The Evaluation Of EDI Software Application

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Abstract

The primary objective of this research is to determine the best EDI software application that meets the users' requirements, and to show the functionality potentially presented in any software of electronic data interchange (EDI) system. Also, in this paper, will be addressed issues relating to integration EDI system into business process, and the issues regarding the performance of EDI application will also be discussed.

Introduction

The need to exchange information is critical within the business community. The information may be generic in nature, such as a purchase order or invoice, or specific to an organization, such as customs declaration (1). Traditionally, companies have exchanged this information by mailing preprinted business forms. By integrating computers and data communications into the business process, companies can reap the benefits of exchanging information electronically. This will be reduced paperwork, minimized cost, and improved response time (2).

The Options for Implementing EDI Software System

Users have three options for implementing an EDI software system:

1. Users can develop their own EDI software. This option is expensive and time-consuming, and since there is a risk involved with developing new software, this option is discouraged except in extreme cases (e.g., using a hardware platform for which no commercial EDI software is available).

2. Users can use an EDI service bureau (e.g., a third-party network). With this option, a company sends its business transactions to the service bureau, which performs the EDI service at its location. Since the fees for this service are generally high, service bureaus are only recommended as a short-term solution.
3. Users can purchase an EDI product. This product purchase is usually the most cost-effective, long-term solution for implementing an EDI system.

As with most software products, EDI products can differ greatly. Some products provide communication functions. Others include forms generation and data entry capabilities. The host of options potentially present in an EDI product can make purchasing the right one, as a difficult task. By understanding the fundamentals of EDI software, however, one can perform an intelligent evaluation of commercial EDI products.

EDI Standards Specification

Although the business computer enabled companies to store and process data electronically, companies needed an expedient method to communicate the data. This method was realized by the widespread use of computer telecommunications. Using telecommunications companies could transmit data electronically over telephone lines, and have the data input directly into a trading partner's business application. These electronic interchanges improved time response, reduced paperwork, and eliminated the potential for transcription errors (3). Computer telecommunications, however, only solved part of the problem. Early electronics interchanges were based on proprietary formats agreed between two partners. Due to differing document formats, it was difficult for a company to exchange data electronically with many trading partners. What we needed was a standard format for the data being exchanged. Both users and vendors input their requirements to create a set of standard data formats that are:

- ☒ Hardware independent;

- Unambiguous, such that they could be used by all trading partners;
- Reduced the labor-intensive tasks of exchanging data (e.g., data re-entry);
- And allowed the sender of data to control the exchange, including knowing if and when the recipient received the transaction.

Although today there are many syntaxes for EDI, only two are widely recognized: X12 and the Electronic Data Interchange for Administration, Commerce, and Transport (EDIFACT). These two standards provide a great deal of flexibility regarding how the application data is represented by EDI software data. Figure.1 shows the basic parts of EDI structure (4).

These two standards can be viewed as hierarchical in structure. Simple data structures at the bottom of the hierarchy are combined to form more complex data structures. At the top of hierarchy are the information units exchanged between trading partners. The hierarchy of standard, beginning with the simple data elements, and increasing in complexity until the EDI interchange is formatted.

With the new version of standards a new type of data element was defined as a composite data element, which is a set of simple data elements that represents a single named item. Data elements are grouped into functionally related units called data segments, which they are grouped into transaction sets. A transaction set is a smallest meaningful set of information exchanged between trading partners (5).

EDI Translator Specification

The software component that governs the conversion of application data to and from EDI interchanges is called EDI translator. Most EDI translators provide two services: data mapping, and standards formatting. The second one is the primary role of the EDI translator. To format data for an application, a translator must:

- Know how to access the data.
- Understand the format of the data.

To access the data most translators support a file interface. For outbound transactions an applications, writes the transaction data to a file (called a flat-file). The translator format the data according to the

appropriate EDI syntax rules and produces an EDI file, which is ready to be communicated to any users. For inbound transactions, the translator verifies that the standard version and release are supported, and that the syntax of the interchange is in compliance with the standards. The translator produces a flat-file for the application as output.

To convert flat-file data to and from EDI data, a translator must understand the format of flat-file data. This understanding is achieved in two ways. First, the translator might require the user to generate the flat-file according to a format defined by the translator. This means that the user must modify the application data so it can be processed by the translator. Second, the translator might provide a tool that allows the user to specify the format of the flat-file. This tool is called data mapper. The data mapping reduces or eliminates the programming required to integrate the translator with a business application (6).

Data mapping is beneficial if an application uses files for input and output. If, however, an application reads and writes data to a database rather than to files, the user needs to develop the software that generates the flat-file from information stored in a database, and vice-versa. Responding to this requirement, some commercial translators now offer the capability of exchanging data directly with an application database. This removes the need for any interface software between the application and the translator. Figure 2 shows the application-to-application linkage.

EDI Communications Software

The EDI translation process converts application data to and from communications-ready EDI data. The communication service, however, is not part of translation process. The EDI standards do not specify how EDI data is to be transmitted to the user. Currently, bulk file transfer protocols are used to convey the majority of EDI traffic. EDI partners seldom communicate directly, but rather, use the services of a third party Value-Added Network (VAN). EDI VANs provide a communications network to connect partners, regardless of individual platforms or communication protocols. Each partner connects to the VAN, and the VAN manages the connections to all partners (7).

VANs also serve as a document clearinghouse, either providing a mailbox service to store received interchanges until a user is ready to download them, or proactively delivering interchanges to a user. The proactive delivery service can be immediate (i.e., interchanges are delivered as soon as they are received) or scheduled (i.e., interchanges are delivered at a specific time of day). Additionally, the proactive delivery service can be defined by document type or partner.

When implementing an EDI system, some type of data communications software is necessary. Communications software can perform a variety of services, such as transmitting EDI files to VANS or encapsulating EDI data in electronic messages.

Many EDI products include some type of file transfer software. This software initializes a modem to call a VAN and to upload and download files. If an organization lacks communications capabilities, purchasing a communications—enabled EDI translator is a viable option. Another option is to integrate a translator with an external communications system. In order to see the benefits of EDI technology, figure 3 shows the possible EDI application of manifest management system.

Conclusion

The beneficial of using EDI can be described as reducing the cost of doing business. This benefit is often divided into the various aspects of cost savings, such as improved time response, reduced need for paper, and minimized overhead expenses. To take full advantage of these benefits, an organization (user) must formulate its EDI requirements prior to implementing an EDI system. These requirements are: functionality, performance, and integration which must be presented in any EDI software system to evaluate this system.

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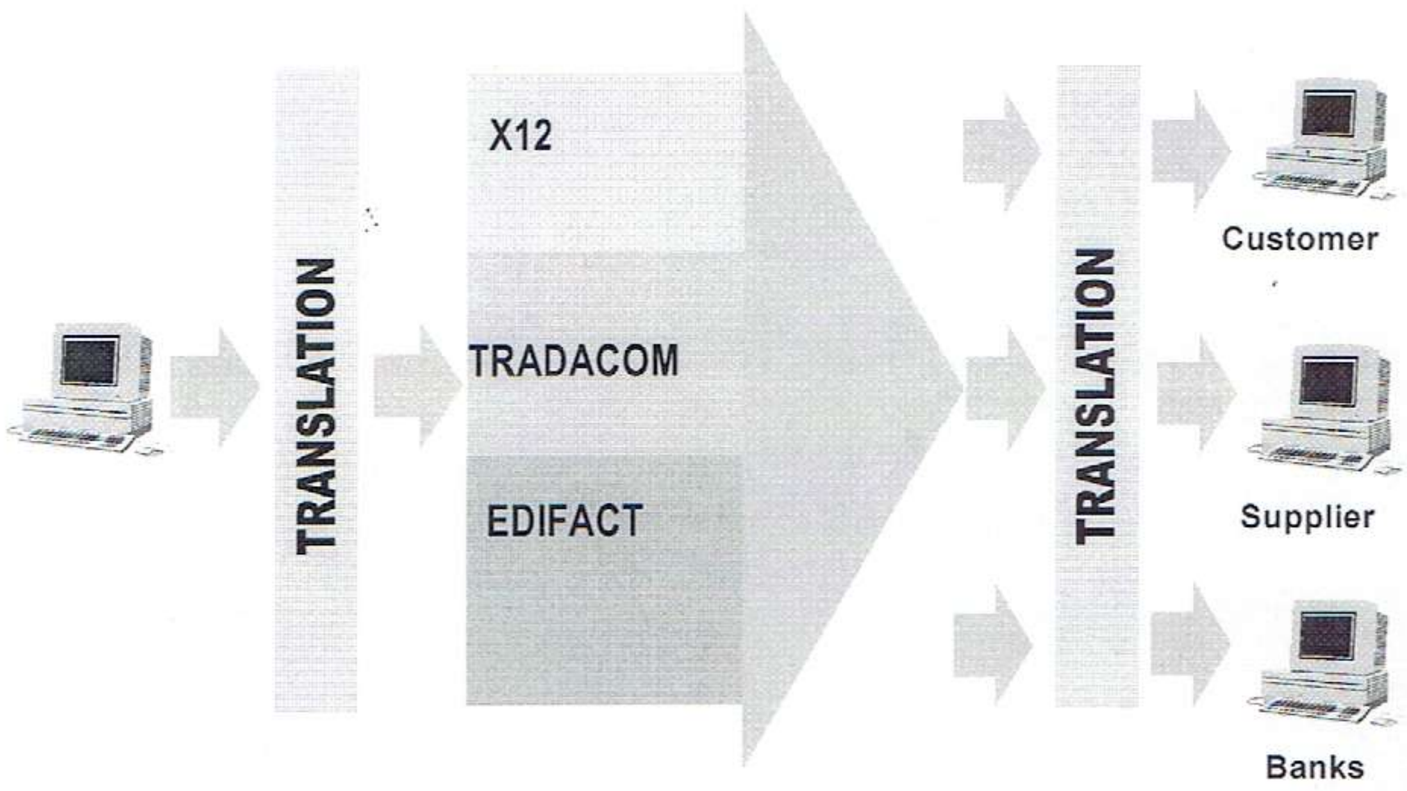

Fig.(1)The basic parts of EDI structure.

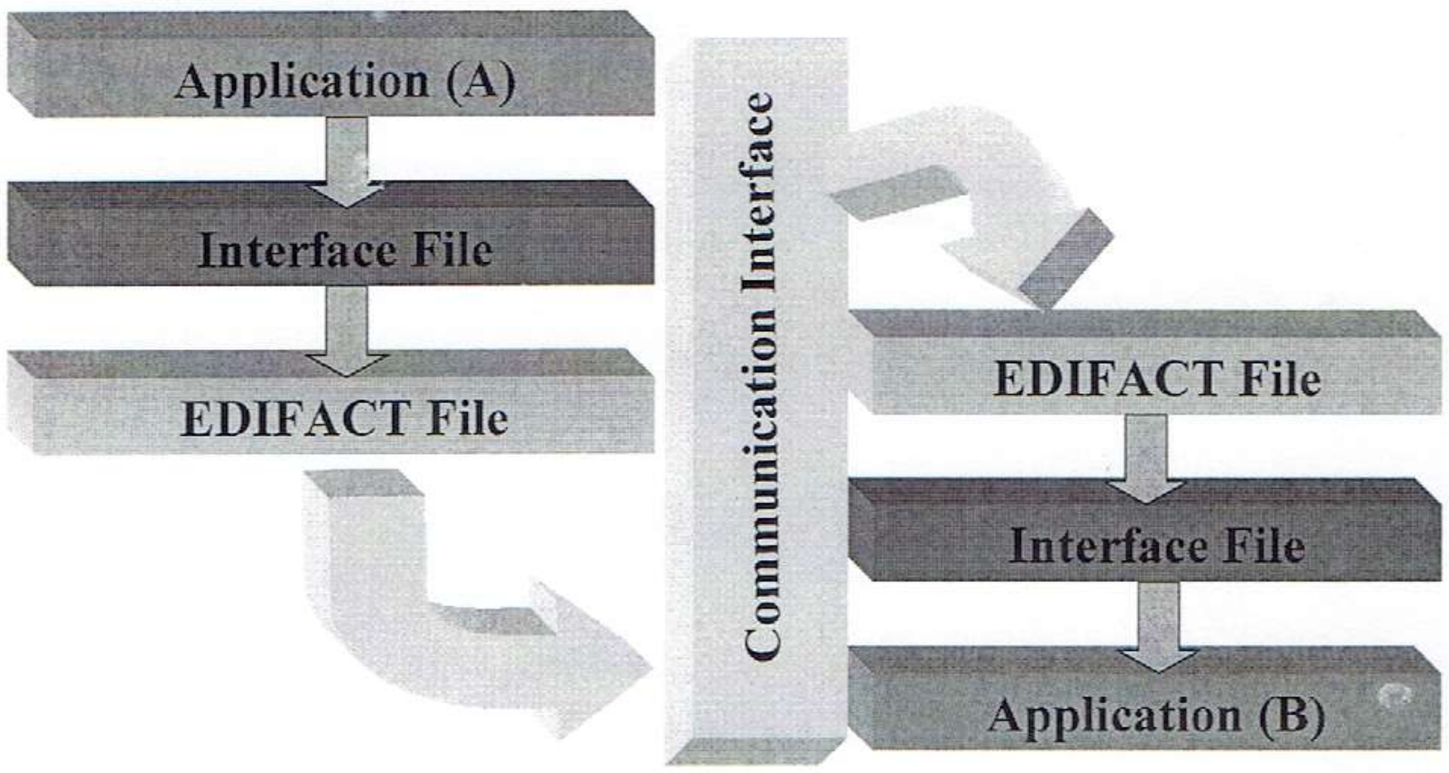

Fig. (2) Application-to-Application Linkage.

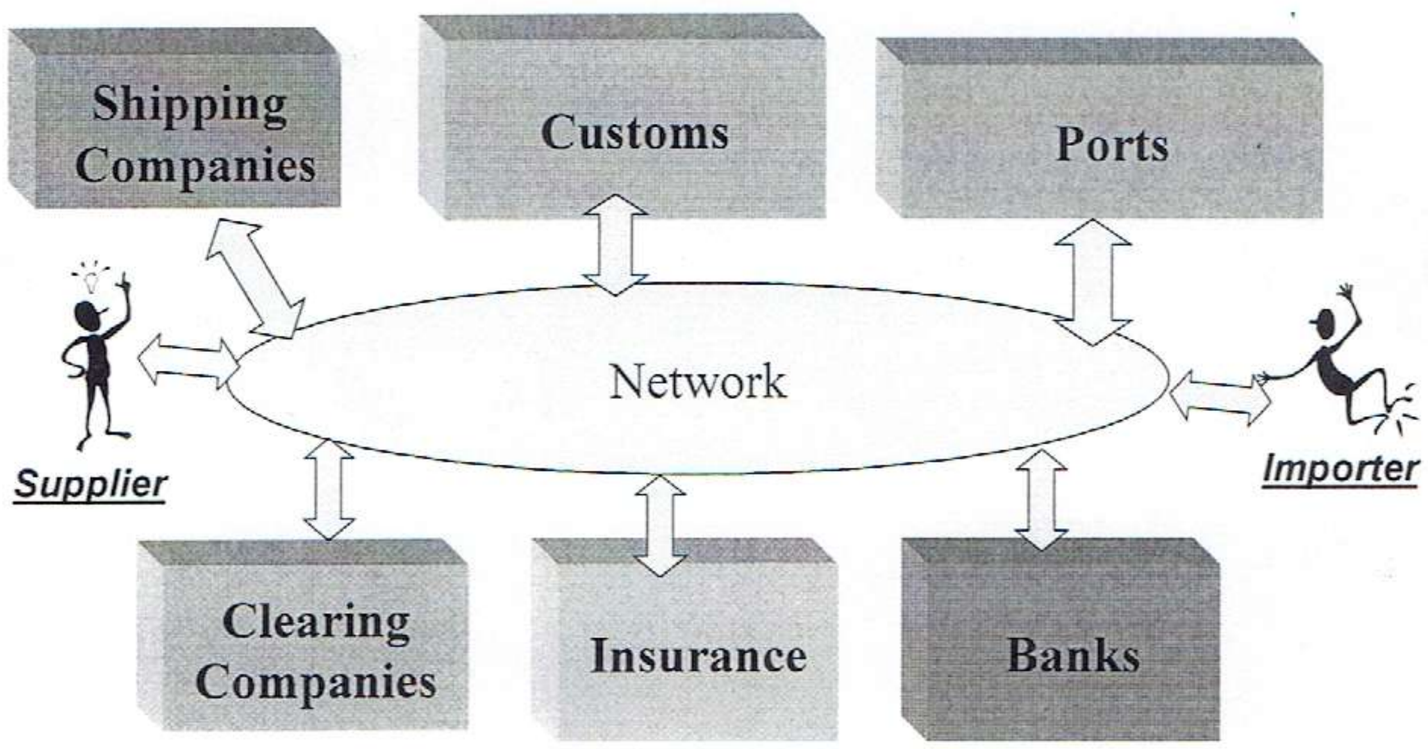

Fig.(3) Possible EDI Application of Manifest Management System.

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تحليل وتقيم البرامجيات التطبيقية الخاصة بتكنلوجيا تبادل البيانات الكترونيا (EDI)

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الخلاصة

أن الهـدف الاساسـي لهـذا الـبحث هو أيجاد وأستخراج التطبيق الافضل من بين التطبيقـيات البرمجية الخاصة بتكنلوجيا تبادل البيانات الكترونيا" (EDI) وذلك لتلاقي وتلبـي كافـة المتطلـبات الأساسية لمختلف الأستخدامات وانواع المستخدمين في الوقت الحاضـر. وكـذلك لغـرض أظهـار القابليات والمهارات الوظيفية الأساسية المتوفرة والمعروضـة فـي أي تطبيق خاص بتقنيات تبادل البيانات الكترونيا (EDI). فضلا"عن ذلـك، سـوف نقـوم بعرض وطرح المواضيع المتعلقة بتكامل أنظمة التبادل الألكتروني للبيانات في العمليات التجارية. و أخيرا سوف نناقش المواضيع المتعلقة بالأداء الأفضل لهذه التطبيقات البرمجية.