those opportunities and threats.
- A decision making process influenced by the values, preferences and power of interested parties.
- A strategy generating process concurred with generating options and evaluating them.
- The process of strategy formulation. Can be a mixture of relational and the non-relational. Two organizations faced with the same environmental circumstances and with similar business capabilities may well develop entirely opposite strategies. Strategy formulation is an outgoing process.

II   Business Environment:

All businesses operate within an external environment Needle (1194) has given the environmental factors as the economy, the state, technology, labour and

cultural factors. All of these factors need consideration in developing a business strategy; Some of the ways they might be relevant to an e-commerce strategy are:

- **Economy :** It effects the relevant market sectors in strategy formulation. E-commerce can give an organization the opportunity to spread its reach and hence the spread of any economic analysis needs to be broader.

- **State :** It influences the economy and sets the regulatory from work within which business operate. E-commerce is generally seen as a positive development by State governments and there can be initiatives to assist companies in it's adoptions.

- **Technology :** Technology change the existing market or create a new type of business. EDI (Electronic Data interchange), EM (Electronic Market), IC (Internet Commerce) all are technological solution to a business problem.

- **Labour :** The labour market will determine if an organization can get the people and skills it needs for it's operations. The regulation of the labour market and the strength of trade unions can also be a determinant in restructuring a company.

- **Culture :** Culture varies in different countries and an appropriate way to operate in one country would not necessarily be successful in another.

Environmental analysis is not easy task. There is some model or method that can be used for example – Porter's model. (discuss in chapter – 6)

III Technology Evaluation –

Technology is the catalyst that changes an existing market or creates a new type of business. There are three technology which solve the business problem–

- **EDI :** It provides streamline business process and also reduce trade cycle times between businesses. EDI is used by organizations that make a large number of regular transactions. EDI is based on a set of standardized messages for the transfer of structured data between computer applications.

- **Electronic Market :** It redefine the way that a market operates but a system that requires co-operation between rivals within a trade sector. It facilitates the search for the required product service.

- **Internet E-commerce :** The Internet can be used for advertising goods and sources and transacting once – off deals. Internet commerce has application for both business to business and business to consumer transactions. In 1996 Block propose that the web can be used to improve, transform and redefine business value. They propose ten components of business value –

The organization	Source of business value
* Improve it	• product promotion • New direct sales channel • Direct saving • Time of market • Customer Service • brand image
* Transform it	• Technological and organizational learning • Customer relation
* Redefine it	• New product capabilities • New business model

Fig.4.3: The components of business value of e-commerce by Block

These elements indicate the scope of e-commerce as a technology all these business value can be used as –

- **Product Promotion :** The web is a new medium of advertising rather than paper based traditional media. Because it is available at any time, it is interactive, it can be changed for individual customer and it can take input from the customer.

- **New Sales Channel :** It is a new medium for direct selling. It does not require retail premise and it provide electronic catalog and other on-line selling tools, which extend the applicable of direct sales to new market, product and services.

- **Direct Saving :** Direct selling cut out the cost of retail premises and potentially reduces the staff requirement. Information like sales order, purchase order or bank statement etc. Can be made available without the paperwork, postage and handling costs.

- **Time to Market :** When ever new product are ready it can be lunched immediately online. Time can be saved on many aspects of conventional product launch and promotion cycle.

- **Customer Service :** Internet e-commerce gives new opportunities for direct retailers which provide customer services in many areas.

- **Brand Image :** Brand image helps to attract more users on the net.

- **Technological and organizational learning :** Companies involved in e-commerce should constantly get up dated with the new technology coming in the market.

5

Inter – Organizational Transactions

Business organizations are constantly purchasing & selling goods & services. Big organizations buy products in bulk from suppliers & sell them to their customers that are they buy in bulk & sell loose. Industrialists buy raw materials, convert them into desired product & then sell that product to the customer who desires it.
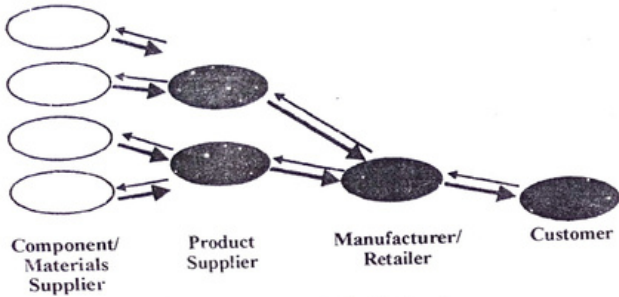

Fig. 5.1 The logistics Network

Solicitors & accountants do not require regular flow of goods but they are still dependent upon supplies so that they can have transactions with their regular customers. For all businesses there is a web of inter – organizational transactions this forms value chain, which ahs been discussed in chapter 4.

The Credit Transaction Trade Cycle.

In Inter organizational trade, transaction occurs on fixed trade relationships. For retail selling there is no fixed principle, customer goes to market & purchases the desired item / good in cash, & moves away that is he does not have any relation with the seller. But this thing does not happen in case of inter organizational trading e.g. Vintron purchasing hard disc from seegate.

The stages in the trade cycle for inter-organizational transactions are –

Pre-Sales: The two organizations that is the customer & the supplier need to meet (search) first & then agree on trading terms, before the trade starts. The customer organization can give out tender or simply contact the firm, which is known to it. And also the two organizations have to agree to the price of goods, condition of delivery & the terms of payment.

Execution: Execution is a process in which order is placed for goods & then they are collected or received. In most of the firms the purchasing department places order. When goods are delivered they are crosschecked with the purchase order it then manually or electronically.

Settlement: In inter organizational transactions the payment for goods usually occurs after delivery of goods. The supplier's requests for payment (invoice) & the customer settle the account (payment)

After-Sales – If in case the goods are damaged or faulty, then they have to be checked out after the execution phase. e.g. Machinery can have on-going process of warrantee or maintenance (after sales)
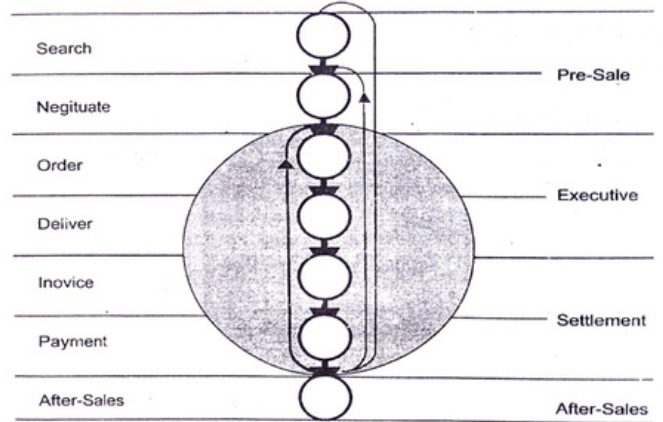

Fig. 5.2: The Credit Trade Cycle

Inter organizational transactions can also be repeated on regular basis. For this customers & suppliers will have to revisit for price & other terms & conditions

of the contract if the customer is not satisfied he can contact other suppliers and then again the chain of search, negotiation order & so on begins.

Each stage of inter organizational trade cycle is documented & both the customer & the supplier can trace the progress of the transactions. The customer will check the delivered goods & will make the payment only when he receives the good. The supplier will also need the payment for the invoice issued as soon as he has delivered the goods.

The customer will give contract to the suppliers & he will read and understand the terms & conditions of contract and will return it back. Then the customer will place an order slip, according to order slip supplier will make delivery of goods & will give a delivery note. He will also give invoice, against which the customer will make payment. If damage occurs to the good than maintenance or after sales service will be provided. This is exchange of documents for trade cycle.

In an export transaction exchange of forty or more documents occur between several organizations that are involved.
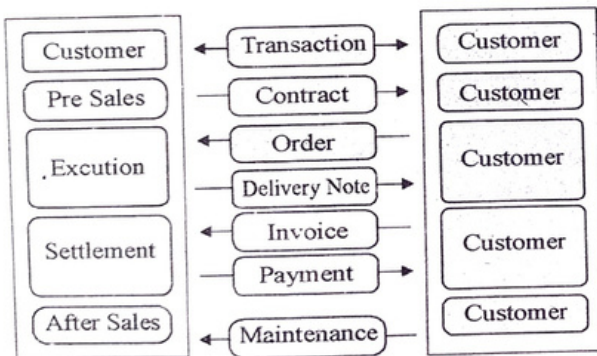

Fig. 5.3: Trade Cycle Document Exchange

PENS & THINGS

According to a case study conducted by Whitely, the use & diversity of inter organizational transactions can be illustrated by study of a fictional company called Pens and Things ltd.

Earnest Barker a small businessman established a company Pens & Things in 1894. This company manufactured Fountain Pen. The company was earlier called as Barker & sons & since 1997 it took up new name Pens and things and started selling other specialized stationary Items Company has retained its original name Barker for its fountain Pen. Barker Pens have established a worldwide fame & are now sold in gift boxes as a set of Barker fountain pen & a Matching Barker Ball – point Pen.

Pens & Things manufactures the pen cases, nibs etc. but the gift boxes, ink cartridges & ball point refills etc. are purchased from other suppliers.

Some stationary articles like letter openers pen, holder etc are purchased from other manufacturers & sold under the trade mark of "Barker"

Barker Pens are sold all over the world. In U.K. its self-sale is through selected wholesalers or some major departmental stores. For export, a local agency is selected, which purchases the product from the company that is Pens and Things in bulk & sells on to the stores in that country.

Full range of products in mentioned in a catalogue, which is circulated yearly to all the agencies, & trade customers. If change in product range occurs in between the issues of catalogue then those changes are documented in a leaflet, which is circulated to all the people who had received the catalogue.

Questions

Very Short Questions :

1.   Explain Pre Sales.
2.   How many activities in valued settlement phase ?

Short Questions :

1.   Short note on PEN & THINGS
2.   What do you mean by Inter Organizational Transaction.

Long Question :

1.   What do you know about the Pen & Things ?
2.   Explain Trade Cycle for Inter-Organizational transaction.

❏❏❏

6

Electronic Market

Markets :

Market theory plays an important role in economic theory. Market economy is based on the sale of product in rural market. Basis of market economy is demand and supply. If there is good output (supply) of any product but its demand is less, then its price will go down. To prevent this few suppliers will have to withdraw from the market. On the other hand if supply of any product is less than its demand, than its price will go higher & higher until the number of customers who are willing to pay that price matches with the supply.

For a market to work effectively 3 conditions should be present (from McAfee & Mcmillan, 1997):

(i)   The number of buyers & sellers are equal that is equilibrium should be there between demands and supply.

(ii) The transacted good should be homogeneous & standardized that is its quality & features are same in distinct units.

(iii) Buyers & sellers know quality of goods, its characteristics as well as its transaction prices.

The market operations are becoming more & more complex and less homogeneous because many organizations operate in market which try to distort the simple market economy of demand and supply and it becomes difficult for buyers as well as sellers to be well informed about the quality & characters this as well as transaction price of the product.

Electronic Market

An electronic market is defined as "An inter – organizational information system that allows participating buyers & sellers to exchange information about price and product offerings" (Quoted in Been, et al. 1995)

It means that electronic market brings together product, price and service information from many suppliers for the buyer thus the buyer can easily meet the

supplier who best meets his purchase requirements. Electronic market is in fait a brokering service which brings suppliers & customers together. It uses information's and communication skills & technologies to provide the traders all over the world with information for fair operation of the market.

Importance of electronic market is that it helps in search phase of trade cycle once search phase of trade cycle. Once search phase is complete it will then facilitate in execution and settlement phases of trade cycle also.
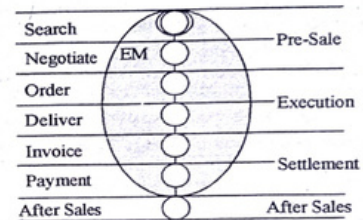
Fig. 6.1: Electronic Market & Trade Cycle.

Electronic markets are used in the financial and commodity markets and the dealing is done by intermediaries. Eg. Public uses the service of stockbroker to buy stocks & shares. These stockbrokers use electronic market & act as intermediary. Thus electronic markets serves the customer well.

Advantages & disadvantages of Electronic Markets

Electronic Market provides great advantage to the customer. Without spending much time & money for searching the commodity the customer gets complete information about the quality, price and characteristic & advantages of the product.

Sellers do not have much advantage from electronic Market. They face a great competition in the market as the customer is well informed about the product through electronic market. By introduction of electronic market search cost is lowered so if a buyer faces low search cost then it is difficult for the seller to maintain high price levels.

Future of Electronic Market

Electronic Market or Internet has given rise to a new class of intermediary who offer various services e.g. Online travel agents, shop bots who search for a particular thing on internet, on line auction sites etc. Electronic Market has also lead to price competition in on line companies.

Questions

Very Short Questions :

1. Define Electronic Market.
2. Electronic Market are used in which type of market.

Short Questions :

1. Explain future of Electronic Market ?
2. Discuss advantage & disadvantage of Electronic Market.

Long Question :

1. How Electronic Market work on trade cycle ?
2. What is the Electronic Market ? Discuss it's future & advantage.

❏❏❏

7

Electronic Data Interchange (EDI)

What is EDI?

EDI (Electronic Data Interchange) is the direct communication of trading messages between computer systems, using national and international telecommunications networks.

Many libraries and suppliers may currently use EDI simply for transmitting Orders and receiving Acknowledgements. However, EDI messages may also be used to transmit other information, for example:

- Invoices
- New title notifications

Why use EDI?

The main advantages of using EDI over other trading methods are:

- Speed of transmission (data arrives in seconds rather than days in postal systems)
- Accuracy of data (no re-keying of data into a system is required, eliminating the 'human error' factor at the receiving end)
- Replaces much of the paper-handling at both ends
- Security and audit trail

In tests comparing the use of EDI with paper orders libraries have found that they save several days on their turn round time (order to shelf-ready) by using EDI.

A 'fulfillment' message has also been developed, which allows a book supplier to transmit extra copy-specific data (e.g. barcode, shelf mark) to be loaded directly into the Library Management System - thus allowing the item to be put directly onto the shelves, avoiding the extra processing usually required to add it to the circulation system.

History of EDI

The early applications of what became known as EDI were undertaken in the United States. The idea's origins have an international flavor, however, being traceable back to the 1948 Berlin Airlift, where the task of co-coordinating air freighted consignments of food and consumables (which arrived with differing manifests, languages and numbers of copies) was addressed by devising a standard manifest. Electronic transmission commenced during the 1960s, initially in the rail and road transport industries. The standardization of documents was a necessary concomitant to that change. In 1968 the United States Transportation Data Coordinating Committee (TDCC) was formed, to coordinate the development of translation rules among four existing sets of industry-specific standards. A further significant move towards standardization came with the X12 standards of the American National Standards Institute (ANSI), which gradually extended and replaced those created by the TDCC.

At about the same time, the U.K. Department of Customs and Excise, with the assistance of SITPRO (the British Simplification of Trade Procedures Board), was developing its own standards for documents used in international trade, called Tradacoms. These were later extended by the United Nations Economic Commission for Europe (UNECE) into what became known as the GTDI (General-purpose Trade Data Interchange standards), and were gradually accepted by some 2,000 British exporting organizations.

Problems created by the trans-Atlantic use of two different (and largely incompatible) sets of standardized documents have been addressed by the formation of a United Nations Joint European and North American working party (UN-JEDI), which began the development of the Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT) document translation standards. A full range of business documents is in the process of being developed.

EDI's direct impact is to reduce the amount of data capture and transcription. This generally results in a decreased incidence of errors, less time spent on exception handling, and fewer data-caused delays in the business process. Benefits can be attained in such areas as inventory management, transport and distribution, administration and cash management.

By the time of the 1991 EDICA Conference in Sydney, it was claimed that there were 1,500 corporations using EDI in Australia and New Zealand. This would have compared favorably with the populations variously claimed for the U.S. (5,000-12,000), but less so with the U.K. (12,000) and Singapore (2,000). The transaction volumes in Australia to date were, moreover, small compared with those countries.

EDI (Electronic Data Interchange), in its many forms, is fast becoming an acceptable way for both the private and public sectors to do business. This white

paper is geared to someone who has not been exposed to EDI, in order to give them a basic understanding of what EDI is all about and how it works.

Definition

Electronic Data Interchange (EDI) may be most easily understood as the replacement of paper-based purchase orders with electronic equivalents. It is actually much broader in its application than the procurement process, and its impacts are far greater than mere automation. EDI offers the prospect of easy and cheap communication of structured information throughout the corporate community, and is capable of facilitating much closer integration among hitherto remote organizations.

A more careful definition of EDI is 'the exchange of documents in standardized electronic form, between organizations, in an automated manner, directly from a computer application in one organization to an application in another'.

EDI is defined by International Data Exchange Association (IDEA) as :

The transfer of structured data, by agreed massage standards, from one computer system to another, by electronic means

This definition of EDI has four elements −

(I) **Structured Data :** EDI transactions are composed of codes, values and short pieces of text if necessary; each element with a strictly defined purpose. For example, an order has codes for the customer and product and values such as quantity orderd.

(II) **Agreed massage Standards :** The EDI transaction has to have a standard format. The standard is not just agreed between the trading partners but is a general standard agreed at national or international level. A purchase order will be one of a number of agreed massage standards.

(III) **From one computer system to another :** The EDI message sent is between two computer applications. There is no requirement for people to read the message or relay it in a computer system. For example, the message is sent directly between the customer's purchasing system and the supplier's order processing system.

(iv) **By Electronic Means :** Usually this is by data communications but the Physical transfer of magnetic tape or floppy disc would be within the definition of EDI. Often networks specifically designed for EDI will be used.

The another definition requested by the sokol as − in 1989. The INTER COMPANY COMPUTER − TO COMPUTER Communication of STANDARD BUSINESS TRANSACTIONS in a STANDARD FORMAT That permitting the receiver to perform the intended transaction.

This definition emphasises the point that the normal application of EDI is in business transaction between companies but, contrary to this definition there are

also applications of EDI for information exchange and for intra company transaction.

EDI Terminology

Before we discuss the implementation of EDI within the Samco Power Accounting system, we must first look at some key parts that make up EDI transaction processing:

- **TRADING PARTNERS:** A trading partner is an organization who uses EDI. They are assigned a trading partner ID number which is their generic "customer number". This ID will be used by anyone they do business with. If you decide to go EDI you will register your company with your service provider (VAN) who will provide you with a trading partner ID number.
- **VAN (VALUE ADDED NETWORK) :** Service provider who stores your EDI mail from your trading partners, and transmits your EDI documents to your trading partner's mailbox. There are a number of different VANs, all of whom are linked together.
- **TRANSLATION SOFTWARE :** Software used to send and receive EDI documents with you VAN. Many translation packages also offer a mapping or integration component for importing and exporting X12 documents.
- **GLOBAL/DX :** The link between your Samco Power Accounting System and the world of EDI. This module takes the output from the translation software and creates the necessary transactions, and also creates files for the translation software to send to your trading partners. An extensive amount of features and enhancements are added by Global/DX to make your Samco Power Accounting System.

How EDI Works

The easiest way to understand EDI is to follow an example of how EDI is implemented within Samco's Power Accounting System using the Global/DX module. In this example XYZ Co. is sending you a Purchase Order.

1. XYZ Co. transmits a PO in X12 format to their VAN. In EDI terms the PO is called an 850.
2. The customers VAN reads the X12 document, determines who its for, and then transmits the document to your VAN who in turn stores it in your mailbox.
3. Your system's translation software dials into your VAN and picks up the X12 document. The document is then converted and exported to a flat ASCII file in a predefined sub-directory with a pre-defined name.
4. Samco's system is set up to automatically poll the sub-directory. When it finds a file it parses out all of the documents into smaller files. In this case only one document is detected so it will create one file for the PO
5. Global/DX then reads the file and determines that it is a PO for XYZ Co. The PO is then run through a template that was set up specific to XYZ Co.

Any errors are reported, and depending on how errors are dealt with certain measures are taken. Some vendors like to have a PO confirmation sent back to them. This would be handled automatically at this stage.

6. Once step 5 is complete, an order is created in the system for XYZ Co and, optionally, a picking ticket is generated in the warehouse for shipping. Hand-held data collectors could also be used to download the order for picking.
7. After the order is picked, shipping enters in the product shipped and other shipping related pieces of information in an "Order Packing" function. With hand-held data collectors the information would have been entered as the order was being picked. Once the order is identified as ready to go, Global/DX creates an Advanced Shipping Notice (ASM) and adds it to the outbound documents folder.
8. When the order is invoiced, an EDI invoice is created in the outbound documents folder, and an optional hard copy is generated for your records.
9. The EDI translation software will then transmit the ASM and invoice to their VAN who in turn transmits them to XYZ Co.'s VAN.
10. XYZ Co. will load the documents transmitted into their system. When the invoice becomes due they could transmit a funds transfer transaction to their bank depositing payment into your bank account. An EDI document is then sent to your mailbox for loading into Accounts Receivable.
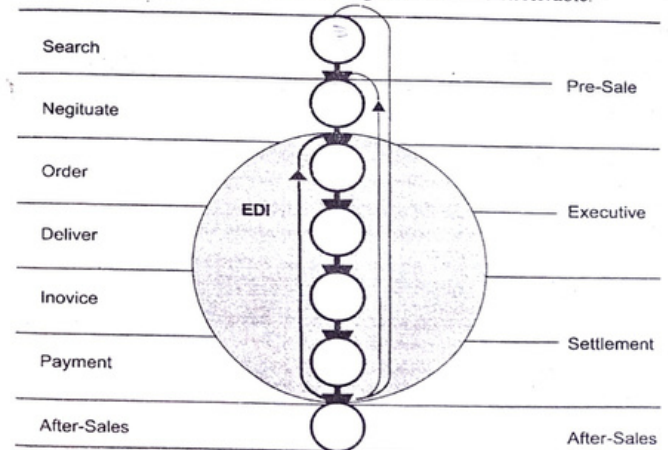

Fig.7.1: The Credit Trade Cycle.

EDI is most commonly applied in the Execution & Settlement phases of the trade cycle. In Execution of a simple trade exchange the customer's order can be sent by EDI and the delivers notification from the supplier can also be electronic. For settlement the supplier can use EDI to send the invoice and the customer can finish the cycle with an electronic funds transfer via the bank and an EDI payment notification to the supplier.

EDI can be used for pre-sales transaction; there have been EDI messages developed for transactions such as contract but they are not widely implemented.

EDI could be used for after sales transactions but only if they were in a standardized format and frequent enough to justify the system costs; transactions such as a dealer claiming payment for warrantee work could be a possible application.

Architecture for EDI

EDI can be compared and contrasted with electronic mail (email). Email enables free-format, textual messages to be electronically transmitted from one person to another. EDI, on the other hand, supports structured business messages (those which are expressed in hard-copy, pre-printed forms or business documents), and transmits them electronically between computer applications, rather than between people.

The essential elements of EDI are:

- the use of an electronic transmission medium (originally a value-added network, but increasingly the open, public Internet) rather than the despatch of physical storage media such as magnetic tapes and disks;

- the use of structured, formatted messages based on agreed standards (such that messages can be translated, interpreted and checked for compliance with an -explicit set of rules);

- relatively fast delivery of electronic documents from sender to receiver (generally implying receipt within hours, or even minutes); and

- direct communication between applications (rather than merely between computers).

EDI depends on a moderately sophisticated information technology infrastructure. This must include data processing, data management and networking capabilities, to enable the efficient capture of data into electronic form, the processing and retention of data, controlled access to it, and efficient and reliable data transmission between remote sites.

A common connection point is needed for all participants, together with a set of - electronic mailboxes (so that the organizations' computers are not interrupted

by one another), and security and communications management features. It is entirely feasible for organizations to implement EDI directly with one another, but it generally proves advantageous to use a third-party network services provider.

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

It is important to differentiate between EDI and electronic commerce. Electronic commerce encompasses all aspects of electronic business exchanges, including person-to-person interaction (collaboration), money transfers, data sharing and exchange, Web site merchant systems, and so on. EDI is a subset of electronic commerce that encompasses the exchange of business information in a standardized electronic form. Standard form defines things like the layout of information for an invoice or purchase order.

EDI can reduce costs, workforce requirements, and errors associated with retyping orders, invoices, and other documents. With EDI, computer data already entered by one organization is made available to a business partner. EDI is typically handled using store-and-forward technologies similar to e-mail. A third party such as GEIS (General Electric Information Service) often serves as a "middleman" to help organizations establish business relationships and handle business transactions.

EDI can be thought of in terms of messages exchanged between businesses that are engaged in electronic commerce. Within a message is a basic unit of information called the data element. A message may consist of many data elements. For example, each line item on an invoice is a data element. All the data elements form a compound document, which is essentially a business form. An EDI message also includes a field definition table that provides information about the data elements in the message, such as whether an element is mandatory or optional, how many characters it has, and whether it is numeric or alphabetic. String identifiers define things like data element names and a data dictionary reference number. The data element dictionary defines the content and meaning of data elements.

EDI was first developed by the automobile/transportation industry in the 1970s. Today, ft is widely used in a variety of industries, including distribution, finance and accounting, health care, manufacturing, purchasing, retail, tax form filing, and shipping. Early EDI packages used rather simple standard forms that forced companies to convert data to fit the forms. Newer EDI systems allow companies

to create custom systems using simple programming or authoring tools. Even more recently.

There are two approaches to implementing EDI. Many large organizations acquire or build their own proprietary systems, often in association with their business partners. If a business partner is small, it may have little choice but to adopt the proprietary system of its much larger business associate. The other approach is to work with a VAN (value added network) provider, which provides EDI transaction services, security, document interchange assistance, standard message formats, communication protocols, and communication parameters for EDI. Most VANs also provide a network on which to transmit information. VAN providers include

- GE Information Systems http://www.geis.com

- IBM Global Services http://www.ibm.com/services/

- Sterling Commerce http://www.stercomm.com

In many ways, the Internet is a better medium for implementing EDI than using value added network providers or installing private leased lines. The Internet is already in place as a business-to-business communication system. The startup costs are cheaper and, in most cases, the organization is already connected to the Internet. This makes it easier for more businesses to join the electronic commerce web, especially those who previously could not afford the expense of EDI.

The use of VPNs is growing for EDI and e-commerce-related traffic. A VPN can secure and give preferential treatment to EDI traffic. The term extranet is usually used to refer to a secure Internet connection between trading partners. The protocol for VPNs are L2TP (Layer 2 Tunneling Protocol), PPTP (Point-to-Point Tunneling Protocol), and the IETF's IPSec (IP Security).

Benefits of EDI

EDI's saves unnecessary re-capture of data. This leads to faster transfer of data, far fewer errors, less time wasted on exception-handling, and hence a more stream-lined business process. Benefits can be achieved in such areas as inventory management, transport and distribution, administration and cash management. EDI offers the prospect of easy and cheap communication of structured information throughout the government community, and between government agencies and their suppliers and clients.

EDI can be used to automate existing processes. In addition, the opportunity can be taken to rationalize procedures, and thereby reduce costs, and improve the speed and quality of services. Because EDI necessarily involves business partners, can be used as a catalyst for gaining efficiencies across organizational boundaries.

This strategic potential inherent in EDI is expected to be, in the medium term, even more significant that the short-term cost, speed and quality benefits.

Five key benefits of Electronic Data Interchange (EDI)

The benefit of electronic trading is well documented. Here are the top five reasons why businesses adopt EDI.

Benefit One: Remove document re-keying

By removing the manual keying of key business documents such as Orders, Invoices, Acknowledgments and Despatch Notes your company can benefit significantly by::

- Reduced labour costs

- Elimination of human keying errors

- Faster document processing

- Instant document retrieval

- Remove reliance on the postal service

Benefit Two: Eliminate Paper

Paper-based trading relationships have some inherent disadvantages when compared with their electronic trading equivalents:

- Stationery and printer consumable costs

- Document storage costs

- Lost documents

- Postage costs

Benefit Three: Reduce lead times and stockholding

- Electronic-trading documents can be delivered far more quickly than their paper counterparts, thus the turnaround time from order to delivery can be reduced.

- By using EDI for forecasting and planning, companies are able to get forward warning of likely orders and to plan their production and stock levels accordingly.

- Companies receiving advanced shipping notes or acknowledgments know in advance what is actually going to be delivered, and are made aware of shortages so alternate supplies can be sourced.

- Integrating electronic documents means they can be processed much faster, again reducing lead times and speeding up payments.

Benefit Four: Increase quality of the trading relationship

- Electronic trading documents when printed are much easier to read than copies faxed or generated on multi-part stationery by impact printers.
- Accurate documents help ensure accurate supplies.
- Batches of electronic documents are usually sequentially numbered, therefore missing documents can easily be identified, not causing companies to wade through piles of paper.

Benefit Five : Competitive Edge

Because electronic data interchange (EDI) makes you attractive to deal with from your customers' point of view, and you are in their eyes cheaper and more efficient to deal with than a competitor trading on paper, your costs will be lower because you will require less manpower to process orders, deliveries or payments.

It is no accident that the leading UK retailers all rely on EDI for placing orders and receiving invoices - they know the benefits they get and the costs that can be saved.

Disadvantages of EDI

Too Many Standards

There are too many standards body developing standard documents formats for EDI. For example your company may be following the X12 standard format, while your trading partner follows the EDIFACT standard format.

Changing Standards

Each year, most standards bodies publish revisions to the standards. This poses a problem to EDI users. You may be using one version of the standard while your trading partners are still using older versions.

EDI is Too Expensive

Some companies are only doing business with others who use EDI. If a company wants to do business with these organizations, they have to implement an EDI program. This expense may be very costly for small companies.

Limit Your Trading Partners

Some large companies tend to stop doing business with companies who don't comply with EDI. For example Wal Mart is only doing business with other companies that use EDI. The result of this is a limited group of people you can do business with.

Questions

Very Short Questions :

1. What do you mean by VAN ?
2. What is trading partners ?
3. What is the full form of IDEA ?
4. What do you mean by structured data ?

Short Questions :

1. What is EDC ?
2. Explain the adventages and disedvantages of EDI.
3. Explain the need of EDI ?
4. Brief the Elements of EDI.

Long Question :

1. Define EDI & discuss the various elements of EDI. What are EDI FACT standards ? **(Raj. Univ. Examination 2005)**
2. Short note on EDI.
3. What is EDI ? Discuss it's advantage & disadvantage?
4. How EDI work ? Give suitable example.
5. Discuss EDI architectre & five key benifits of EDI ? **(Raj. Univ. Examination 2005)**
6. What are the application of EDI ? Mention the advantages & disadvantage of EDI ?

□□□

8

EDI Standards

In the early days of EDI large firms announced a proprietary format and communication interface and either encouraged or mandated trading partner participation. Proprietary data formats and technical requirements work well enough when a firm deals with only one, two or a small number of partners. However, widespread implementation of EDI cannot not proceed without the development of widely accepted data format and communication standards.

Standard Organizations

A number of different standards bodies exist to develop standard formats for EDI. The Electronic Data Interchange Association (EDIA) is a non-profit organization set out to serve as an administrator for several different industry groups. Each industry served has a committee to determine new standards, modify existing ones, and pass the information on to the EDIA for publication and distribution. EDIA was asked to develop a set of standards applicable to the grocery industry. The first such standard is The Uniform Communication Standard (UCS) which was applied to an actual transaction by the Quaker Oats Company in 1981. UCS standards are now widely applied in the grocery and retail trade.

The Need for EDI Standards

EDI provides on electronic linkage between two trading partners. To send documents electronically to each other, firms must agree on a specific data format and technical environment. In the early days of EDI large firms announced a proprietary format and communication interface and either encouraged or mandated trading partner participation. K-Mart, for example, developed a proprietary purchasing system for sending electronic purchase orders to its suppliers. Firms wanting to sell to K-Mart agreed to adopt those conventions. Proprietary data formats and technical requirements work well enough when a firm deals with only one, two or a small number of partners. Suppose the K-Mart supplier also wants to supply Sears, which has a different data format. The supplier would have to install a second system to comply with the Sears format.

Suppose further that the supplier wants to sell to Service Merchandise, which has yet " another format. A third system would be needed to interface with the Service Merchandise format.

It should be clear that widespread implementation of EDI could not proceed without the development of widely accepted data format and communication standards. If K-Mart, Sears, and Service Merchandise agree to use a common standard, then the supplier who wants to sell to all three needs to maintain only one system to read electronic purchase orders from them all.

Transportation Data Coordinating Committee. The development of widely accepted standards has been formally under way since the formation of the Transportation Data Coordinating Committee (TDCC) in 1968 (TDCC has since been renamed the Electronic Data Interchange Association , or EDIA). This non-profit organization set out to establish standards for communications between and within railroads, ocean carriers, air carriers, and motor carriers. The first TDCC standard was published in 1975.

EDIA has subsequently broadened its reach to serve as administrator for several different industry groups. Each industry served has a standards committee made up of industry representatives. The standards committees determine new standards, modify existing ones, and pass the information on/to the TDCC for publication and distribution.

EDI Standards facilitate electronic data interchange (EDI) by providing :

- Rules of syntax
- Definition of the data organization
- Editing rules and conventions
- Published public documentation

ANSI X12 Committee In 1978 the Credit Research Foundation and EDIA formed the BUSAP (or Business Applications) Committee, which subsequently received a charter from the American National Standards Institute (ANSI) as the ANSI XI2 Committee. The charge of this committee is to develop standards that will be acceptable across industry groups. In 1983 five standards were published by X12. The ANSI XI2 committee has subsequently published standards for more than 20 documents including purchase order, remittance advice, invoice, and request for quote. Work is going forward to define EDI formats for an additional 100 documents.

Uniform Communication Standard

In 1980 A.D. Little issued its report on the grocery industry and suggested that adoption of electronic communications would greatly facilitate movement towards EDI. TDCC was asked to develop a set of standards applicable to that industry.

The first such standard (the Uniform Communication Standard, or UCS) was applied to an actual transaction by the Quaker Oats Company in 1981. UCS standards are now widely applied in the grocery and retail trade.

Towards common standards

In 1984 the ANSI XI2 committee and other industry groups joined with Europe's Trade Data Interchange (TDI) to form the Joint EDI Committee (JEDI). Parallel efforts in standards development have also been proceeding in Europe, leading to the development of the EDIFACT standards (EDI for Administration, Commerce and Trade). The EDIFACT committee worked out a common data dictionary and syntax rules so standards in different industries and countries can base standards development on the same building blocks. Several industry groups (automotive, chemical, communications, etc.) have decided to adopt XI2 standards for their industries. Rather than develop standards from the ground up, these industries often suggest subsets of generic X12 standards that fit the needs of their industries. The overall trend seems to be towards an ANSI XI2 basis for future standards development.

Open-EDI The ISO (International Standards Organization) and IEC (International Electrical Committee) are developing an EDI reference model under a joint committee called Open-EDI. The goal of Open-EDI is to allow electronic transactions among "multiple autonomous organizations" that may or may not have any prior business relationships. In other words, businesses should be able to establish trading partners over networks like the Internet upon first contact and without any pre-agreement, assuming trust systems are in place.

EDI Standards and Initiatives

There are several EDI standards that have been around for many years. But as the Internet took hold, new techniques for implementing EDI developed in groups and consortiums such as the W3C (World Wide Web Consortium), Commerce-Net, Rosetta Net, and Open Buying on the Internet (OBI).

EDI Standards are categorized in two standards, national & International EDI.

  (A) **National Standards:**

      Some of the more notable National Standards are:

- **ODETTE**

An EDI format developed for the European motor industry. ODETTE stand for the Organization for Data Exchange by Tele Transmission in Europe. ODETTE was predated by VGA, a standard developed, and still used, by the German motor industry. The motor industry is planning to move from VGA and ODETTE to EDIFACT when the standards are stable and their requirements are fully met.

- **TRADACOMS**

TRADACOMS is a UK National Standard, which is developed by the ANA (Article Numbering Association) in 1982. BEDIS group (Book Trade EDI Standards) also developed their standards and is now maintained by that group's successor : Book Industry Communication (BIC), BIC has decided that any new developments will be carried out in EDIFACT.

- **ANSI ASC X12 (American National Standards – X12) –** X12 is a standard that defines many different types of documents, including air shipments, student loan applications, injury and illness reports, and shipment and billing notices. The ANSI (American National Standards Institute) assigned responsibility for development of EDI standards to the ASC (Accredited Standards Committee) X12 organization in 1979. X12 has roots in work done in the shipping industry by the TDCC (Transportation Data Coordinating Committee) and work done in the food distribution industry by the UCC (Uniform Code Council).

  (B) **International Standards:**

EDIFACT: (Electronic Data Interchange for Administration, Commerce and Transport) was developed during the 1990s with a subset, EANCOM, which is the most widely-used 'dialect' of EDIFACT in the international retail and distribution sector.

The Pan-European Book Sector EDI Group (EDItEUR) was set up to develop and promote EDI in the European book sector and decided to work within the EANCOM subset wherever possible. EDItEUR mainly interprets, and occasionally extends, these standards for use in the book trade.

UN/EDIFACT : UN/EDIFACT (United Nations/Electronic Data Interchange for Administration Commerce and Transport) is an international set of EDI standards that are published by the United Nations Trade Data Interchange Directory (UNTDID). The Standards include syntax rules and implementation guidelines; message design guidelines, directory sets defining messages, data elements, and code sets, among other definitions. It is built upon X12 and TDI (Trade Data Interchange), the latter being a generic EDI standard used in Europe.

What is EDIFACT?

EDIFACT is an acronym for EDI for Administration, Commerce and Transport. It coordinates international standardization by working through the UN/ECE (United Nations/Economic Commission for Europe). It provides :

- an international EDI standard
- a set of syntax rules
- data elements, segments and codes
- messages

As shown in the following diagram, EDIFACT is the product of the evolution in bringing the Proprietary Standards of the U.S. and Europe together to form a single international EDI standard.
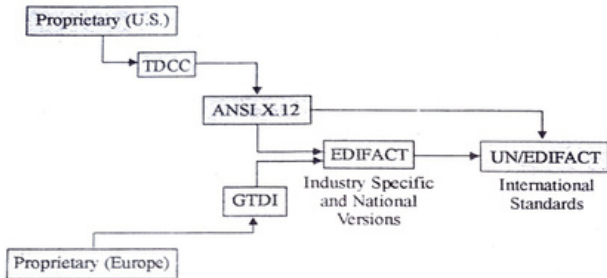
Figure : 8.1

In order to bring about the evolution of the EDIFACT standard, the UN has created UN/ECE to coordinate this effort. The organizational structure of the UN/ECE is made up of the following board members :
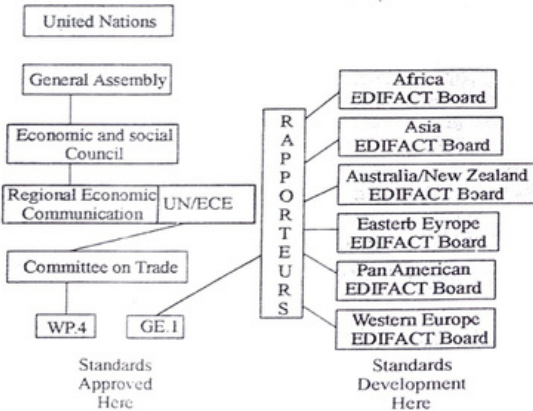
Figure : 8.2

The organizational structure of the regional boards are all structured in a similar fashion. Here is the organizational structure of the Pan American Board :
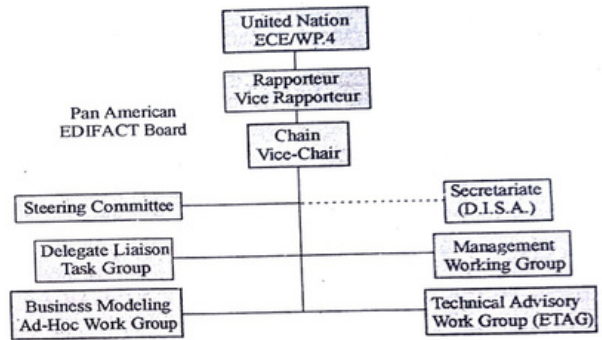
Figure : 8.3

Message Definition

A Message is a single business document. Each message is identified by a six character name. From the buyer-side these include :

- ORDERS – Purchase Orders
- CUSDEC – Customs Declaration
- IFTMIN – Instruction Message
- REMADV – Remittance Advice
- PAYORD – Payment Order

Seller – side messages include :

- IFTMAN – Arrival Notice
- CUSRES – Custom Response
- INVOIC – Invoices

Messages are made up of a collection of sequenced segments within defined areas. Some segments may be used in more than one area. The segments that can be used in each area are defined by the EDIFACT documentation. EDIFACT provides a hierarchical structure for messages.

Messages begin with the Message Header(UNH) Segment and end with the Message Trailer (UNT) Segment. These two segments are the first, and innermost, level of the three levels of "electronic envelopes" within EDIFACT. Here is an example of an Extended Payment Order (PAYEXT) message that illustrates this structure :

UNH+...	
BGM+...	Header
MOA+...	
...	
DOC+...	Detail
...	
UNS+S'	
...	Summary
MOA+...	
UNT+...	

Figure : 8.4

Message Structure: Segment Tables

The message structure is defined in segment tables. These give the 'rules' of the message. They also show which segments are used in a particular message and the order in which the segments must appear.

Here is an example of a segment table for the Extended Payment Order (PAYEXT) :

Position	Tag	Name
0010	UNH	Message Header
0020	BGH	Beginning of Message
0030	DTM	Date/time/period
0040	BUS	Business funetion
0060	RFF	Reference
0070	DTM	Date/time/period
0080	FTX	Free text
0090	PAI	Payment instructions
0100	FCA	Financial charges allocation
0120	MOA	Monetary amount
0130	CUX	Currencies
0140	DTM	Date/time/period
0150	RFF	Reference
	etc.	
	etc.	

Figure : 8.5

Segment tables specify if a segment must appear in a message. This is done using the 'Requirements Designator' field. Each segment in the table is designated as either Mandatory (M) or conditional ©. Mandatory means that at least one occurrence of the segment must appear in the message. Conditional means a segment may be used, if needed, but it is not required.

Segment tables also specify how many times a particular segment may repeat. This is called the 'Repetition' field. Here is the requirements designators and repetition in as displayed in the table for the Extended Payment Order (PAYEXT) message :

Position	Tag	Name	Req	Rept
0010	UNH	Message Header	M	1
0020	BGM	Beginning of message	M	1
0030	BUS	Business Function	C	1
0040	DTM	Date/time/period	M	4
0060	REF	Reference	M	1
0070	DTM	Date/time/period	C	1
0080	FTX	Free text	C	5
0090	PAI	Payment Instructions	C	1
0100	FCA	Financial charges Allocation	C	1
0120	MOA	Monetary Amount	M	1
0130	CUX	Currencies	C	1
0140	DTM	Date/Time/Period	C	2
0150	RFF	Reference	C	1
	etc.			

Figure : 8.6

Message Structure: Segment Groups

When collections of segments repeat as a group, they are called segment groups. If you are familiar with ANSI X.12, these are the equivalents of loops.

Here is an example of segment groups for the Extended Payment Order (PAYEXT):

Position	Tag	Name	Req	Rept
0010	UNH	Message Header	M	1
0020	BGM	Beginning of message	M	1
0030	BUS	Business Function	C	1
0040	DTM	Date/time/period	M	4
0050		Segment Group 1	C	2
0060	RFF	Reference	M	1
0070	DTM	Date/time/period	C	1
0080	FTX	Free text	C	5
0090	PAI	Payment Instructions	C	1
0100	FCA	Financial Charges Allocation	C	1
0100		Segment Group 2	M	1
0120	MOA	Monetary Amount	M	1
0130	CUX	Currencies	C	1
0140	DTM	Date/Time/Period	C	2
0150	RFF	Reference	C	1
	etc.			
	etc.			

Figure : 8.7

Segment groups may be 'nested'. This means that a segment group is fully contained within another segment group.

Here is an example of a Nested Segment Group :

Position	Tag	Name	Req	Rept
0280	DOC	Segment Group 6	C	9999
0290	DTM	Beginning of message	M	1
0310	REF	Date/time/period	C	5
0320	NAD	Reference	C	5
0330		Date/time/period	C	2
0340	CUX	Segment Group 7	C	5
0350	DTM	Reference	M	1
0360		Date/time/period	C	1
0370	AJT	Segment Group 8	C	100
0380	MOA	Adjustment Details	M	1
0390	RFF	Monetary Amount	C	1
0400		Reference	C	1
	etc			
	etc			

Figure : 8.8

- Take Self Test I to check your understanding at this point. Self Test I can be found at the end of this tutorial.

Segments

- A segment is a collection of logically related data elements in a fixed, defined sequence. Segments contain :
- A three-character alphanumeric code that identifies the segment. This is called the segment tag.
- Variable length data elements. These can be either simple or compsite.

Segments must be separated by a data element separator (data element delimeter), which is normally + and :, and terminated by a segment terminator, normally :

All segments are fully documented in the United Nations Trade Data Interchange Directory (UNTDID). These tables list the segment position, segment tag, segment name. Segment tables also specify if a segment must appear in a message using the requirements designator M (Mandatory) or C (Conditional), and how many times a particular segment may repeat (repetition field).

In EDIFACT, there are two kinds of segments :

- Service Segments
- Generic Segments

Service Segments are :

- Envelopes (UNB – UNZ, UNG-UNE, UNH-UNT)
- Delimiter String Advice (UNA)
- Section Separator (UNS)

Generic Segments are :

- DOC to identify and specify documents
- MOA for monetary amounts
- DTM for dates and times
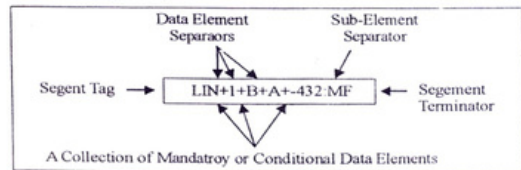- NAD for name and address data
- Here is a sample segment :

Figure : 8.9

Segment Terminators and Delimiters

The end of each segment is determined by the Data Segment Terminator. In EDIFACT the standard data segment terminator is :
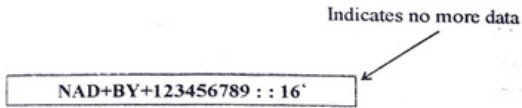
Indicates no more data

NAD+BY+123456789 : : 16'

Figure : 8.10

Optional or conditional data elements that are not used must be accounted for by their position with the segment. Here is an example :

NA+BY+123456789 : : 16'
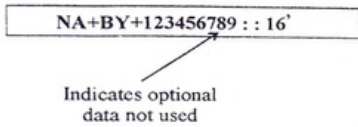
Indicates optional
data not used

Figure : 8.11

However, optional or conditional data elements without data that appear at the end of a data segment do not need additional data element separators to correctly position the data. Here is an example.
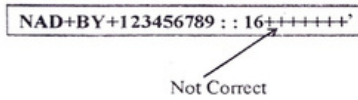
NAD+BY+123456789 : : 16+++++++'

Not Correct

Figure : 8.12

What is mapping?

There are almost as many business applications as there are businesses. In the early days, each business had its own applications for tracking merchandise, ordering, invoicing, accounts payable, receivable, and other business needs. We soon realized that:

1. The computer applications of one business couldn't talk to those of another. This meant re-entering all data that was received.

2. The applications in one department of a business couldn't talk to those of another in the same business – order entry couldn't talk to invoicing which couldn't talk to accounts receivable.

This meant re-entering required data multiple times.

The solution was to standardize the data that was read by a computer program so that the data could be read by all programs with that standard. Can you read the purchase order below?

Human readable purchase order:

QTY	UNIT	NO	DESCRIPTION	PRICE
3	CASE	6900	CELLCLOSE SPONGES	12.75
12	EACH	P450	PLASTIC PAILS	.457
4	EACH	1640Y	YELLOW DISH DRAINER	.94

Figure : 8.13

Standards translate the 'human readable' invoice to a 'machine readable' format :

```
LIN+1++6900:MF'
IMD+F++:::CELLULOSE SPONGES'
QTY+21:3:CA'
PRI+CAL+12.75'

LIN+2++P450:MF'
IMD+F+++:::PLASTIC PAILS'
QTY+21:12:EA'
PRI+CAL+0.457'

LIN+3++1640:MF'
IMD+F+++:::YELLOW DISH DRAINER
QTY+21:4:EA'
PRI+CAL+0.94'
```

Figure : 8.14

Data Elements: Simple and Composite

A simple data element contains one piece of information. The composite data element contains more than one piece of information, usually containing qualifiers.

In EDIFACT all mandatory data elements must contain data. Conditional data elements may or may not contain data, depending on the requirements of the particular transmission.

Since data elements must be accounted for by their position in the segment, if an optional or conditional data element does not have data, that data element must still be accounted for in its position within the segment by using the appropriate number of data element separators to 'skip over' the empty field. For example :
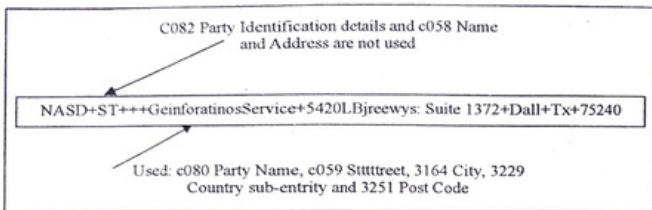
Figure : 8.15

Here is a list of data element types and the rules that apply to them :

Numeric

A numeric segment may contain only digits, a decimal point and, if negative, a minus sign.

Attributes	Sample Data					
n..4	Permitted :	1	123	1234	-1234	1.1
		1.234				
	No Preminated:	A12	12345			
n4	Permitted:	134-1234	123	A12	-1234	
		1				
n8	Not Permitted :	20000214 (dates Are Number)				

Figure : 8.16

If the numeric is a given as a decimal, the number must have a digit before and after the decimal point. For example : 2.0 is correct (as is 2), however, 2 is wrong. 0.50 is correct (as is 0.5), .50 is wrong.

Alphabetic

An Alphabetic segment contains the specified number of alpha characters, including imbedded blanks. Leading spaces must be preserved.

Attributes	Sample Data				
a.8	Permitted:	ABCD	TOM	ABC	ALSMITH
	Not Permited.	DOGREENWOOD			
a4	Permited:		WXYZ		
	Not Permited:	A	A123	BCDEF	

Figure : 8.17

Alphanumeric

Alphanumeric segments contain the specified number of alphanumeric characters (including imbedded blanks). Leading spaces must be preserved.

Attribuæsa	Sample Data				
a..8	Permitted :	ABCD	TOM	ABC	ALSMITH
	Not Permitted :	DONGREENWOOD			
a4	Permitted :	ABCD	WXYZ		
	Not Permitted :	A	A123	BCDEF	

Figure : 8.18

Different types of data elements also have specific rules they must follow. The data element dictionary usually specifies the codes (Identifiers) by using the words 'coded' or 'qualifier' in the data element name :

6345	Currency, code	C	an..3
6345	Currency, qualifier	C	an..3

Figure : 8.19

Composite Data Elements: Qualifier and Value

In EDIFACT, the composite data element is made up of 2 or more pieces of data (known as components), which form a single date unit. Typically the first data element is the value, which is being qualified. The second data element is typically the qualifier. These are typically ID (code values) fields. The qualifier gives additional definition to the value.

Here is an example of a composite data element. This data element is in regard to financial institution information. This is the information provided in the segment detail :

3035	Party Qualifier	M	an..3
C708	Account Identification	C	
3194	Account holder number	C	an..17
3192	Account holder name	C	an..35
3192	Account holder name	C	an..35
6345	Currency, Coded	C	an..3
C988	Institution Identification	C	
3433	Institution name identification	C	an..11
1131	Code list qualification	C	an..3
3055	Code list responsible agency, coded	C	an..3
3434	Institution branch number	C	an..17
1131	Code list qualifier	C	an..3
3055	Code list responsible agency, coded	C	an..3
3432	Institution name	C	an..70
3436	Institution brach place	C	an..17
3207	Country, Code	C	an..3

Figure : 8.20

This is how the Party Qualifier data element (3035) is displayed in the message :

Figure : 8.21

The composite data elements (C078 and C088) are made up of various conditional components from the segment table. Because they are conditional not all of the data elements are used. All components are separated by a sub-element qualifier (:).

- Take Self Test II to check your understanding at this point. Self Test II can be found at the end of this tutorial.

Message Structure and Electronic Enveloping

There are three significant steps for creating and sending data using EDIFACT :
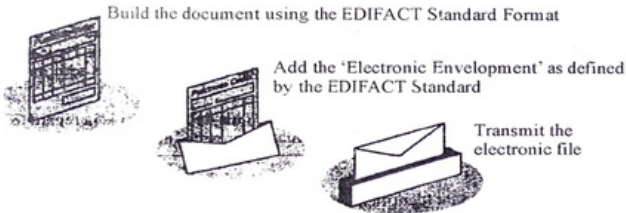

Build the document using the EDIFACT Standard Format

Add the 'Electronic Envelopment' as defined by the EDIFACT Standard

Transmit the electronic file

Figure : 8.22

Levels and Character Sets

In EDIFACT there are two levels in which messages may be transmitted. The use of a particular level designates which character set will be used :

- LEVEL A (UNA) : only upper case; only printable characters
- LEVEL B(UNB) : upper and lower case; includes non-printing characters for delimiters

The UNA Interchange is transmitted as a single string of 9 characters prior to the UNB Interchange segment. UNA is optional, and if not used, the defaults shown below apply :

	Level A	Level B	
Character 1	:	IS1	Sub-element delimiter
Character 2	:+	IS3	Data element delimiter
Character 3	.or,	Same	Decimal point delimiter
Character 4	?	Not Used	Release character (space if not used)
Character 5	Reversed for future use		Space
Character 6	'	IS4	Segment terminator

Figure : 8.23

A RELEASE CHARACTER is used when there is a need to transmit a message in which a character is designated as a delimiter, indicator or terminator, but it also represented in the message data. For example :

The name of a company is DON'S DISTRIBUTION COMPANY. The apostrophe is designated as the segment terminator. Question : How do you transmit the apostrophe in DON'S in your message ?

Solution : Use a release character (normally ?). So the data would look as follows :

18 Steps to successful EDI

The following is a generalized list of major points for consideration when undertaking an EDI project:

1. Obtain commitment from all areas of management.

Involvement from all impacted departments is essential. Each department should be included in the analysis, testing and implementation to validate the testing and to ensure that the resulting system meets the objectives.

2. Establish a plan

Develop a work plan that identifies the tasks required and provides initial time estimates. This plan should also provide a direction of what type of documents you wish to trade.

3. Establish a Project team

The team should establish a responsibility list for each identified task. The deliverables from each task should be defined. The team should consist of representatives from all affected areas.

4. Establish EDI Business Contacts

These people are essential when working with other companies to ensure that the business needs are met.

5. Establish EDI Technical Contacts

These people will work in concert with the EDI Business Contacts and your Trading Partners to ensure that the stated process flows as expected.

6. Review Internal Systems and Business Procedures

A through current system analysis should be done. The present process that create! the business documents and the flow of the documents should be recorded. The next step is to determine how EDI should be integrated into existing systems.

7. Conduct a Trading Partner Survey

This survey will provide you with a listing of your potential trading partners:

- EDI Experience and knowledge
- Network providers (or direct connections using the Internet)
- Documents traded or planned
- Degree of integration of EDI into their applications.

This point is critical if possible you want to start your EDI program with a trading partner who has as much as experience as possible with EDI, documents that you are sending and have a commitment to continued working with you in the future

8. Decide on EDI Translation Software

Great choice of deciding to go with the experts at SoftCare and our fully featured ED Management System, TradeLink.

9. Decide on EDI Integration provider

You can utilize your existing I.S. providers to implement EDI or you can use SoftCare? Solution team to help in any facet of the implementation of EDI Our experienced staff has helped in the integration of hundreds of EDI systems.

10. Review data contained in the documents to be exchanged

A review of the data to be transmitted and received is essential to ensure that integration wiil proceed normally.

11. Decide on a Network Provider

Recently many EDI Hubs (such as Wal*Mart) have insisted on direct EDI communications over the Internet using the AS2 communications protocol. While many of your trading partners will use this protocol, there are many EDI trading hubs that still require a connection using an EDI VAN?s

Suppliers of these VAN services have standard contracts and commercial price lists. The timing of this decision should be made early, as it will influence many of the future decisions that you will make. As there are various services available from Network providers it is important to determine what services are to be purchased. Your SoftCare Solutions group contact can help you with the decision on which network and how to communicate tc that network to get your company the best Return on Investment.

12. Code and Test Interface to in-house systems.

The maximum benefit of EDI is derived from integration of information so that information can flow directly in/out of in-house systems without human intervention. TradeLink has many tools such as the TradeLink XMapper to help you with this interface.

13. Implementation of your Translation software

We have already installed TradeLink, in the next few days we will be configuring it to send and receive data to/from your pilot trading partner.

14. Implement and test the network connection with the translation software

This process will test the connection to the network provider or directly using the Internet from the translation software's scripts.

15. Conduct system testing with the "pilot" Vendor

The purpose of this is to verify the sending and receiving of transmissions from your "pilot" vendor. This allows data to be processed to determine if any changes are necessary. Extensive testing should be done prior to implementation. Most companies conduct parallel testing with EDI and paper documents until they are sure that the information received meets their needs.

16. Decide on a production cutover date

Develop a signoff document that includes all the participants in the project.

17. Implementation

It is recommended that you collect data during the first few months to use to access what savings/costs your company is experiencing. This information is useful for your management and future trading partners.

18. Post Implementation Review

Review the results after six months to determine if the planned benefits/costs meet the actual benefits/costs.

$\boxed{\textbf{Questions}}$

Very Short Questions :

1. Write a full form of EDI FACT.
2. Write about on TRADA COM
3. What is Messages ?
4. UNA Stand for ?
5. ANSI Stand for ?
6. What is agreed message standard.

Short Questions :

1. Why need for EDI Standard ?
2. What do you mean by Open Standard ?
3. What is Mapping ?

Long Question :

1. What is ment by EDI standardization ? Discuss it's need & relevance ?
   (Raj. Univ., Examination 2007)

2. Write all EDI implementation steps.
3. Write a essay on national & international EDI standard.
4. What is EDIFACT ? Discuss it's message structure.

❏ ❏ ❏

9

Value Added Networks (VAN)

Introduction

To avoid all the paperwork handling and mailing problems and rekeying overheads, companies have looked into the possibility of EDI - that is the connecting of their computer systems to send business data directly from computer to computer after having agreed on the sorts of paper (invoice, purchase orders, bills of lading etc) to be exchanged and the data and format for the exchange.

While this has solved the problem of overheads, the application of EDI could in fact lead to a complex web of communication lines connecting each company to its trading partners, and result in the use of many formats.

Companies also need to contend with the issue of connecting their computer systems to computer systems of different makes which their trading partners may use. Companies could face a long lead time in developing custom-made connections to each of its trading partners.

The concept of a clearing house, through which computers would transmit documents electronically has therefore evolved. Value Added Networks (or in short VAN) emerged to serve as the clearing houses.

Definition of VANs

The definition of VAN can be taken as "those, which add value to the basic telecommunication networks in order to provide a more cost effective service".

- It is not unusual that the "VAN market" in many countries, including Asian countries, is regulated by the telecommunication authorities; these authorities grant licenses to companies operating VANs.
- Most VANs in many countries offer, besides EDI services, a suite of other complementary services, including electronic mail, on-line databases, electronic funds transfer services etc.
- VANs play a key role in EDI implementation in many countries as they have both the resources and expertise needed to set up direct

communications links with each of the trading partners. VANs also provide a host of support facilities, such as audit trail, translation of EDI standards and implementation support.

- The role of VANs, the services they offer, how to select a VAN, when to use a VAN etc, are some issues which we will deal with in this chapter.

The role of VANs

VANs undertake the role of a middleman in the channel of EDI communications. Often referred to as the "electronic postman", VANs offer services to connect all parties so that EDI users need only establish one single connection with the VAN in order to communicate electronically to all other parties connected to the VAN. In other words, VANs eliminate the need for computer systems to be connected to a multitude of other computer systems in order to send and receive EDI messages.

In so doing, VANs also eliminate the problem of incompatible systems not being able to connect to each other. For example, a VAN would support all platforms of computer systems, mainframes, minicomputers, personal computers of all makes - IBM, HP, DEC, UND etc. In a situation without a VAN, it would not be easy for an IBM personal computer to communicate electronically with a DEC minicomputer. With a VAN as the middleman, both the computer systems need only connect to the VAN, which supports both interface requirements.

The role of VANs can be outlined as follows:

1. VANs act as clearing houses;
2. VANs perform mailbox and network management;
3. VANs offer translation capabilities from one EDI format to another;
4. Most VANs provide a host of complementary services, such as electronic mail, electronic funds transfer, database access etc;
5. Most VANs offer communications capability round the clock;
6. Most VANs also provide technical consultancy and support in EDI applications.

Network features of VANs

VANs generally provide the following network features:

1 Password management

manages the passwords of users within your account.

2 Access management

manages network and application access for authorised users only.

3 Communications management

offers delay transmission and redial facilities as well as recovery/restart support.

4 Problem management

offers round-the-clock facility for users to report, track and resolve problems.

5 Status monitoring facility

monitors usage status of network users within your account.

6 Broadcast facility

enables users to disseminate information to others.

7 Mail facility

offers electronic mail services.

8 Message archival

permits users to store messages and access by message reference or date.

9 Message acknowledgement

provides various types of systems delivery and receipt acknowledgements.

10 EDI standards

supports a wide array of open and proprietary EDI standards.

Types of VANS

VANs can be generally classified into three broad categories depending on the scope of services offered :

Industry/application-specific VANs

These are mainly focused on a specific industry or sector. They have a focused market of users in the specific industry/sector and offer value added services to meet the needs of those parties. National VANs

These are set up to take care mainly of electronic communications for a broad spectrum of parties within the countries' geographical boundaries. National VANs are very prevalent in the Asian region. Global VANs

These span across country boundaries and often position themselves as focusing on providing services for inter-country communications as opposed to intra-country communications more often taken care of by national VANs.

Trends of VANs in Asia

For most Asian countries, EDI has been introduced in a big way only in the last five or six years. There are two prominent trends of VANs in these countries.

In Asian countries, the Government usually plays a big role in the promotion and implementation of EDI. This is significantly different from the developments in the western countries, whereby the private sector impetus to EDI is very strong. This can be attributed to the fact that it has been recognised that EDI can be used as a springboard for a country's economic growth.

As EDI in Asian countries is very much Government-led, there is a general trend towards the setting up of national VANs, in most cases with government participation, either directly or indirectly. This is evident in countries such as Malaysia, the Republic of Korea, Singapore etc.

As international trade plays a key role in the economic development of the Asian countries, one can also observe that the first EDI application implemented in these countries is likely to be that in the international trade sector. Singapore implemented TradeNet as the first nationwide EDI application. Malaysia set off the EDI "fire" with DagangNet ("Dagang" in the Malay language translates to "trade").

Selection of VAN

Through these years of EDI developments, many VANs have been set up. How would you decide which VAN is most suited to your EDI needs? First of course, you would need to determine the unique features and requirements of your EDI application. However, there are several basic factors which you can consider in the selection of a VAN. These are:

1 Speed

how long does it take for your business partner to receive the EDI message you sent out?

2 User base

are your EDI partners using the same VAN? Is the VAN able to reach out to all your business contacts within your EDI program?

3 Reliability

does the VAN have a good record of reliability? Does it have a workable disaster recovery plan?

4 Support

does the VAN provide you with 24-hour customer support?

5 Reporting and inquiry capabilities

does the VAN provide an audit trail of all your EDI transactions?

6 Communication access

does the VAN support a wide array of computer linkages?

7 Mailbox access

does the VAN enable you to send to a mailing list of parties with one single message?

8 Standards support

does the VAN support both proprietary and open standards?

9 Security

does the VAN support critical security features such as passwords, encryption and message authentication?

10 Complementary services

does the VAN offer complementary services such as Email, fax gateways etc?

11 Cost

and finally, of course, does the VAN offer you a cost-effective solution?

Questions

Very Short Questions :

1. VAN stand for ?
2. Write a defination of VANs.
3. Write a ful form of VAD's.

Short Questions :

1. What do you mean by VAN ?
2. Explain any four factors which helps in felecting VANs.
3. Explain Industry/application specific VANs.

Long Question :

1. Explain the types of VAN ?
2. What are the trends of VAN in Asis?
3. What do you mean by VAN ? Explain the role of VANs.

□ □ □

10

EDI Implementation, Agreements and Security

EDI Implementation

Planning for its implementation is an important factor for success. With strategic planning on how EDI is to be applied, the resultant impact is likely to be much more significant than results achieved from pockets of implementation which are not properly planned and integrated into existing operations.

This chapter provides step-by-step guidelines to initiate EDI implementation, from reviewing the need for EDI to deciding on the technical solution to implementation issues.

Identify organizational needs for EDI

First, study the company's existing workflow and how it can be improved using EDI. Identify bottlenecks of current systems and explore how EDI can be used to dissipate the bottlenecks. This study should attempt to cover the whole range of data and information flow through the entire company and not be limited to known EDI applications.

As part of this exercise, one should also identify opportunities for streamlining current workflows across organizational boundaries in order to take full advantage of the introduction of EDI. One example of such streamlining and re-engineering of current workflows is the quick response concept which is fast being adopted by the retail and manufacturing industries because of its wide-ranging impact on customer services and the companies' bottom line. By fully integrating the collection of point-of-sale information and automation of reorders directly from the manufacturing plant based on customer buying patterns, systems across the distribution chain can be programmed to trigger off chain reactions from the manufacture of goods to delivery and sale at retail outlets, with minimum inventory in stock. This implies a change in the in-house systems of retailers and manufacturers to accommodate the new concept of procurement.

Weigh the cost and benefits of EDI

Having identified the areas in which EDI implementation can help to dissipate bottlenecks and improve workflow, one should then weigh the benefits of EDI against the costs of setting up the system.

The costs of EDI implementation go beyond start up costs of acquiring the EDI software and hardware components and training. Ongoing costs such as VAN usage charges, maintenance and support costs need also to be taken into account.

Identify EDI business partners

Next is the identification of the business partners with whom to implement EDI. The following factors should be considered :

(1) Which of the business partners have the highest volume of transactions?

(2) Which of these business partners have the right prerequisites for EDI?

(3) If they are overseas business partners, do they have the right environment for successful EDI?

(4) Do these partners enjoy a good business relationship with you?

(5) Are they going to be your long-term business partners, thus warranting the EDI implementation?

(6) Do they have the same ideals and goals towards EDI?

Upon identification of business partners, discussions with them about the possibility of establishing an EDI link to replace the current transmission medium then needs to be initiated.

Obtain top management approval

EDI implementation is a strategic business issue. EDI impacts the way business is conducted. A successful EDI system integrates all functional processes of the business across departmental boundaries.

It is therefore crucial that all parties involved in the EDI system be committed to its success. Obtaining top management approval of the EDI implementation ensures that the EDI implementation is a overall company objective. Top management will also have the authority to approve the necessary resources required for the implementation and can set directions for implementing EDI strategically across departments.

Form a EDI project team

As EDI is not merely a technical exercise of converting paper documents to electronic messages, EDI implementation involves not only personnel with the necessary technical expertise, but also those who are experts in their areas of business. An EDI project team needs to be formed to ensure that the requirements of all parties are addressed, and to ensure that the implementation is well managed and on schedule.

The EDI project team can be headed either by an in-house expert (with IT and EDI experience) or by external consultants. The project team will coordinate overall project activities, ensure project scope is adhered to, plan the implementation and monitor its progress as well as resolve issues with users and vendors.

Education and training

Prior to the implementation of EDI, education and training programmers should be put in place as a vehicle to communicate corporate attitudes about EDI. The training and education programmed can also be used as a power tool to demonstrate senior management support of EDI. These programmers prepare people for the changes that are forthcoming.

An EDI training programme prior to EDI implementation could cover basic concepts of EDI and the benefits EDI can bring about. The training programme should also address concerns, which staff may have in EDI implementation, such as redundancy of employees. This serves to allay any fears or apprehension of staff in embracing the technology and harnesses commitment to the eventual EDI implementation.

An EDI training programme nearer to the date of implementation could cover specific areas of user operation, the EDI environment as well as how to use the system.

A third category of training programme can be developed specifically in the technical areas to prepare the technical staff for the maintenance and support of the system.

Decide on EDI standards

It is necessary for organizations embarking on EDI to adopt a common set of standards for communication. If this is not done, one of the major benefits of going EDI will be eroded.

Hence, the set of EDI standards to be adopted in your EDI implementation need also to be agreed upon by you and your business partners. UN/EDIFACT is the prevalent global EDI standard used in most countries today.

Decide on the connection options

The various possibilities of running your own EDI system should be investigated. Are you building your own proprietary network or selecting a third party VAN? If you are making use of a third party VAN, which one? Factors determining how to select a VAN which will meet your needs is discussed in chapter 5.

Implementation planning

With your business partners and VANs identified, and the EDI application prioritized, implementation planning comes next. An implementation schedule is to be drawn up so that all parties are aware of all actions required and the time-frame allocated to each task in order for the EDI implementation to be realised. At this stage, you should also decide whether or not to plan a pilot implementation and which approach should be taken towards full implementation.

EDI Agreements

Electronic Data Interchange (EDI) allows businesses to conduct their transactions through computer networks and eliminates the need for companies to physically exchange paper forms and documents. Using EDI, companies can conduct instantaneous transactions without waiting for standardized documents, such as quotations, purchase orders, and invoices to be delivered by mail. In a conventional paper system, the data contained in these documents would typically be input into the receiving company's computer system manually, thus introducing additional delay and greater potential for error. EDI promotes efficient use of computer resources by eliminating the need for the receiving company to re-enter the data received.

In its basic form, EDI requires an agreement between trading partners that dictates a standard data format for their computer to computer communications so that each party can encode and decode any information in a transaction. The two trading partners need not have a direct connection between their computer systems. Instead, many companies hire third party network providers, which serve as clearinghouses for messages between the parties. By joining a third party network, the company has access to any other company on the network and may even have access to companies using other third party networks. The networks also provide additional services to EDI users, such as password security for their accounts, regular backups of data sent over the networks, and audit trails.

EDI is rapidly changing the manner in which business transactions occur. While this technology increases speed and efficiency in the business world, it also presents legal questions, which are easily overlooked by parties using EDI. Some of these questions can be answered by the application of existing legal doctrine, but many questions will require fresh answers from the legal system. *EDI and American Law* provides an invaluable overview of the potential legal problems for anyone currently involved in EDI transactions. *EDI and American Law* should be required reading for managers responsible for implementing EDI, lawyers who provide legal advice to these managers, and government officials who will now be responsible for designing new record keeping and audit regulations that are not incompatible with EDI.

Since there exists little case law or statutory authority to guide companies using EDI, the best precaution is to understand the risks and to allocate these risks fairly in contracts between trading partners, network providers, and any other parties affected by the implementation of EDI. *EDI and American Law* addresses this need on three levels. First, it alerts companies using EDI to pitfalls they are likely to

overlook. Second, it serves as a guide in negotiating agreements with trading partners and network providers. Finally, it raises important issues which both industry partners and the legal community must address to avoid unnecessary and extensive litigation.

Trading Partner Agreements

Well-drawn trading partner agreements can prevent disputes by settling legal questions in advance. In a traditional paper trading system, the Statute of Frauds and related doctrines prescribe that certain contracts will only be enforceable when supported by "written" and "signed" evidence. When trading parties conduct their transactions through EDI, no such evidence exists in its conventional sense. Mr. Wright notes that some trading partner agreements attempt to establish that the Statute of Frauds will not apply to their EDI transactions. The requirements of writing and signing are designed to ensure that a contract is supported by reliable (written) evidence and that the parties assented to (signed) the contract, the trading partner agreement must establish electronic equivalents to writing and signing.

Agreements with third party network providers

EDI users often rely on third party networks to communicate with several trading partners. While these networks often provide form agreements that cover the relationship between the EDI user and the network, EDI users may want to negotiate changes to these forms. Typically, these standard forms allocate virtually all the risks to the EDI user and shield the third party provider from any liability. For example, current forms often relieve the network provider from liability for data loss or errors in transmissions as well as for losses caused by acts of god. Many forms also excessively limit the time period in which the customer may file a legal action against the network provider. As the market becomes more competitive, EDI users should try to bargain for a more balanced distribution of risks and liabilities.

First, the EDI user should reserve all property rights to any data transmitted over the network In absence of such an agreement, the third party provider could assert an artisan's lien on the data if network charges are not paid. At the same time, the EDI user will want to negotiate the network's duties to backup information, to inform the EDI user if government authorities subpoena network data, and to make data available for internal and external audits. EDI users to carefully negotiate the allocation of risks for errors based on willful misconduct, negligence, or unavoidable disaster. The EDI user should at least insist on a negligence standard of care from the network provider, since the EDI user often needs both advice and troubleshooting from the network's professional staff. At the same time, the EDI user should be prepared to assume adequate precautions to minimize damages caused by mistake. The EDI user use acknowledgements, audit reports and security protections.

Presently, most network contracts include disclaimers against consequential damages. Since these damages represent the greatest potential loss to an EDI user

and its trading partners, the user should negotiate carefully so that both the user and network understand the risks they assume and that each side is adequately compensated for its share of the risks. Also, EDI users should be wary of clauses that limit the time that the user can bring suit against the network to one year. If the network provides professional services such as consulting or programming, one year may not be enough time to reveal problems with the service. The EDI user may want to negotiate for property rights in any custom programming work provided under the agreement so that the user can switch to another network provider without having to rewrite any special programs. Finally, the EDI user should insist that the network provider warrant that its service does not violate the copyright, trade secret, or patent rights of others, since an injured party might try to hold the EDI user responsible along with the network.

Record keeping

As companies automate previously manual transaction processes, they must also implement archive procedures that satisfy IRS regulations, federal law, and state corporate law. The importance of these procedures by relating the story of Holt Hauling, a warehouse for imported goods that automated its bookkeeping but failed to design its system to provide proper documentation for Customs regulations. Holt Hauling paid for its oversight by having its license suspended for one year.

Anti trust

EDI agreements could implicate users in antitrust problems. Data shared among a small group of companies using the same EDI system could promote illegal price fixing or could be used to lock out smaller competitors who do not have access to the EDI network. Also, as EDI industry standards evolve, the designers must be wary of standards that inadvertently favor certain companies or networks.

EDI security and legal issues

(A) EDI security

The types of security controls networks should have are crucial when your organization adopts EDI as you and your trading partners are entrusting some of your most crucial and confidential data to the network.

Securing an EDI system is much like securing any kind of computer network with this difference : EDI extends to more than one company. Not only must organizations,make sure their system is secure, but their trading partners must all do the same.

A full EDI security system should include three levels of security:

(1) Network level security

This level of security basically screens users accessing a particular network With a set of account/user identification codes coupled with the corresponding

passwords, authorized users will be able to log into the network and to perform transactions (that is, sending and receiving of EDI messages) across the network. This level of security ensures that users not registered in the EDI network are not able to gain access to its facilities.

(2) Application level security

Beyond network security, application level security can also be put in place. This level of security is usually controlled by the individual front-end EDI application (or software).

In any given EDI application or software, there might be some data you are not allowed to see, some you can see but not alter, some to which you can add information and some where you can change existing information. Application level security makes use of passwords to admit different catagories of users to the different levels of application to which they can gain access. For example, a clerical staff may only be given authority to key in data in an electronic purchase order but not the authority to send the EDI document to the supplier. A higher level managerial staff may hold a password which allows him to view the data keyed in by the clerical staff, make the necessary corrections and send the document out.

A system administrator is usually appointed to oversee the EDI application to maintain a system that both identifies the data and monitors which password holders shall be given and to decide on the kind of access to the system.

(3) Message level security

Message level security can also be put in place to combat unauthorized disclosure of message content, non-bona fide messages, duplication, loss or replay of messages, deletion of messages and repudiation of message responsibility by its sender or its receiver. To counter these, EDIFACT has in place several methods of message-level security:

(i) Encryption

The idea of data encryption is that data, whether on screen or as ASCII within a computer system, can be totally enciphered by a transmission process, and on receipt by an authorized user can be reconstituted into its original format.

This method of security is used to ensure confidentiality of contents and protects against unauthorized reading, copying or disclosure of message content.

(ii) Message authentication

Message authentication, or a MAC (Message Authentication Code), can be applied to a whole message or only part of a message.

The idea behind the MAC process is to ensure that only authorized senders and receivers correspond and that no one is impersonating another correspondent.

(iii) Message sequence numbers

Message sequence numbers are used to protect against duplication, addition, deletion, loss or replay of a message.

(iv) Hashing

Hashing is a technique used to protect against modification of data.

Message content integrity can be achieved by the sender including with the message an integrity control value (or known as hash value). The receiver of the message computes the integrity control value of the data actually received using the corresponding algorithms and parameters and compares the result with the value received.

(v) Digital signatures

Digital signatures protects the sender of a message from the receiver's denial of having received the message. The use of digital signatures can also protect the receiver of a message from the sender's denial of having sent the message.

Protection can be achieved by the sender by including a digital signature with the transmitted message. A digital signature is obtained by encrypting, with an asymmetric algorithm. The digital signature can be verified by using the public key which corresponds to the secret key used to create it. This public key may be included with the interchange agreement signed by the parties.

Protection can be achieved by the receiver sending an acknowledgement which includes a digital signature based on the data in the original message. The acknowledgement takes the form of a service message from the receiver to the sender.

The use of digital signatures provides not only non-repudiation of origin and receipt, but also message content integrity and origin authentication.

(B) EDI legal issues

The legal issues which are fundamental to any business relationship must also be resolved prior to EDI implementation. The legal aspects of EDI can be divided into two areas:

(1) A national legal framework which allows for documents transmitted electronically via EDI to be legally binding;

(2)   A contractual arrangement between EDI partners to agree on terms under which EDI documents will be considered legally binding and acceptable.

UNCID

The Uniform Rules of Conduct for Interchange of Trade Data by Tele-transmission (UNCID) published by the United Nations contains the introductory note and text of the Uniform Rules of Conduct.

This document is developed by a special committee with participation from CCC, ISO, ODETTE, ECE, UNCITRAL etc. It provides a foundation on which the parties involved in electronic communication can build a communication agreement - a contract with legally binding effect.

The UNCID has 11 articles which should be addressed by any interchange agreement :

(1)   Objective

(2)   Definitions

(3)   Application

(4)   Interchange standards

(5)   Care

(6)   Messages and transfers

(7)   Acknowledgement of a transfer

(8)   Confirmation of content

(9)   Protection of trade data

(10)   Storage of data

(11)   Interpretation.

      EDI : the nuts and bolts

Questions

Very Short Questions :

1.   What is message level authentication ?

2.   What about Haghing ?

3.   What is the full form of UNCID ?

4.   What is Encryption ?

Short Questions :

1.   What do you mean by Trading Partner Agrements ?

2.   What do you mean by Record Keeping ?

3.   What is Digitial Signature ?

4.   Explain EDI legal issues.

5.   What do you mean by Application Level Security ?

Long Question :

1.   What are the security features of EDI ?

2.   What do you mean by EDI agreement.

3.   Explain UNCID?

4.   Short note on :

     (a) EDI Implementation

     (b) EDI security   **(Raj. Univ., Examination 2005)**

5.   Discuss EDI secuity & legal issues ?