

Electronic data interchanges system

[Business](#), [Management](#)



EDI Electronic Data Interchanges Electronic Data Interchange technology is a complicated mixture of three disciplines: business, data processing and data communication. Integrated with logistics practices EDI can be defined as the electronic exchange of 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. EDI began in the 1970s and was first developed by the automobile industry.

Today is used in different industries including distribution, finance, healthcare, manufacturing, purchasing, retail, publishing, and shipping. EDI system is in evolution and is adapting to the current market situation. In fact, EDI is a technology that many companies are using in its logistics practices in international supply chain operations. Many businesses choose EDI as a fast, inexpensive, and safe method of sending all documents used on business. Any business application that implements EDI works in a fast, efficient and paperless environment.

The traditional document flow for purchasing transactions starts with data entry by the purchaser to create a paper document to send by mail to trading partners. Once the trading partners receive the data, they keystroke the information received into a local application and then perform more data entry by entering a response into a local application. The resultant paper document is then mailed to the purchaser. The procedure is both time consuming and labor intensive because data from both trading partners has to be entered twice.

EDI data is key in only one time, at the original point of entry. The data is then translated into a standard format electronically and sent to the trading

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partner electronically. Time for transmission is very fast in comparison to postal mail. Even on a slow modem connection the time is considerably shorter than through the postal service. EDI Benefits " Removing unnecessary process tasks benefits the whole supply chain, allowing improved performance and cost management. " By using Electronic Data Interchange systems companies have made significant improvements, benefits and savings.

Over 160. 000 companies have made the change to electronic data interchange to improve their efficiencies. Many of these companies require all of their partners to also use EDI. Studies have shown that manually processing a paper order can cost 70 times more than processing the same order thru EDI. The most relevant benefits are: * Much less labor time is required and fewer errors are made because computer systems process the documents rather than processing by hand. When a company reduces manual work and administration reduce the process operating costs. EDI is commonly used instead of faxing and mailing paper documents improving the efficiency of communicating documents. When the timing of the invoice to goods delivery is shortened it improves the invoice approval and streamlines its payment. * Fewer errors occur because computer systems process the documents rather than processing by hand * Data integrity can be secured across the supply chain because suppliers' information is automatically sent to customers' systems. Improved processing efficiency increases the opportunity to negotiate early settlement discounts, reducing the cost base for customers. Business transactions flow faster: Faster transactions support reduction in inventory levels, better use of warehouse

space, fewer out-of-stock occurrences and lower freight costs through fewer emergencies expedites. EDI Barriers Standards are a necessary part of EDI. Every business has application files that are used to manipulate their data in ways that are familiar to the business. The problem is that most businesses though using the same types of data do not use the same application programs or hardware and software platforms.

If businesses are to be able to communicate their data to one another, they must have a common ground to meet on to allow the exchange of the information. Standards are the solutions to this problem. All business that conforms to specific standards can share data in the formats delineated by those standards. Data processing One of the technological fields required to implement EDI is data processing. Data processing allows the EDI operation to take information that is resident in a user application and transform that data into a format that is recognizable to all other user applications that have an interest in using the data.

In the EDI environment, data processing will handle both outgoing and incoming data. The user-defined files are the files that are produced by a business application. These files may or may not be formatted by the user. These are the business files that need to be translated into the ANSI X12 or EDIFACT standard format. Standards The heart of EDI is the document standards. Every business has application files that are used to manipulate their data. The problem is that most businesses, though using the same type of data, do not use the same programs, software and hardware platforms. The solutions to this problem are the standards.

The American National Standards Institute's Accredited Standards Committee X12 (ANSI ASC X12) is the accepted standard for EDI transactions in the United States. The ANSI ASC X12 committee has the mandate to develop variable-length data formats for standard business transactions. The committee was accredited in 1980, and the X12 standard has been evolving ever since. One of the requirements placed on the committee was and is to keep the standard open to inter-industry applications. This requirement makes the standard more complex than an industry-specific standard, but the advantages easily overcome the disadvantage of complexity.

With a single standard, a business has multiple functionality and only has to use one standard for each business function. The International Standards Organization (ISO), an organization within the United Nations, has developed the EDI standard that is used in Europe. The Electronic Document Interchange for Administration, Commerce, and Transportation (EDIFACT) is the UN standard that the whole world has agreed to eventually adopt. The actual implementation of EDIFACT within the U. S. has been moving at a snail's pace. Everyone agrees that EDIFACT is the international standard.

Security One of the major roles provided by the data communications technology is the ability to apply security to EDI transactions so that the transactions will not be tampered with or observed, depending on the level of security needed. **Confidentiality** Confidentiality requires that all communications between parties are restricted to the parties involved in the transaction. This confidentiality is an essential component in user privacy, as well as in protection of proprietary information and as a deterrent to theft of information services.

Confidentiality is concerned with the unauthorized viewing of confidential or proprietary data that one or both of the trading partners does not want known by others. Confidentiality is provided by encryption. Encryption is the scrambling of data so that it is indecipherable to anyone except the intended recipient. Encryption prevents snoopers, hackers, and other prying eyes from viewing data that is transmitted over telecommunications channels. Data Integrity Data sent as part of a transaction should not be modifiable in transit. Similarly, it should not be possible to modify data in storage.

Data integrity is a guarantee that what was sent by the sender is actually what is received by the receiver. This is necessary if there is a need to ensure that the data has not been changed either inadvertently or maliciously. However, authentication schemes do not hide data from prying eyes. Providing data integrity is generally cumbersome and not used unless one of the trading partners requires it. The normal mechanism for acquiring data integrity is for the sender to run an algorithm against the data that is being transmitted and to transmit the result of the algorithm separately from the transmission.

Upon receipt of the transmission, the receiver runs the identical algorithm and then compares the results. If the results are identical, then data has not been modified. Examples of EDI implementation EDI for the Automotive Industry EDI has been in use across the automotive industry for over forty years. The smooth running of today's car production lines rely on the seamless exchange of business documents between the car manufacturers and their supply chain. Many of the business processes used in the

manufacture of today's cars were developed from a production system devised by Toyota in Japan.

A number of best practices were developed around the 'Toyota Production System', for example Just-In-Time and Lean Manufacturing. JIT and Lean Manufacturing processes are central to the smooth running of many production lines around the world and EDI provides a fast and efficient way to transfer business documents in order to support these types of manufacturing processes. Providing visibility of inventory levels and notification of when shipments are due to arrive at the production line are critical to making JIT and Lean manufacturing processes a success.

The global nature of the automotive industry means that it is important for car manufacturers to be able to onboard their suppliers as quickly as possible, no matter where they may be based around the World. Many car manufacturers have established a manufacturing presence in for example Eastern Europe, Brazil and China and it is important to ensure that suppliers located in these regions are able to exchange EDI documents as smoothly as possible.

ICT skills across low cost or emerging markets are traditionally very low therefore the car manufacturers must ensure that they can provide simple to use EDI tools that allow even the smallest suppliers to be able to trade electronically. Due to the global nature of the automotive industry, there are numerous communications and document standards in use today, along with a number of regional specific EDI networks. EDI for the Financial Services Industry

The success of the financial services industry relies on its ability to process payables and receivables, as well as manage investments and loans on behalf of its customers both retail and wholesale. For years many of these processes were manual and paper intensive. However, the introduction of EDI has allowed the financial services industry to automate many of the transactions required to transmit payment and remittance data from one party to another. As a result of the economic upheaval of the past few years, the world has come to recognize and appreciate the interdependent nature of the global financial infrastructure.

The financial supply chain has become a reality for global business as buyers from one geography rely on goods from suppliers based in other regions that utilize different currencies and are governed by different regulations. EDI provides not only low cost alternative to traditional paper-based payment methodologies but also enables organizations to realize faster, more accurate and more flexible payment structures in the course of doing business. EDI enables the full alignment of the financial supply chain with the movements of the physical supply chain.

A fully automated financial supply chain enables the seamless, accurate and timely exchange of financial documents between buyers, suppliers and their financial institutions. With EDI an organization can electronically transfers funds from one bank account to another designated bank account or counterparty. Electronic payments are processed to allow organizations to have access to funds more quickly and with fewer exceptions or delays due to human error. EDI for the High Tech Industry

EDI has been in use across the high tech industry for many years. The high tech value chain has become very complex with many high tech companies relying on external partners to help design and manufacture their products. Due to the nature of the high tech industry there has been a desire to try and exchange business transactions electronically, more so than many other industry sectors. The high tech industry is very consumer driven which has meant that high tech supply chains have had to become flexible to changing consumer demands.

There has also been an increasing demand for introducing Vendor Managed Inventory systems to ensure that retailers have the correct levels of inventory to support for example new product launches or seasonal fluctuations in consumer demand. For this reason inventory visibility across retail networks and multi modal logistics networks is important for both the high tech companies and their trading partner community. Many high tech companies have globalised their operations to take advantage of low cost suppliers in many of the emerging markets around the world.

This has meant that the high tech manufacturing companies have had to ensure that they can trade electronically with suppliers in any country around the world, even those with limited ICT related skills . EDI Stages of Implementation Many companies implement electronic data exchange as part of their customer-supplier partnerships. Both the customers and suppliers expect to gain operational and competitive benefits. A link exists between the level of implementation of EDI and the associated benefits. Benefits from EDI for a supplier company appear limited unless the company reaches an advanced stage of EDI implementation.

In this stage the customer and the supplier openly sharing information on demand patterns, inventory levels, and planned production. Achieving this level of implementation is a significant challenge for those professionals involved in EDI installations. The implementation stages for supplier companies using EDI are: * Stage 1, EDI is used for a small number of transactions with one trading partner. Some documents are handled electronically, while all others are completed manually. Electronic documents are manually entered into the MRP planning system.

The benefits include reductions in paperwork, reductions in time spent sorting and filing mailed documents, reductions in input errors, faster response time and standardized information. * Stage 2, EDI is used with two or more customers for a small number of transactions. The extent of implementation relates to the volume of business transacted through EDI. The additional benefits include reductions in inventory, reductions in lead time, and improve customer relations. * Stage 3, EDI technology is integrated into the MRP planning system to update transaction-driven information without additional data entry. Stage 4, EDI is integrated with customers to the extent that the firm can inquire into a customer's database for information such as inventory status and shipments. * Stage 5, EDI transactions are found in all functions of the business organization: quality control, engineering, manufacturing, marketing and accounting. As new benefits the cost reduction and efficient business operations, effective use of personnel assigned to new tasks. Conclusions EDI is well established as effective technology got reducing costs and increasing efficiency.

EDI technologies are approximately the same age as Internet technologies. In the past, the technologies have been mutually exclusive, but this is rapidly changing. As the two technological communities begin to merge and as the business community sees the advantages of this merger, EDI and the Internet will eventually become everywhere. The implementation level affects the benefits companies can expect from installing EDI. At early stages of implementation, companies can expect only those benefits that result from improvements in the transaction process.

As planning systems are linked, companies can expect improvements in lead time, reductions in inventory, and other benefits derived from sharing information with their customers and suppliers. EDI represents a specific class of inter-organizational systems, and the concept carries with it a unique set of strategic and implementation considerations. The most significant and, heretofore, most overlooked factor in determining the effective use of EDI is the organization's ability to manage the changes in structure and work processes that must attend the implementation of this technology.

EDI development is a process that takes time and patience, and those who start first have the best chance of staying ahead of the competition if they recognize that EDI involves a continuous process of change. There is no end to organizational change in this era of rapidly evolving information technology. References * Bort, R. , and Bielfeldt, G. R. Handbook of EDI. Boston, Massachusetts: Warren, Gorham and Lamont. * Canis, R. J. , Value-added networks: What to look for now and in the future. Conference Proceedings EDI 2000: EDI, Electronic Commerce, and You; (pp. 141-157). * Kimberley, P. (1991). EDI.

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