

CHAPTER TWO

2

CONCEPTS RELATING TO ELECTRONIC DATA INTER- CHANGE

EDI allows automated data flow for the creating, delivering and receiving transactions between consignor, carrier and consignee, resulting in a significant reduction in errors and network expenses (Price Waterhouse International Information Technology Review 1993/1994.)

Truly integrating EDI transaction data into applications potentially reduces manual effort, redundant data entry and errors. Moreover, time, paper and postage are reduced compared to the paper systems (Computimes, May, 1994). Electronic Data Interchange (EDI) has rapidly become the world - standard instrument to improve the efficiency of the administrative process of communicating document data between the various organisations involved in the entire cycle of executing international trading transactions.

EDI reduces the time and costs of trade document processing through the efficient use of electronic media. It is much easier to key, copy, modify and correct data entered into the computer than with a typewriter and paper. Moreover, because "electronic documents" can be communicated from one computer to another, the common data for all of the documents related to a specific trade transaction need not be re-keyed --- only new information which applies to the next step of the trading cycle is added to the data.

This leads to tremendous productivity improvements , more efficient use of personnel, and the ability to cope with substantial increases in business volume without the need to increase staff size. Case studies have shown that error-rates dropped from 20% to less than 1%, staff increases were nil even during periods of 50% rates of growth in business, and the overall cost per transaction processed dropped to a small fraction of what it had been, using paper-based systems.... (Profiting from EDI: Encik Muhammad Nasir Jaafar- Managing Director-EDI (M) sdn.bhd.)

JUST-IN-TIME - The concept exhibited by EDI here is, that it ensures the timely and accurate placement of orders, thus eliminating uncertainties of postal delays and manual inefficiencies due to transcription errors and duplication of documents. It means that exact quantities of stock are maintained at a particular point in both the retail trade and manufacturing industries. The principal idea is to reduce costs associated with excess stock holding i.e. storage and operational costs (Banker's Journal Malaysia).

ELECTRONIC FUNDS TRANSFER (EFT) - EFT through EDI, will be timely, accurate and speedier as the manual preparation of documents will inevitably reduce, thus ensuring lower error rates. This will further reduce paperwork costs and with Bank Negara's policy to deregulate banking practices, in hope of a more competitive banking environment, such benefits will hopefully be passed on to the general public

and the commercial sector.

The savings from electronic commerce are most well documented in electronic funds transfer (EFT) arena. Issuing and mailing a paper cheque costs the Treasury 30.2 cents, versus 4.5 cents for an electronic payment through the automated clearing house, (ACH) - a 26-cent savings totalled \$94 million for 360 million electronic payments, primarily Social Security benefits and Federal employee wages, issued by the Federal government. The Government's 55 million annual payments for goods and services represent potential additional savings of \$13 million.

EDI changes the game and the rules. The use of single source data moving across communication networks and allowing all parties the opportunity to pick up data for processing within their own local systems environment has to be attractive. It reduces the opportunity for error, it overcomes inconsistencies and it is available ahead of the physical movement.

International shipping sees EDI as an evolution rather than a revolution. The Achilles heel in meeting the new challenge is the availability of paperwork, and for it to be ahead of the physical service.

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payment instructions, schedules and manifests. The concept of electronic transmission attempts to move towards a paperless trading environment. From this general overview, it is not difficult to picture the competitive edge in applying EDI as the system ensures:-

- o speedier transmission of business information.
- o greater accuracy, and
- o substantially less paperwork. (1)

By 2020, it is projected that 80% of business profits and market value will come from that part of the enterprise that is built around info-businesses. Basically modern corporations will be pure information processing machines. A review of several strategic business developments that are leading, the way in shaping the future global trade practices towards the 21st century, may reveal the irreversibility of the global trend as industries become more information and speed oriented in outlook.

UNITED KINGDOM - Today, 70 of the Time's top 100 companies, nine out of the 10 top retailers, the top 10 pharmaceuticals and 17 of the top 20 general insurance companies in the UK are doing business via EDI.

PFA Research Ltd., published "State of Nation" based on an interview conducted with 1,000 UK organisations. It reported that : out of the thousand organisations, about 500 of them are EDI users in the UK, and the balance are planning to adopt DI within the next two years.

It is estimated that there are between 6,000 and 7,000

EDI users in the UK, and this number is expected to grow by 25% and 30% over the next two years. In addition to this growth in the EDI user base, the existing users say that on average they will expand the number of EDI trading partners by a factor of seven over the next two years, linking up with more of this expanding population of users (Figure 9).

According to the Norwich Health Authority (NHA),

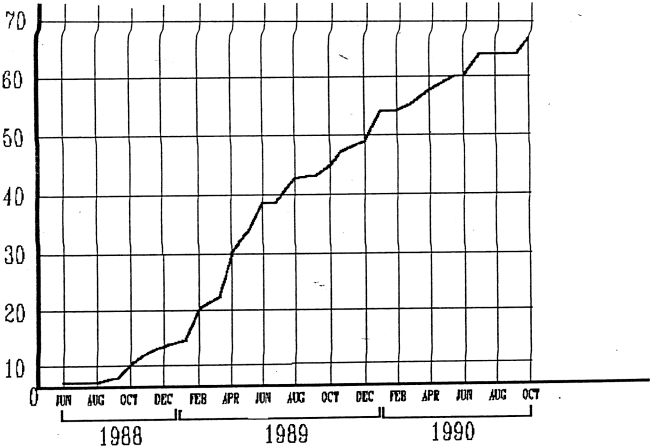
Financial EDI has contributed towards the closing of the trading cycle. NHA's links with its suppliers enable "paperless settlement", reducing administration costs and improving financial management. Automatic reconciliation of invoices and payments has led to improved cash-flow for suppliers.

The Authority deals with up to 5000 suppliers, presenting major administrative problems for the accounts payable department which has to generate thousands of payments and remittance advices every month. With the purchasing system and the AP system linked, the order will be placed using EDI. The solution addresses a common need facing many organisations looking to make best use of paperless reading by extending EDI to paperless settlement. The system transfers the functions of payment, advice and settlement to the banks. This means a single method is used for trading, lessening the likelihood of costly errors.

The total trading system consolidates trading relationships and realises real cost savings, by eliminating expensive manual processing of invoices and remittance advices. It reduces error margins characteristic of re-inputting remit-

GROWTH IN TRADING PARTNERS
SINCE JUNE 1988

NO. OF EDI SUPPLIERS



(FIGURE 9)

tance advice or bank statement information. Effectively, this study demonstrates the strategic use of EDI to close the electronic trading cycle, thereby, dealing with competitive cost effectiveness.

UNITED STATES OF AMERICA - Giant retailers, such as Wal-Mart in the US are setting new pace by demanding that all vendors, of any size, do business with it, computer-to-computer, i.e. via EDI.

The Union Pacific Railroad is providing EDI communications to large customers such as Toyota to support their "Just-in-Time" approach with as much as 99.9% on-time delivery accuracy.

Many experts have quoted costs associated with the export paper-chase, and a leading bank has estimated that US \$300 billion is spent on the preparation of documentation for international trade in one year. So there is plenty to go for if we believe that changes in procedure will result in cost-effective benefits to a number of parties in the export chain.

NAVISTAR, formerly International Harvester, saw ways to improve their operating costs by hooking up with 700 suppliers in an EDI program, implemented over 18 months. Since then, the program has helped reduce their inventory from 30 days to only six days and, in turn, reduce their investment in inventory by \$167 million. EDI is also helping Navistar lower their premium freight payments because it reduces errors in orders and deliveries. Equally important, the right

goods arrive at the right time.

The benefits (Figure 10) derived from the concept of EDI, has many fold aspects.

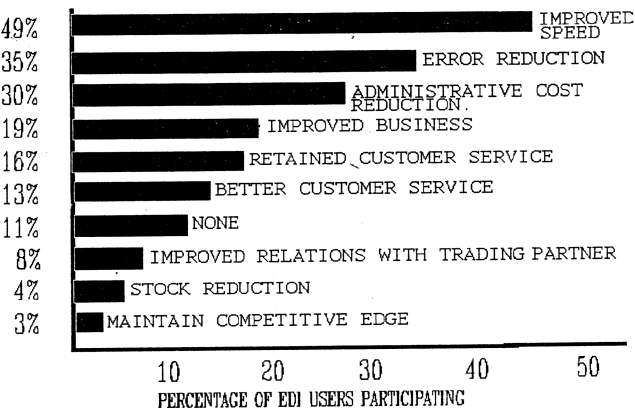
At RCA , a part of GE and a pioneer in EDI, the average cost of a single Purchase Order was \$62. If you were generating 10,000 PO's per year, you could be saving more than half a million dollars with an EDI program.

Integration is one reason why EDI within Super Valu stores is so successful. They can reduce clerical costs by \$600,000 each year, because computer applications are reconciling POs, against invoices - without human intervention.

FRANCE - In France, the Airbus Industrie has built an integrated telecommunication system linking its design teams and the designers of all its parts suppliers, in on-line real-time exchanges of graphic design, text, video, and voice information to support design, manufacturing, engineering, project management and administrative functions. This process is reported to shorten the products development cycle by one-third.

EDI calls for change and is therefore seen as frightening. It asks everyone to review the complexities that have been created over a long period of time and reduces them in a dramatic fashion that will offer genuine savings. If , the creation of an order from a buyer, the addition of the costing and transport components and the identification of the transport routing between the parties, is all that is

BENEFITS OBTAINED FROM USING EDI



(FIGURE 10)

necessary in data terms, to enable a consignment to be packaged and moved around the world, then you must wonder why 40 original documents are used today. Add the potential for transportation errors and the effort and cost is incredible.

NEW ZEALAND - New Zealand's economy has traditionally been based on trade with nations in distant parts of the world. Not surprisingly, EDI began in New Zealand with a customs initiative, implementing EDI in the country's trade and travel industries. New Zealand's customs teamed with GE Information Services (GEIS) to develop a system which revolutionised the entire process of cargo clearance and accounting for goods. The customs there was then operating the Customs and Statistics Processing and Entry Retrieval (CASPER) computer data base, which contained a number of interlinked subsystems.

With the government's policy directed to freeing and deregulating trade practices, while at the same time ensuring that domestic producers, manufacturers and traders are not being victimised by unjust trade practices, the Customs' prime mission had since been redefined to emphasize, facilitation of trade and entry passengers at the border. In line with this objective, the Customs have introduced two (2) major EDI systems, Customs EDI for international trade (CEDI*FIT) and Customs EDI for passengers (CEDI*PAX). The main feature of CEDI*FIT imports, is to allow paperless declaration processing

procedure through the restructured CASPER computer system.

Additionally, New Zealand, Australia and the USA, now exchange passenger manifests electronically, allowing the port of destination to clear an aircraft within 20 minutes and know in advance who is arriving on an inbound aircraft. New Zealand customs had planned to have 90% of all transactions moving via EDI by the end of 1993.

2.2 LITERATURE REVIEW-

CASE STUDIES have been known to highlight the variables being discussed in this paper i.e. the cost effectiveness of implementing an EDI system, its benefits and limitations.

-The transport sector is traditionally characterized by extensive duplication of data exchange and the accompanying control problems (paper management). Electronic Data Interchange, or EDI , is an instrument to improve the efficiency of the administrative process significantly.(2)

.In their paper, the following issues were considered."Over the years the paper flow in international transport has grown very complex due to , among other reasons, the many parties involved. Furthermore there are many different types of (sometimes comparable) documents in use. Bill of Lading, Air Waybill etc. They are all transport contracts concerning one consignment.

The same data are repeated in many different documents; the receiving party has to re-enter the same data that was

printed out from the delivering party's computer. Estimates are that approximately 70% of the information on a transport document received is rewritten into another document. This redundancy of data originates in the current administrative process, characterized by data exchange via paper.

EDI offers the opportunity to organize this process in a more efficient way. Only data that are really new will be sent. Errors can be kept to a minimum in this way, because data are entered only once i.e. at the source. "In their paper they have stressed that the important requirements in today's market-place are :-

- o reliability (e.g. JIT delivery at destination)
- o speed
- o Quick communication and service
- o overall cost effectiveness

EDI is an indispensable instrument for fulfilling these requirements.

-A survey conducted at the Electric Communications at Burgens Brunswig, confirms the concepts involved in this paper - that, EDI offers the following services: (3)

The adoption of electronic communications as a concept has provided new platforms upon which additional services and products have been constructed. e.g., customers can now take physical inventories with hand held order entry devices, transmit the inventory data to the servicing location and have their inventory priced and totalled.

Returned merchandise can now be electronically processed as reverse order entry without cumbersome paperwork.

-Chain store headquarters normally process paper

invoices into their accounts payable systems. By utilizing paperless EDI invoice they can receive invoices in a machine readable format, for processing electronically into their accounts payable system, with no manual intervention.

EDI increases productivity and competitiveness. In a study, -EDI Forum, 1992 - it was of the opinion that, being more competitive means operating more efficiently, always looking for ways to cut out the fat in your operation. (4)

(5)

A survey conducted in 1993 to examine the effectiveness of applying EDI to a trucking and carrier company, PST Vans, Inc., in Salt Lake City, Utah, confirm following concepts:-

- o approximately 280 pages of documents can be converted to microfiche for \$0.65 (exclusive of Personnel cost). This contrasts with normal paper copying costs of about \$0.05 per page.
- o storage was also much more efficiently maintained. Two million document pages could be stored in a volume less than the size of a traditional file cabinet.
- o assessability to records are referenced by computer software for easy reference. Although it may take many

minutes to physically locate a paper document in a room full of file cabinets, a single document page in a two million page microfiche cabinet can be retrieved in less than 30 seconds.

- o productivity improvement in the Accounts Receivable staff was another key EDI benefit. In 1986, there were four professionals on the staff; in 1990, after experiencing 40% growth in document volume per year, the staff still consists of four people. Without EDI, PST would likely have had to fill four to six additional staff positions.
- o payments are also much more timely than was the case in the paper-based system, for two reasons:-
 - a) The electronic freight bill has a much lower error rate.
 - b The freight bill is sent when the load is booked rather than after all paperwork is gathered following load delivery.

A study made one of the largest chemical plants in the Southeast, expressed the view that implementing EDI was an inevitability. Annually, the purchasing groups of CIBA-GEIGY process approximately 50,000 purchase orders involving nearly 200,000 on line items, with expenditures of over \$400 million. To manually process this volume would be absolutely maddening. (6)

Hence replacing with EDI in the area of purchasing and

invoicing, resulted in a tremendous user benefit. According to his paper, speed means the ability to transmit information as quickly as you feel necessary ; this in turn eliminated delays, especially if locations were an outpost type. Accuracy of information was enhanced by the standard format. Time was saved through the elimination of repetitive manual tasks.

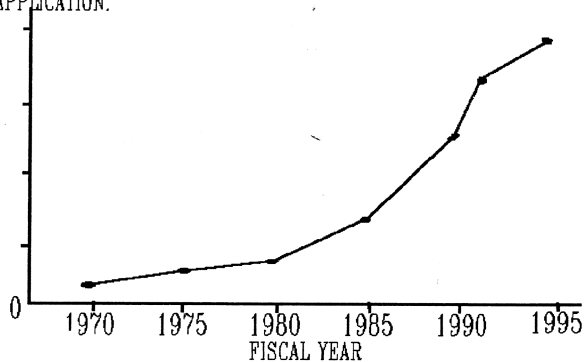
Electronic Data Interchange in the U.S. Government, can save money, and increase efficiency and accuracy, by eliminating paper transfer of information between companies. Mailing costs and data input errors can shrink markedly. Electronic Commerce means an end-to-end paperless business environment, the business environment of the 21st Century. (7)

As intended to prove in this paper, with reference to the findings , EDI application in the Malaysian environment also reduces operational costs, increases efficiency and accuracy by the elimination of repetitive data and paper transfer of information, between trading partners. (Table 5)

(As Figure 11 shows), EDI is a growth industry, and one in its early stages. Real growth began after 1985, with a 23 % increase in applications in 1985-89 and 16 % already projected for the period 1991-94.

GROWTH OF U.S. GOVERNMENT EDI APPLICATION.

FEDERAL GOVERNMENT
EDI APPLICATION.



(FIGURE 11)

2.3. BENEFITS AND OPPORTUNITIES WITH EDI

The potential opportunities and economic benefits of introducing EDI are considerable. The major areas of benefit include the reduction of time and cost for paper handling and data capture, improved flow of goods and associated payments, improved access to "real-time" information, and finally, improved customer service and business relationships with trading partners. EDI makes all of this possible through the fast and efficient method of recording, storage, processing and communication of business transaction information using computers and telecommunications.

In addition to improving the flow of documents, EDI also improves the flow of goods and associated payments, primarily by eliminating the waiting time for goods release and delivery, pending completion and delivery of related documents at the main points in the transportation chain. Case studies have shown that there is a reduction of international transaction cycle time from 10-18 days to 2-4 days through the use of EDI, which is particularly useful for the speedy preparation and handling of customs declarations.

Thus EDI also serves to decrease delivery times and thus reduce stock and warehousing levels and the associated holding costs. Faster delivery also means faster and more reliable payments. This is even more true in situations where payments can be made automatically through Electronic Funds Transfer.

Another important opportunity created by the use of EDI is the ability to access and utilise "real-time" information. Given the fact that all of the necessary information on any trade transaction (or groups of Transactions), is already "on-line", this information can be made available immediately to decision-making managers, administrative personnel and customers being served. This is particularly useful for the transport industry, where timely cargo tracking, information tracing, status acknowledgments and multi-modal coordination are absolute requirements. EDI data can also be integrated into an organisation's Management Information System (MIS), providing up-to-date information for status-tracking, forecasting, and automated interim auditing.

EDI is an essential tool for logistics planning, allowing up-to-date status information of the movement of goods, and improving production, distribution, and delivery systems. In fact, the use of EDI for logistics purposes such as cargo tracking is often referred to as "LDI" or Logistics Data Interchange. It assists shippers in expediting shipments from origin to destination by precisely tracking cargo movements and also allows the customers themselves to track their product movements within the carrier's shipment network.

One such network in the COBRA automated cargo system, which not only tracks cargo, but also has fully automated inbound and outbound vessel cargo manifests and data entry capabilities, provides electronic notification of customs

releases to brokers and carriers, and can electronically generate movement status reports for shippers and customers.

While speed is important, the reduction in errors is another big benefit of EDI. Errors are reduced because every firm downstream from the original input are using this original input to build their documents.

Several banks are starting to offer services supporting EDI for international trade. Now with EDI, they have reduced the time it takes to process payments to customers to four from eighteen days.

The benefits of implementing EDI go beyond speeding up the trade documentation process and reducing errors. One is international sourcing and the other is concurrent product/process development. Due to the cost of material and labor, many businesses are sourcing products or parts from other countries. The logistical cost of doing business internationally is high. It can quickly overshadow any material or labor cost advantage.

Logistics costs do not only include those associated with a carrier or container. Costs stemming from trade documentation, time differences, and global distances are also coming into play. Input Research Corporation, in the U.S.A. estimates that trade documentation alone costs an estimated \$40 billion annually. They also estimate that each consignment probably generates \$300 - \$400 of cost just for paperwork. To top it all off, roughly 40 percent of the paperwork contains errors. Between freight forwarders,

carriers, suppliers, and banks - the paperwork process can turn into a nightmare.

An EDI system can break down the significant barriers to doing business internationally. With EDI, an importer could send an order or even a design electronically to an exporter. The exporter could create documents and send them to a freight forwarder in a matter of minutes. The freight forwarder could process these documents and send them on to the carrier and to the bank. These documents can then be transmitted directly to other participating banks, resulting in significantly faster payment of letters of credit or in documentary collections.

2.4. CHALLENGES AND BARRIERS IN IMPLEMENTING EDI

While EDI is still in its infancy, it has been over 20 years since the first groups met to consider how to define a generic electronic document that could be used by multiple companies. Over this time, a number of issues had to be recond with.

First, while seeming to be a paradoxical statement, EDI is a simple technology, but it is technologically complex. That is say, by itself, EDI is simply sending a formatted message from one computer application to another. The problems come in the changes EDI makes to the organisations, using it.

- o EDI affects relations with trading partners (not like spreadsheet technology which is independent of trading

partners).

- o It competes against firmly entrenched, low cost technology (paper), with which people have had two thousand years of experience.
- o It depends on a relatively higher educational level to implement than paper.
- o It also depends on a complex infrastructure of standards, translation software, communication intermediaries (like VANS) , hardware and legal structure. It challenges the existing organisational structure in terms of information flow, job definition and redefined relationships.
- o EDI implementors will confess that the hard part about EDI is not so much the technology, as the people running the technology.

As the world moves towards a "global economy", a new economic order of international inter-dependency and cooperation, Malaysia's socio-political and organisational cultural attitudes must adapt accordingly. Those responsible for policy-making and decision-making at all levels must think globally and cooperate to plan strategically with national interests in mind.

The traditional 20th-century ways of doing things can not successfully cope with the 21st-century challenges posed to the nation, its governmental agencies, its commercial industries, and its aspiring people. The highly pervasive advances in information and telecommunications technologies provide new tools which must

be utilised to overcome the traditional barriers to international trade and business communication.

2.4.1. A BUSINESS ISSUE, NOT A TECHNOLOGICAL ISSUE

The technical requirements to "hook up" to EDI are fairly straightforward. All that is needed at the simplest level is a computer (even a personal computer will do), a modem, some off-the-shelf software for translating and communicating internally stored data into standard formats, and finally a link to a telecommunications network, in particular, a third-party EDI clearing centre.

However, because EDI technology is a computer-based business communication tool for trading partners, the actual use of computers must be widespread among the trading partners. Moreover, all of the trading partners, both in the private and public sectors, must identify and improve those areas where there are inter-functional relationships. For the benefits of EDI to be realised at the national, industrial and organisational levels, the implementation efforts must be carefully coordinated at each of these levels.

Certain related issues must be resolved, including transaction rules, system rules, document and signature requirements, accounting and auditing requirements, legal relationships and inter-functional procedures and responsibilities.

2.4.2. COPING WITH CHANGE

EDI offers organisations the opportunity to change the way they do business because this application of technology completely changes the form, flow, and use of trade information. But for this to happen, organisations must cooperatively begin the modification of existing document flow processes, and the subsequent restructuring of existing organisational functions, because EDI redefines the way organisations utilise personnel and computers to communicate internally and externally.

For the individual organisation, the most significant factor in determining the effective implementation of EDI is the organisation's ability to manage the changes in structure and work processes integral to EDI. As the organisation moves away from manual documentation procedures towards EDI, new skills must be acquired, responsibilities may shift, and job definitions may need to be redefined. This requires effective change management, coupled with a strong level of commitment towards organisational learning and education.

2.4.3. CHALLENGES IN EDI IMPLEMENTATION AT PKCS

Having interviewed the relevant personnel in charge of the implementation of the PKCS, the following issues were highlighted as being problems to be handled.

1. **HARMONISATION OF CUSTOMS PROCEDURES - EDI**
implementation is supposed to bring about standardisation and harmonisation of documents and procedures. However, this was not the case. Customs procedures differ from one Custom station to another.

2. **HARMONISATION OF WORKING HOURS OF ALL TRADING PARTIES** - The working hours differ from one party to another. Forwarding companies operate from 9.00a.m. to 5.00p.m. Banking hours are between 9.30a.m. to 3.00p.m. Customs (imports) operates on 2 shifts between 8.00a.m. and 8.00p.m. The port operators operate on 24 hour shift. To be effective, there is a need to synchronise the working hours among the parties.

3. **WAIT-AND-SEE MENTALITY** - From the discussions with the personnel, it was found that their biggest challenges was in overcoming the "fear of the unknown", which has created the "wait-and-see" attitude. These fears have put many forwarding and shipping companies on the side-line, waiting for a right signal, though Customs have urged and encouraged the forwarding companies to use EDI submission.

4. **PARADIGM SHIFT**

- o Shift from family-owned businesses to

managers. Majority of the forwarding companies in Port Klang are traditionally family-owned businesses

efficient information system, there is a need to decentralise its' management control. To do this, there is a need to employ qualified and highly-paid executives which most companies are reluctant to do. Decisions have to be decentralised, to expedite decision making process, otherwise it would impede the flow of EDI messages and responses between trading partners.

- o HUMAN INTERFACES TO FULLY COMPUTERISED INTERFACE- current manual procedures for the submission of Customs declarations require a lot of human interface. Simply, EDI submission is the computer-to-computer exchange of processable declaration information. It simply implies very minimal or no human intervention.

WHAT DOES THIS IMPLY?

- i. Once a EDI Customs declaration is sent, the Forwarding Clerk does not know the "fate" of the declaration. In the manual system, he is physically there to monitor the flow of documents in the Customs' assembly line after submission.
- ii. It requires computer knowledge, and

greater reliance on computer systems. It creates phobias for non-computer staff (e.g. fear of learning new skills, loss of job, etc)

o PAPER-BASED TO "PAPERLESS" ENVIRONMENT -

Traditional paper-based processes have generated voluminous papers. For generations, these "pieces of paper" have acted as a back-up system to many business and legal disputes. EDI is expected to bring about a "cultural change" in the way business will be done in a paperless world.

5. JUSTIFICATION OF PRICING - At the on-set of the EDI implementation, all usage charges are provided at no charge for the following reasons:-

- i. to facilitate and ensure the implementation roll-out.
- ii. to encourage the forwarding and shipping companies to utilise EDI submission.
- iii. to build up users' confidence.
- iv. to test the 'SHADOW PRICING MECHANISM'-i.e. a nominal price is initially set, for purposes of evaluating and arriving at a most equitable price to be charged when the system is fully implemented.

But at the end of it all, nothing is free! As

envisaged when the implementation proceeds with the charging process, there will be a lot of justifying necessary to the users, as well as to the authorities, even though the benefits are apparent.

2.4.4. LEGAL ISSUES

Converting transactions from paper to electronic form, like any information resources management initiative, requires sound advance planning, adequate and justified resources, and careful attention to user education and project management. Beyond these generic issues, however, lie concerns particular to doing business electronically. One of the outstanding issues is the legal aspect.

Most legal issues, focus on what constitutes "writing" or a "signature", in the context of laws or regulations that specify written certifications before agreements are legally binding. In using EDI, one concern is whether there is sufficient legal framework within which EDI can operate. This is, so that EDI users know their legal position in a "paperless environment", in the same way they do in a paper environment.

There are two aspects of contract formation which may be affected by the use of EDI - the offer to enter into a contract and the acceptance of the offer which concludes the contract. The parties would be concerned with:-

- o whether the intended recipient of the offer or acceptance received it.
- o whether the message was received in the form it was sent.
- o whether the intended recipient understood the message.

Assuming that a contract is concluded, the parties may also be concerned with "when" and "where" the contract was concluded.

The interpretation of the term "writing" is given by the interpretation Acts, 1948 and 1967, where it is stated that, printing, lithography, typewriting, photography and any other mode of representing or reproducing words in visible form, should be included. The words "in visible form", raised a difficulty in the context of EDI. Can it be said that an agreement concluded through EDI and not on paper is "in visible" form?

Nevertheless, there is a proposal to amend the definition by deletion of the words "in visible form" and this should then deal with any doubts which have arisen.

Apart from the requirements in writing, there are other statutory provisions which could pose a difficulty for EDI, for e.g. section 145 of the Customs Act 1967 provides that "no person shall use any form which is not printed or issued by authority of the Director General". This clearly contemplates a form on paper.

Another type of situation which contemplates paper is Regulation 8 of the regulations under the Service Tax Act 1975. That regulation requires invoices, issued by any person

liable to pay service tax, to be printed and issued in duplicate. If the business community is to move away from paper, so that it can render invoices electronically and forward a copy at the same time to Customs, amendments to the law will be required.

Recent amendments to the 1950 Evidence Act has been well-received by members of the IT industry as it is seen to overcome potential legal setbacks in using IT products, especially computer-based archival and document imaging systems. The Evidence Amendment Act 1993 which was passed by the Dewan Rakyat in May, provides, among others, computer generated documents to be tendered as primary evidence in court. Section 3 of the 1950 Act has been amended to give a wider and clearer definition for the term "document." The new definition has been expanded to include any substance, material, thing or article embodied in a disk, tape, film, soundtrack, or any other device by means of among other things, letters, figures, any visual recording or any sound recording.

The Act also allows the court to accept computer evidence without having to call the maker as a witness.

It is felt, however, that these amendments are not enough to support and enable the full implementation of EDI in the country. The Customs Act and other Customs related Acts, have yet to be tabled for discussion by the Legal Framework Task Force chaired by MITI.

2.4.5. SECURITY AND CONFIDENTIALITY IN EDI

The issue of security and confidentiality in EDI are raised by the following questions: _

1. How can a sender be sure that a message goes only to the intended recipient?
2. How can the parties be sure that no other person can gain access to the message?

It is possible in an EDI network to provide for different levels of safe-guard. In some systems a guarantee of message delivery can be given. The communications protocol operates in a manner which assures that with the correct codes a message can only reach one destination. As an alternative, the network operator could be requested to record messages sent or received by a user and to provide the user with a copy of such records confirming despatch of messages.

In an EDI environment, it is possible to institute a system of passwords limiting access to information stored in a computer. Further, messages and dates can be encrypted so that they can be accessed only by a party authorised to do so. These measures effectively provide greater security than conventional modes of communication, such as faxing, mailing or telephoning.

It is also important for an EDI user to institute among its employees and its own operations, security procedures. These could range from stringent sign-in/sign-off procedures to in-depth screening and investigation of employees for sensitive positions. These procedures should be backed by frequent, but irregular, audits which test the

integrity of the procedures by employees.

In the end, however, it may be that fears expressed on security and confidentiality aspects of EDI, give a negative impression more as a result of unfamiliarity with the technology, and movies on the success of computer "hackers", than issues and risks, but certainly none so great as to justify the rejection of the use of EDI.