IMPLEMENTATION OF ELECTRONIC DATA INTERCHANGE (EDI) AS A MODERN METHOD OF COMMUNICATION BETWEEN BUSINESS PARTNERS

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1 Introduction

At the present quick time, the information is considered the most valuable commodity at the market. As the most important characteristics of information is considered its quality and timeliness, i.e. speed of delivery designated entities. In the business transactions between the two business entities, the speed of data transmission, including data, relating to order or payment, may have the value of millions EUR.

The introduction of computer technology into business processes helps to accelerate the transmission of information and the associated faster creation and processing documents.

Employees working with business documents have required information much faster than employees who use sending information in a physical form.

2 Electronic Data Interchange - a modern way of communication

For this purpose there was developed a standard EDI (Electronic Data Interchange). EDI is a modern way of communication between two independent entities, in which standard structured business documents are exchanged with other documents, such as orders, delivery notes or invoices, electronically. EDI is most often used by commercial organizations in the field of trade, industry and services (financial institutions, tourism, transport, logistics), but also the organization of state administration and public administration.

The main objective of these systems is a gradual replacement of paper documents by electronic documents. The reason is to reduce the costs associated with the exchange and simultaneously increase the speed and efficiency of transmission, but also the possibility of further automatic processing. The biggest benefits bring the introduction of electronic communication within regular exchange of large amounts of standardized documents. EDI documents have the same legal weight as documents "paper". Using EDI may occur linking various information processes inside and outside the company. Data exchange is by automating the whole process much faster and also cheaper. EDI communication is defined
and guided by supranational standards. It is a time-tested technology that can be used with business partners from all over the world. In these modern times there are EDI solutions that are accessible to practically anyone and it can be used in any industry. Depending on the individual branches certain standards are used in electronic communication, such as EDIFACT, ODETTE, VDA or standards based on XML and more. For electronic communication it is necessary, that both partners are able to communicate within certain standards. This capability ensures their compatibility with business partners.

A practical example with the order shows the work of EDI the best. This is a comparison of the order inside the company without the use of EDI and conversely with its use (see Table 1).

\textit{Tab. 1 Individual steps of movement goods order without and with using EDI}

<table>
<thead>
<tr>
<th>Number of steps</th>
<th>Order of goods in the traditional way - without the use of EDI</th>
<th>Order of goods with the use of EDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Purchaser confirms the order in its information system (for example SAP)</td>
<td>Purchaser creates order in its information system (for example SAP). Created order goes through EDI electronically to the supplier.</td>
</tr>
<tr>
<td>2.</td>
<td>Purchaser will print order from the system and send it by fax or e-mail</td>
<td>Supplier receives EDI order into its system. Order arrives electronically and acceptance seems that the order automatically &quot;created&quot; in the information system.</td>
</tr>
<tr>
<td>3.</td>
<td>Supplier accepts order by fax or email, will print it</td>
<td>Further is processed the order, ongoing removal, delivery of goods, invoicing etc. Exchange of all other documents (delivery note, invoice) can also take place via EDI.</td>
</tr>
<tr>
<td>4.</td>
<td>Supplier overwrites the order from paper forms into its information system</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Further the order is processed, ongoing removal, delivery of goods, invoicing etc.</td>
<td></td>
</tr>
</tbody>
</table>

Source: prepared according to [6]

Compatibility in this communication is ensured by using international standard, which is marked UN / EDIFACT. To implement this standard in the organization means
advantages in terms of maintaining and increasing competitive advantage at domestic and foreign markets. Organizations with a large number of purchasers or suppliers use electronic data interchange and require its use also from its trading partners. Compliance with the standard ensures global organization GS1, active in Slovak and Czech Republic [4].

For better transparency it is possible to show the process of moving goods orders without and with using EDI in the following figures (see Figure 1 and Figure 2).

**Fig. 1 Typical manual process without using EDI (lots of people and paper)**

![Typical manual process without using EDI](source)

**Fig. 2 The process with using EDI (no people, no paper)**

![The process with using EDI](source)

The main advantages of EDI, arising from the example, include:

- Increase of employees´ productivity.
- Reduction of the costs of postage, printing and recording.
- Reduction of the administration costs.
- Clearer information about making a payment.
- Acceleration of document flow.
- Simplification of transmission of documents and their archiving.
- Limiting errors in manual entry of data.
- Increase of security for transferring documents.
- Improvement of the relationship between business partners.
• Smaller number of irregularities in the business transactions.
• Unified communication of different systems and operators.
• More effective planning and management of production, trade.
• Easier supplying and strategic planning of supply. [2]

Based on these advantages, the priority benefits of EDI communication include:

• It is faster, saves time - reduces delays in the transmission of documents, eliminating the rewriting messages from the system to the system.
• It is more reliable, increases the quality - improves services to customers and can respond quickly to their needs, are eliminated clerical error in the documents (typos, unreadable fax).
• It is cheaper, saves money - saves labor force and costs (eliminates certain types of documents (by mutual agreement), reduces fees for phone, fax paper, postage, etc.).

3 Transmission of EDI messages

The connection of the participants transmission of EDI messages are mostly done through private dedicated networks with increased security, i.e. through the network type VAN (Value Added Network). Those networks transmit data means "store and retrieve". Each user has a mailbox and network operator type VAN performs transactions between mailboxes for each user. The role of VAN operator is to ensure the distribution of standard reports and items. Network type VAN acts as a middleman - the software supplier, it means the converter and communication software for connecting to the VAN network. Converter and communication software are on the client side. While the client also bears the costs associated with their establishment and management (see Figure 3).

A substantial disadvantage of this connection is the fact that the sender is not informed about when the recipient selects the message from the mailbox. This means that the message can "lie" in the box unnoticed for days and hours. Another disadvantage is the high cost for use of the service VAN and therefore it is not suitable for smaller organizations. It is more suitable for large organizations with large capacity of communication.
**Fig. 3** Scheme of transmission EDI messages via the network type VAN

Connection using network-type X400 works on the principle "store and forward". Advantage of the connection is the fact that messages convey to the recipient soon as it adopts and the messages does not reside in boxes. Sometimes this can be a slow connection. [5]

Currently there are such types of EDI solutions at the market that are beneficial to large companies, but they are also available to small and medium-sized companies. Principle consists in that the advanced EDI solutions eliminated the most common barrier to the introduction of EDI and this is the complexity of the system and the unfavorable ratio of price and performance.

The scheme of EDI solutions originates from the model of communication via VAN operator using EDI provider. For the main platform for communication is considered to use of the Internet. The clients do not need specialized converter or specialized software to communicate on their side. Everything is secured by EDI provider. Its role is operation more clients and communication with other EDI providers and their clients. EDI provider accepts data from the information system of one subject (via the Internet) and then are these data changed by converters to its internal standardized format (XML, UN / EDIFACT). Data are changed again before sending (through the EDI converter) on the format of the recipient and sent via the Internet to the information system of the other subject (see Figure 4).
The advantage of the EDI solution is its availability via commonly used Internet network. Another advantage is that the provider takes all activities for the user associated with the conversion and delivery of data. This leads to the elimination of costs associated with the management of EDI system on the client side. [2]

4 Application and implementation of EDI

The idea of EDI application is simple, its implementation is a little more complicated. It can cause significant problems for the organization, because fundamental questions are raised about the meaning of existence each of its activities and the meaning of its existence. Benefit from the implementation and use of EDI can be achieved only if all activities give each other a sense of each activity and its importance are reviewed separately. [5]

The introduction of EDI communication requires close coordination between the supplier reports, the recipient and the provider of EDI messaging server. The establishment consists of several major steps, which differ from each other depending on the circumstances of implementation (use of information systems, the choice of EDI solutions, way of working in the company, etc.).
The main points:

- Selection of EDI solutions and provider,
- Securing the communication,
- Ensuring the identification,
- Ensuring the integration [6].

Implementation is divided into the following steps (steps describe the implementation of EDI solutions ORION):

- **Identifying** the EDI, getting ideas about what can bring EDI to the company, what can expect from it and what is required.
- Leads to the **selection of a suitable EDI solutions** and provider (based on lessons learned).
- **Designing best practices, steps and deadlines**, that recommends and takes EDI provider with the competent staff of the company.
- For ensuring the integration is essential the **preparation of the interface** for communication with EDI System.
- **For ensuring the communication** with EDI mailbox (EDI provider), you must have an Internet connection or to be connected to an Internet provider.
- **Ensuring the identification number**, this number is assigned by company GS1. Producers who indicate their goods EAN codes, already have this number.
- **Testing of EDI Interface** - the necessity to test correctness and completeness of content.
- The actual **implementation** of EDI solutions - starting the testing operation with purchasers / suppliers.
- **Verification operation** of exchanges EDI messages [6].

The whole process of implementation EDI takes about 30-90 days, depending on the capabilities of the computer system used. In the case of the standard implementation of a system that already has EDI module, it is possible to reduce the time of implementation EDI on 5-10 days.

5 Conclusion

EDI is a modern way of communication between two independent entities, in which standard structured business documents and other documents, such as orders, delivery notes or invoices are exchanged electronically. The main idea of EDI describes an example of the order, which is illustratively described in this paper (see Table 1). It follows that the
The objective of EDI is a gradual replacing paper documents by electronic and reducing costs associated with the exchange.

The fact that EDI has a lot of advantages and benefits that lead to streamlining and improving the process in the company plays a very important role in the implementation of EDI technology. This fact is an impulse for small and medium-sized enterprises and large organizations to introduce this technology. In fact, there can be another reason for the implementation of EDI into business, which is to endeavor to meet important purchasers - retail chains. For many suppliers, this is the real reason why they think about EDI. Nowadays many chains are asking for using EDI as one of the main conditions of trade cooperation. In this case, the actual access to EDI - how new technology can be perceived by the business negatively, because the company does not own convictions about how beneficial the implementation of EDI can be.

However, if the company correctly perceives the introduction of EDI as a way to streamline and improve business processes, so together with appropriate EDI solution brings benefits to the purchaser and supplier.

References


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