

THEORETICAL AND COMMERCIAL STUDIES OF ELECTRONIC DATA INTERCHANGE USING INTERNET IN ORGANISATIONAL SYSTEM

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ABSTRACT

Electronic Data Interchange (EDI) is a system which transfers a data from one computer to another. It works more quickly, flexibly, cheaply and have greater security and accuracy. It is not very advance telecommunication system but provides a paperless and seamless inter-connection with organisational system. Electronic Data Interchange provides an information for the internet community. It does not specify an Internet standard of any kind, but the distribution is unlimited. It is targeted towards the Electronic Data Interchange (EDI) Community that is unfamiliar with the Internet, including EDI software developers, users and service providers. It introduces the Internet and assumes a basic knowledge of EDI. In general, this paper provides the background and development of EDI and benefits of others internal and external organisational systems. It considers the future of EDI and implementing of EDI in organisational system.

INTRODUCTION

The primary goal of the Electronic Data Interchange (EDI) community is unfamiliar with the Internet, including software developers, users and service providers. The users needs some understanding of EDI. Internet Engineering Task Force (IETF) is to improve understanding and effectiveness in the use of the Internet. As the internet is the inter-working of existing corporate and government networks using commonly used telecommunications standards. It is based on mutual interests of users to communicate more effectively via electronic message and file transfers. Internet Communications may be interpersonal (Person-to-Person) E-mail or Process-to-Process like EDI. Messages may be inquiries to shared databases and responses. It acts like an entire files. The Internet is not an organization or government agency. We use the Internet to do business like we use the telephone. The same is the Internet connection where our organization uses to send electronic mail to the EDI transactions. Software developers write EDI translators, package or templates for our E-mail system. So that one can handle their own EDI transactions. EDI activities does not need to be co-ordinated but our connection to the Internet does. There are so many

definitions of EDI. According to Akerman and Cafiero[1], Electronic data interchange (EDI) is a document standard acts as common interface between two or more computer applications in terms of understanding the document transmitted. It is commonly used by big companies for e-commerce purposes. Such as sending their order. It is more than mere e-mail; for instance, organizations might replace bills of lading and even cheques with appropriate EDI messages. Figure (1), where communication exchange between people and computer are shown.

Communication Party 1	Person	Computer Programme
Communication Party 2		
Person	E-mail	World Wide Web
Computer programme	World Wide Web	Web enabled EDI/XML

Fig. (1) Communication exchange between people and Computers.

In 1996, the National Institute of Standards and Technology defined electronic data interchange as 'the computer - to - computer interchange of strictly formatted messages that represent documents other than monetary instruments. EDI implies a sequence of messages between two parties, either of whom may serve as originator or recipient. The formatted data representing the documents may be transmitted from originator recipient via telecommunications or physically transported on electronic storage media'. In 1989, Brawn[2] has given a detailed description of EDI. According to his paper, the essential elements of EDI are

- direct application - to - application;
- the use of an electronic transmission medium normally a value-added network (VANs) rather than magnetic tapes, disks;
- the age of electronic mail bores for 'store and collect / store and forward' transmission/delivery of documents.
- the use of structured, formatted messages based upon internationally agreed standards.

The term EDI therefore does not refer to :

- Electronic mail (which must be read by the recipient and which does not make are of standardised document formats) ;
- the transfer of files (which also makes little use of standardised formats)

- the remote data entry (which places the entry terminal some distance away from the computer).

THEORETICAL AND COMMERCIAL BACKGROUND OF EDI:-

The Primary goal of every purchasing professional is a secure paperless transaction from point of requisition through invoice settlement and reporting to the general ledger. Some of the best solutions available today make full use of both the Internet and EDI. Like many methods one method is to use internal intranets to house all relevant supplier information. This information may be provided to the Company's web-server via a very secure EDI file transmission using a standard catalog protocol. This is time consuming and expensive. The catalog is updated with the use of VAN. The catalogs can be downloaded via the Internet to the web server [3] inside the fire wall. Access to the suppliers information can be gained only across the intranet. This ensures limited access across the fire wall by end-users, guarantees a specific catalog dedicated to the company and minimizes the cost by avoiding an actual EDI transmission.

The basic fact of this EDI is that there is a need of time and administration involved in defining and creating the catalog with each supplier and then overseeing the periodic updating if you wish to maintain Catalog consistency. If anyone doesn't mind the end users seeing very different catalog compositions and it may be able to use exactly what the supplier offers. There are a number of excellent software options today to assist companies wishing to undertake either endeavor. There are so many company's internal requisitioning processes that can be effectively automated without the use of either EDI or the Internet. The use of internet or browser technology is all that is really necessary in combination with the development of an intranet. Enabling one or both technologies allows a company to develop a more sophisticated and complete solution by connecting directly to the supplier for catalog and pricing information.

(A) EDI Standards :

Electronic data interchange provides a technical basis for commercial "Conversations" between two entities either internal or external. EDI constitutes the entire electronic data interchange paradigm, including the transmission, message flow, document format and software used to interpret the documents. The EDI standards were designed by the implementers, initially in the Automotive industry, to be independent of communication and software technologies. EDI can be transmitted using any methodology agreed to by the sender and recipient. This includes a variety of technologies, including modem, FTP, E-mail, HTTP, AS1, AS2 etc. The EDI standard prescribes mandatory and optional information for a particular document and gives the rules for the structure of the document. The standards are like building codes. Just as two kitchens can be built "to code"

but 100K completely different. Two EDI documents can follow the same. Standard and contain different sets of information. For example a food company may indicate a products expiration date while a clothing manufacturer would choose to send color and size information.

The aspect of standardisation of EDI system is the need for a consistent set of codes and indentifies between the various systems users. In 1989, Wilkinson[4] discuss the problem in the content of an Australian EDI System designed by tracking railway containers. Where each state railway authority uses different codes to designate the same items. The Railways of Australia scheme makes use of a simple conversion table to solve this apparently complex problem.

(B) Types of EDI System :

Over the view that EDI is a technical problem, which must be solved a new each system is reflected in the approach often take to implementing new EDI Schemes. EDI Software falls into two separate categories the -in-house software which translates information from unstructured, company-specific formats into structured EDI formats (such as ANSI × 12 or EDIFACT).

The transmission process can take place in one of two ways. Either by linking the two partners directly (point-to-point) via modem, or by means of third-party network; in essence, what a third party network provides is the EDI Communication skills, expertise and equipment necessary to communicate electronically Emmelhainz[5]. The implementation of EDI tend to see each scheme as unique. It is largely because each company involved in a particular market segment transacts its business slightly differently from its competitors. EDI systems can be categorised into three systems (Akerman and Cafiero, 1985).

(i) One-to-many EDI Systems :

These types of system forms when organisation wishes to streamline its interactions with suppliers. One can say that the initiating organisation is the hub of the system, while its trading partners from the satellites. In this type one EDI system like A is connected to many EDI system B, C, D, E.... etc. It is shown in figure(2).

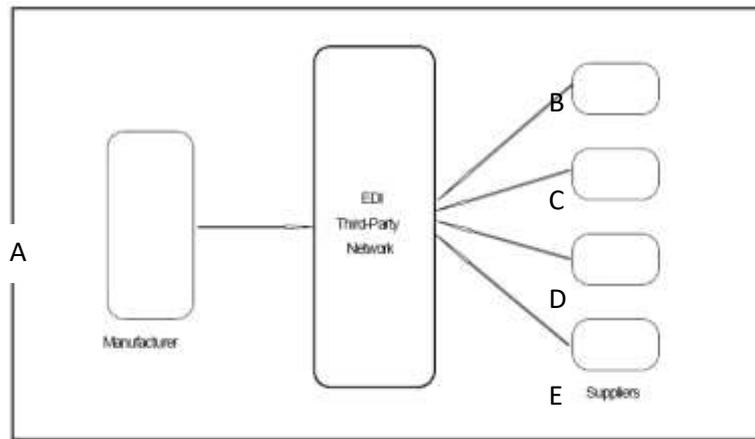


Figure (2) One-to-Many EDI System

(ii) Many-to-many EDI Systems :

In this type of EDI system many buyers and sellers interacting with each other. It works between two organisations systems. In which each representing an industry group. It is shown in figure (3), where different kinds of EDI systems are connected to many and many EDI systems.

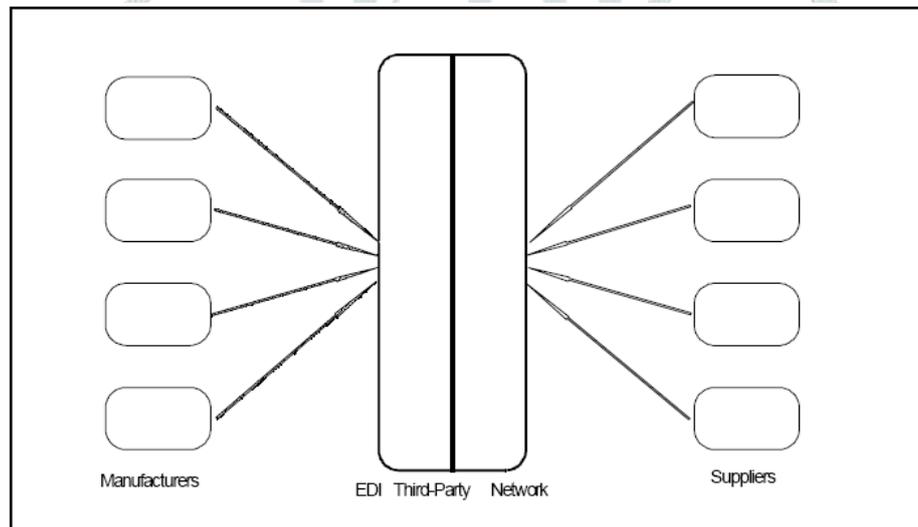


Figure (3) Many-to-many EDI Systems.

(iii) Incremental paper trail system :

In this documents are amended by a series of participants with additional information being added to the document at each stage in the process are particularly relevant to the domestic and international trading community.

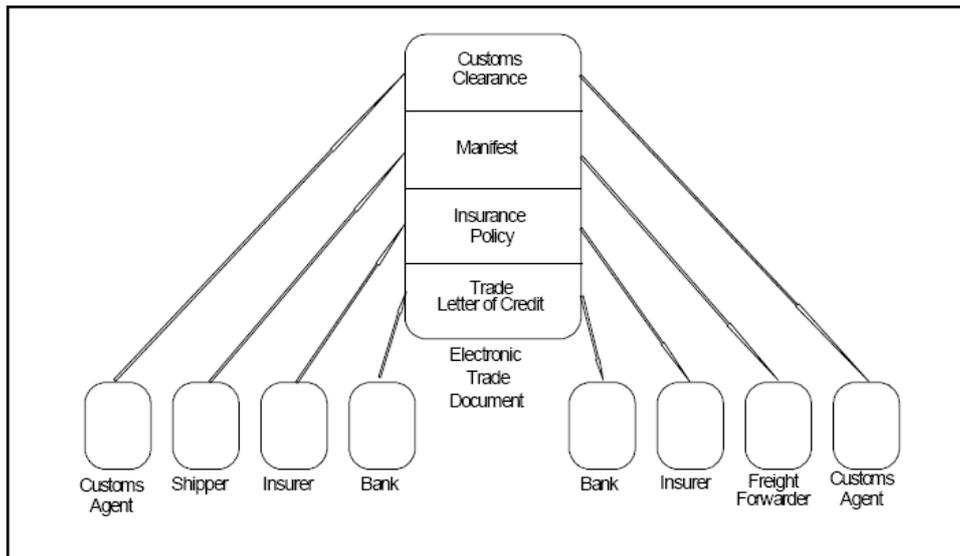


Figure (4) Incremental paper trail EDI System

(iv) Generalised EDI Systems :

It is a kind of single data store for the entire EDI system. The data store can not be implemented as a distributed database. The diagram shows a single data store for the entire EDI System. Example :- The current European development of an electronic bill of Lading (EDI monthly report, September 1990), with its consequent need of multiple third party. Network providers, (Takac and Swatman[6]) seems to indicate that distributed document storage will be the method of choice.

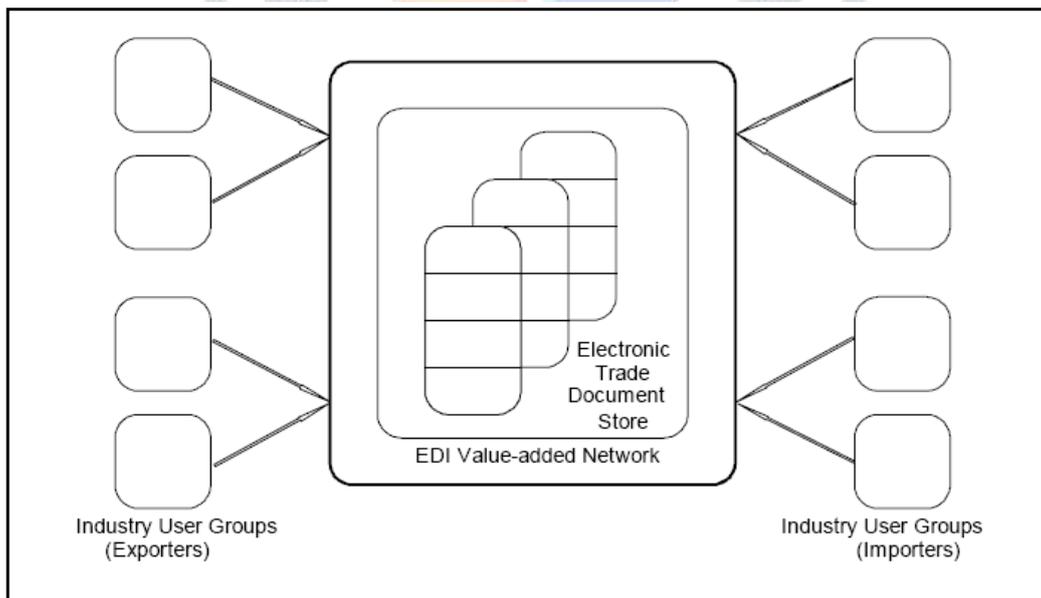


Figure (5) : A Generic model of an EDI System

***Purchase Order Placement :-**

EDI have a very secure effective transaction set for a purchase order within which all relevant data is transmitted through a VAN to the supplier. The costs involved include the original design and set up of the files and the ongoing cost of the data packets transmitted with each other.

By contrast, the company's web server, using any number of software packages can submit ordering information direct to a supplier's web-site at virtually no cost. In maximum cases the data transmitted is not likely to be highly proprietary, even it does get hacked. With appropriate software, companies can even receive acknowledgement or confirmation of their order.

Some figures related with these are shown below :-

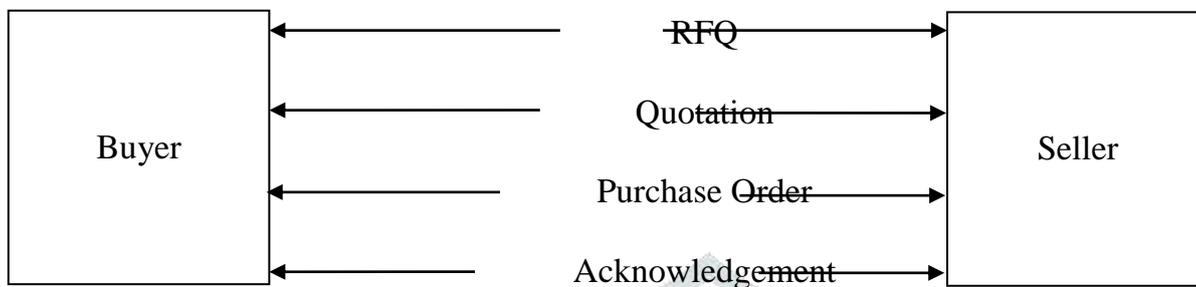


Fig.(6) - Small Purchasing business application and EDI

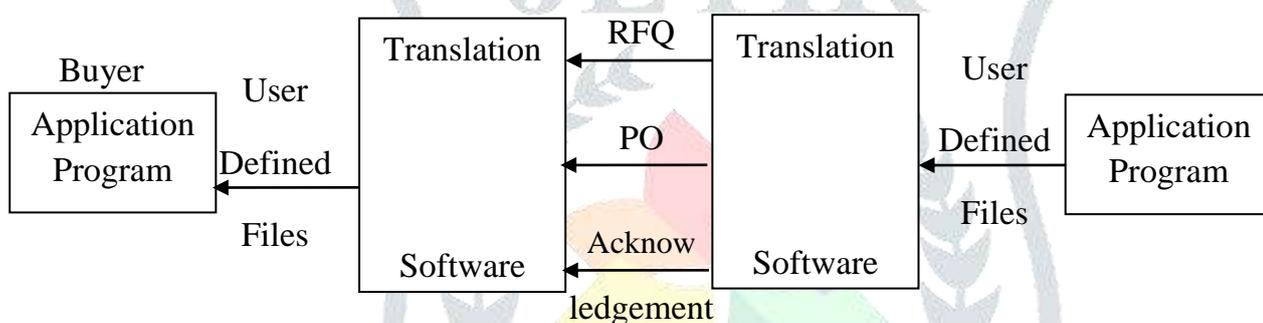


Fig.(7) - Data Processing & EDI

USERS OF EDI

First of all EDI was initially used mainly by the transportation industry. The auto industry and its suppliers and large retailers discovered the advantages of EDI and began to require that their trading partners conduct business via EDI. Most industries had their own standards but gradually conformed to X12 standards. Most of the companies uses computers to send business documents instead of mailing paper documents. Like most of our pay checks are directly deposited into our banks accounts. The transfer of funds is accomplished by the use of an electronic file being sent from one company to other bank.

BENEFITS OF EDI :

In this globalisation era most benefits of EDI's are the savings of Labour, Cost of Labour in the areas of transcription, controls and error investigation and correction. Use of EDI in any organisational system provides the quick response technology. Some benefits of EDI's are :-

- It works quick & effective for customers.
- It is easy to reach door-to-door
- It save the time
- It improves the relationship between trading partners.
- It increases the ability to compete both domestically and Internationally.

LIMITATIONS OF EDI

EDI is not a technology but a new way of doing business. Though identifying the costs related to EDI is relatively easy, identifying the benefits of EDI, especially when a company is not using EDI is hard. Since most of the real benefits are strategic and intangible in nature. As such, EDI will require a different approach to cost-benefit analysis and it is essential for the success of a corporate EDI program, that management has appropriate expectations on the return on investment (ROI). Still a cost-benefit analysis is not so essential as to justify the investment in EDI in order to priorities applications and the allocation of information technology resources.

CONCLUSION

The use of EDI lie rather in the areas of inter-connectivity and intergeration of inter and intra organisational information systems and communications media. EDI with its standardised document exchange facilities, offers an entirely new way of solving the problem without the need for a single, monolithic database and system structure. See Dearden[7] But there are also some technical issues involved in EDI implementation. Technologically, EDI is not complex. The structure of EDI standards, software and Networks is in place and is working. The technological implementation issues need to be understood and addressed by firms using EDI.

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