

■ **ELECTRONIC COMMERCE: EXPLOITATION STRATEGY
OF TECHNOLOGY FOR BUSINESS ACHIEVEMENTS**

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ABSTRACT

The meaning of electronic commerce as a type of "business transaction with electronic means", although technically exact, it does not express the essential meaning. Electronic commerce can offer substantial benefits in many functions of a company, while it can be applied in a series of business functions, such as: information exchange for products and services (before sale), customer support (before and after sale), electronic pay-

ment etc. In order benefits to be achieved via e-commerce, it is necessary to combine technological means of the new era in tandem with reengineering of business processes. This paper provides a brief synopsis to the nature of electronic commerce and describes the alternative mechanisms of business partners' electronic interaction, as well as the technologies that support the business applications of it.

Keywords

e-commerce, networks, inter-business, business-to-business

1. INTRODUCTION

Electronic Commerce (e-commerce) as a general concept covers any form of business transaction that is conducted electronically, using telecommunications networks. One possible definition of e-commerce would be: “any form of business transaction in which the parties interact electronically rather than by physical contact” [1](SME-Reports and Studies, 2000). However, while accurate, such a definition hardly captures the spirit of e-commerce. E-commerce is not identical with the use of electronic means for communication but rather with the capabilities for redefinition of the way the commerce is carried out, which for first time it can be carried out with the use of new technologies by the companies [2].

E-commerce is not a technology in its own. It is an integrated and well-defined attempt of combining new technologies in order to facilitate the communication between the companies. E-commerce combines computer network and software technologies in such a manner that can effectively and efficiently be used by the companies [3]. Basic point of reference is the support of the businesses in their attempt to plan and apply strategic movements in order to gain competitive advantages in the markets they operate [4]. Thus, e-commerce doesn't only refer to the use of technology in order to automate some business activities, but rather to its strategic exploitation for business goal achievement [5].

In practice, the application of e-commerce needs a series of investments for the companies. However, beyond the profound investments (materials, software, telecommunication equipment), e-commerce needs the allocation of human resources, training, possession of know-how and other indirect costs which are related with the reengineering of business practices. For initial applications the cost of e-commerce adoption may be essentially very small. It increases when the magnitude of the company and the sectors where it operates increase. In general, the companies, which are familiar with the use of new technologies, do not face the cost of investment as a negative factor.

E-commerce may be an important tool for companies

which would like (or there is necessity due to market conditions) to make changes in the way they operate in order to survive and expand in the new era competition. E-commerce can help a company to wholly transform its structure, passing from many hierarchical levels to more "horizontal" structures, and improving its bonds with the customers and suppliers [6].

2. APPLICATION AREAS

E-Commerce impacts upon a large number of business activities. The core component is addressing the commercial transaction cycle and the basic participants in an environment of e-commerce are companies and consumers [7]. In a *business-business* case a company uses a network for ordering from its suppliers, receiving invoices and making payments. This category of electronic commerce has been well established for several years, particularly using Electronic Data Interchange over private or value-added networks. The *business-consumer* case largely equates to electronic retailing. This category has expanded greatly with the advent of the World Wide Web. There are now shopping malls all over the Internet offering all manner of consumer goods, from cakes and wine to computers and cars.

E-commerce encompasses a broad range of activities:

Information exchange for goods and services (before sale).

The information exchange, advertising and education for goods and services is possibly the most widely adopted use of e-commerce [8]. Many companies provide internet pages through of, which advertise goods and services they sell. Approximately 16 million Europeans make purchases over the internet. Three years ago e-commerce generated 165 million euros in revenues in the European Union [9]. This is projected to rise to over 3 billion euros in 2002.

Customer support (before and after sale). Many companies create groups of discussion and contact with customers exchanging ideas, questions and consultancy.

Electronic payment (electronic transfer of capital, credit

cards or e-money). Specific algorithms are used which guarantee the confidentiality of transactions.

Electronic distribution (management of physical distribution and distribution in general). In this way, an internet page can be provided where the customers can see information about the goods of a company, transfer to their PC with no charge trial versions, and paying via credit to transfer to their PC's computer programs.

Development of shared business processes. These processes bring in close relationship the customers with suppliers making stronger the business bonds and making more difficult the dissemination of business cooperation (lock in). For example, Tesco, which operates more than 500 supermarkets in the UK, has a "sales based ordering" system whereby information on product sales at individual supermarkets, as collected by the checkout scanners, is forwarded electronically to the computers at the company's Store Control Centre [10]. These computers determine the goods need to replenish the stock at each store, and send this information electronically to the computers at the Tesco depot serving that store. For many products Tesco itself holds no stock, so orders are generated automatically and forwarded to Tesco's suppliers using Electronic Data Interchange. On delivery to the Tesco depot, the replacement stock is immediately shipped on to the appropriate stores. Within 24 hours of an item being sold by the supermarket its replenishment is back on the shelves. The re-stocking system relies on electronic communication and on close co-operation between Tesco and its suppliers, who in effect are partners in a shared business process of replenishing products on the supermarket shelves. As marketplaces begin to gain a critical mass, new initiatives, Vendor Managed Inventory (VMI) and Collaborative Planning Forecasting & Replenishment (CPFR), have been created around goods transaction [11&12].

The use of e-commerce for all these activities is not easy. The cost of e-communication use is not the same for each application. It depends on a number of factors such as the affiliation of the company with the use of information systems, use of electronic networks, number of cooperating

companies. In general, companies that already use Information Technology and make transactions with other companies, which do the same, don't face the cost of investment as a negative factor. However, a company which should invest "from scratch" in all the necessary equipment and may economically help the small customers/suppliers to do the same, should very carefully weigh the costs with the expected (short term and strategic) benefits [13]. Traditional collaborative Interactions between businesses are complex, labor intensive and difficult to cost justify unless conducted between companies exchanging tremendous volume. That is why the initial value of doing business on the internet-electronically automating business-to-business purchasing significantly reduced costs and inefficiencies for all companies independent of their size.

The use of e-commerce is by its nature a meaning of cross boundaries business activity. Although e-commerce can be also applied inside the company, the real benefits appear when it is applied between companies, mainly with companies that operate with relationships supplier-customer. For this reason the benefits accrued to the users are almost always parallel [14]. Every business opportunity offered by e-commerce to a supplier can be translated in a corresponding benefit for its customers [15].

3. FROM TECHNICAL TOWARDS OPERATIONAL STEPS

As we move from technical (infrastructure) towards operational (business activities) steps, the first steps of e-commerce are concerned with a basic network presence, company promotion, and pre- and post-sales support. By using available technologies, these movements can be both cheap and straightforward to implement, as thousands of small companies can already testify. By contrast, the more advanced forms of e-commerce pose complex problems that are much legal and cultural as technological. In these cases companies are forced to develop a new custom system.

Infrastructure of connecting partners who make business electronically

The alternative mechanisms of interconnection of business partners that make business electronically are not the same and a lot of enterprises use different types of telecommunication infrastructure for different business applications. The basic alternatives are the following:

Internet. During last years important applications have been developed (via World Wide Web) mainly in the sector of advertising and promotion, but also in the sales, e-delivery and e-payments. The lack of security and centralized management which occurred as the main disadvantages in the beginning, did not remain as obstacles in the afterwards development. Europeans are growing rapidly as a proportion of the world internet population. One fifth of internet users are in Europe (33 million out of 150 million) [16]. The USA and Canada account for two-thirds of internet users.

Value Added Networks (VANs). In contrast with Internet which is mainly used in the communication with customers (business to customers), the VANs are a widely adopted mean in the exchange of business data between businesses (business to business). The use of VAN reduces the start up cost of an EDI system installation and creates a business environment which is very positive for the development of business relationships.

Message Handling Systems (MHSs). The MHSs networks offer a cheaper alternative solution concerning the VANs for the users that wish mainly the exchange EDI and E-mail of messages, but do not become interested so much for the remainder services that can provide a VAN.

Local Area Networks (LANs). LANs as well MANs and WANs are networks which entirely belong to the business that uses them, is responsible for them and their management. LANs allow the connection of computers which are based in small distance locations, usually inside the same company. When e-commerce is used, LANs may be used for the application of e-mail inside the company in order exchange of information and common use of resources to be achieved.

Metropolitan Area Networks (MAN). The use of MANs is referred to the connection of computers that are scattered in the same city or the same geographic area, which is described by the same phone code (so as the call via telephone lines to be charged as local call). In contrast with LANs, the management of these systems is much more difficult for the company that operates them because it is required a lot of experience and specialization in networks know-how.

Wide Area Networks (WAN). WANs allow the connection of computers irrespectively their geographic distance. It is a feasible solution for large scale companies which have a lot of experience in the use of network technologies and at the same time need long distance communication, have high standards of security and are not connected with a large number of partners.

Every business has to make a choice on which network is the optimum, subject to specific criteria [17]. When the case is a complicated application of e-commerce, then the use of more than one network may be the most efficient.

Technologies supporting e-commerce business applications

The application of the following technologies supporting business applications of e-commerce requires in most cases the existence of the telecommunication infrastructure described above.

Electronic mail (E-mail). It allows the communication between the users in order to exchange any type of information.

Electronic Data Interchange (EDI). It refers to the electronic interchange of business data (i.e. vouchers) between companies. The exchanged data are structured according to a prototyped software language and thus may be immediately used by applications even if these are not compatible each other.

Electronic Document Management (EDM). It is the revolutionary continuation of EDI and it refers to the whole management of the company's documents, either they are of structured format (EDI) or not (e-mail, written docu-

ments). The management is achieved via specialized software that is able to recognize and manage accordingly the input and output messages in a company. The application of EDM leads to the minimization of paper use in business transactions.

Electronic Funds Transfer (EFT) refers to the communication between two or more financial organizations (i.e. banks) and the management of their transactions.

Electronic Catalogs (E-Cat) allow the connection of internal applications, where data for a company's products is stored, and the automatic list creation of these products. The catalogs may contain technical descriptions of the products, price information etc. The main advantage is that the catalogs may be updated automatically every time changes occur in the data bases of these products.

Electronic Forms (E-Forms) offer the possibility of electronic filling and submission of data through a user-friendly graphical environment. Using these forms, the company's customers may electronically order its products, fill in questionnaires (giving by this way useful information), ask questions and generally communicate with the company.

Voice Messaging (V-messaging), is the link between the Information Technologies and the classical by phone communication, allowing by this mean way the communication via natural mean (voice). It can be considered as an evolutionary procedure of e-mail, where the e-messages are replaced with voice messages which are transmitted via communication networks.

Some of the basic business operations that can be electronically transformed using new technologies are:

Electronic Negotiation refers to all forms of communication between companies which lead to underwriting (or not) of a business deal. Basic supportive technologies are E-mail and EDI. This kind of communication is suitable for permanent business relationships, since it requires the exchange of a series of information related to the companies and their products.

Product Information Exchange, refers to the communication of a company with another company (or a sole consum-

er with a company) in order new data for products/services to be searched. Basic supportive technologies are E-mail and EDI.

Electronic Product Delivery, is feasible only for products that by nature are in electronic form or can be converted to such (i.e. software, music, editions).

Electronic Payment, for trade transactions is possibly the most difficult application of e-commerce, at least for the time. The factors contributing to this are many, for example the non existence of proper harmonization in many national legislations, the increasing safety requirements, and finally the non existence of a world wide accepted prototype for that kind of payments. E-payments can be achieved in now days by credit card or by EDI mechanism. The most advanced way of electronic payments, which is expected to replace those mentioned earlier, is e-money. The most advanced form of e-money doesn't use cards at all (which are charged with points, assigned to money sums deducted from the customer's balance) but it is based on secure software which is located on the PCs of users. The program manages the money balance which is disposable to the customer (i.e. may withdraw e-money from the bank by sending proper e-message) . It will take a some time till the states' legislations allow these mechanisms to take place in day to day transactions.

4. CONCLUSION

E-commerce is coincidental to the use of technology for business purposes support. Companies which treat e-commerce only as a way of merely automating and speeding up the existing operations, cannot in the majority achieve substantial benefits by using it. The full exploitation of the capabilities and opportunities e-commerce methods provide, is feasible when the technology is combined with (and support) the business activities reengineering towards the achievement of specific objectives and the cultivation of a mutual gain environment.

E-commerce is happening world-wide and is essentially global in both concept and realisation. With the rapid growth of Internet and the World Wide Web e-commerce is accelerating. The impact of e-commerce will be pervasive, both on companies and on society as a whole. For those companies that fully exploit its potential, e-commerce offers the possibility of breakpoint changes. These changes alter so radically customer expectations that they re-define the market or create entirely new markets. All other companies, including those that try to ignore the new technologies, will then be impacted by these changes in markets and customers expectations. The boundaries of e-commerce are not defined by geography or national borders, but rather by the coverage of computer networks.

The whole of the commercial transaction, including ordering, transport and delivery, the invoicing and payment cycle can be supported electronically. However, a number of issues such as security, legal questions and procedures still have to be addressed as part of the e-commerce business environment. E-commerce over open networks demands effective and trusted mechanisms for privacy and security. These mechanisms must provide for confidentiality, authentication and non-repudiation. Global electronic commerce will require the establishment of a global certification system. Despite these open issues, companies world-wide are establishing a basic electronic presence on a global open network, learning from the experience, and gradually becoming more sophisticated in their use of the technologies.

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