

# The value of information in electronic trading

JAN CHROMY, MILOS SOBEK

Department of Technical Subjects

Faculty of Education University of Hradec Kralove

Rokitanskeho 62, 500 03 Hradec Kralove III

CZECH REPUBLIC

jan.chromy@uhk.cz sobek@vsh.cz <http://www.uhk.cz>

*Abstract:* - This contribution deals with the value of information in e-business. It shows part of e-business and the basic issues of data transmission (data, information and knowledge) in the electronic environment. The example of researching online stores which deal with audio-visual products practically demonstrates the importance of information for customers and basic potential shortcomings of e-business. The lack of information can result in damage to the customer.

*Key-Words:* - E-business, e-commerce, internet shop, data, information, knowledge, research

## 1 Introduction

Business processes implemented electronically with the use of information technology and information systems are called electronic business.

Electronic business is the broadest area. E-commerce creates a component part of e-business; internet shop is part of e-commerce. See Figure 1.

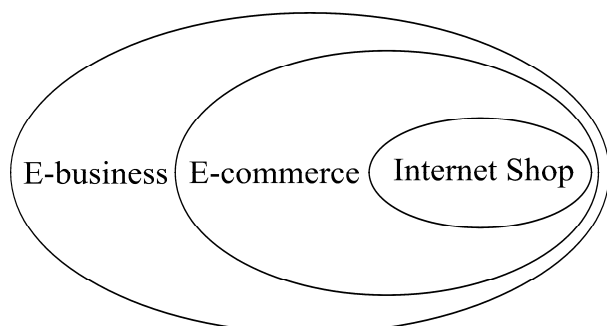


Fig. 1: Components of e-business

Source – author, 2012

In practice, there are many ways how various electronic modes can be used in doing business. It need not be a complete e-commerce. For example, most internet shops use electronic communication and contacts only to support their sales.

Electronic and other modes of business are subject to similar principles. It is not important in what area a particular business takes place, whether for example, the purchase and sale of goods, provision of services or any other field. The only difference lies in the use of special tools, i.e. the use of information technology and information systems in e-business. What is very important is the method of communication, especially the types of communication channels.

However, neither e-commerce nor e-business in general, can be carried out exclusively in an electronic way.

For customers it is indeed important and advantageous to see through the Internet goods intended for purchase and to get their technical and other parameters. Sometimes, it is possible to find opinions of other customers regarding the quality of a particular product, reports and results of product testing of various professional bodies, etc. The customer can get such information electronically from home or office. Likewise, the customer can order any goods or services electronically and should only determine the timing and method of delivery and payment. The actual delivery of goods is carried out usually in a classic way. Exceptions for the benefit e-commerce apply to rendition of services such as consulting, advisory services, acquisition of e-books, magazines, journals, etc.

When planning and setting up e-commerce we must consider the subject of sale, possible needs and requirements of customers and other specific conditions resulting therefrom.

Individual customers are the most important component of any business. Electronic commerce should focus on meeting their needs in a broader sense, i.e. it need not concern only the final sale of any goods or rendition of services. What is important and particularly significant in the electronic business and commerce is the systematic organization of all activities starting with the acquisition of raw materials, data, etc., to the ultimate satisfaction of customers' needs.

When planning and setting up e-business it is relevant to electronically provide only those

activities that simplify, accelerate, or otherwise streamline the operation of the whole business. Electronic business is a means to achieve a certain effect, therefore, it can't be the goal, regardless of their anticipated benefits.

One of the decisive factors in the management efficiency and competitiveness of the enterprise become information technology and information systems, which also form the foundation of electronic business and commerce. The development of electronic business is directly proportional to the development of information technology and information systems.

Therefore, their mastery and understanding has become a prerequisite for the success of managers in all fields of economic activity. Acquisition of necessary means of information technology and the construction of the enterprise information system is neither easy nor cheap.

Even the most sophisticated information technology and information systems need not be sufficient. Their quality and success of use will always depend on the quality of human factor [1].

In e-business, there is certainly a need to process data and information. This requires to pre-define not only the means - information and communication technology, but methods of their processing - information systems - must be determined as well. At the same time, it is necessary to realize that the whole system will be managed by people on both sides, i.e. entering the necessary data (eg on the part of the customer) and their processing (eg the operating system of a specific company). All of these people must be able to work with the system at a level appropriate to their relation to this system (eg customer, system administrator, data administrator, etc.). Therefore it is desirable that in the creation of the system not only mental structures, but also social conditions of people who will come into contact with the system in any way in the future will be considered and reflected [6].

Using information and communication technologies can be useful in solving various problems, issues, etc., in various operations with data and information and, at the same time, it is possible to use the required knowledge, or to acquire knowledge itself. In normal conversation, the following concepts may seem synonymous, but if you think about their purpose, we discover crucial differences [3].

Data are data, instructions, and other elements in a form to be workable, or portable with the help of information and communication technologies. Data processing at a particular moment seems to have no meaning or connection with the solved tasks.

Information includes the meaning that is attributed to the data according to certain rules. It is the data that have specific meaning and significance. Alternatively, it may be certain knowledge that can be communicated and transferred through information and communication technologies. If we realize that the data contain certain entropy (uncertainty, insecurity, disorder), we define information as data which can be conveyed, transferable, have a specific meaning, significance and reduce entropy.

Knowledge is an outcome of cognitive processes, which are generated and developed on the basis of conscious activity in order to understand the relevant facts. They represent what we know when the data and information are incorporated in the appropriate context.

Information systems provide the collection, transfer, storage, transformation, update, and provision of data and information for their use in the management and marketing activities of the company. Information systems use information technology to operate themselves.

The primary aim of computer networks is to share their data in a short time and at a great distance. In general, other devices, which are ICT, can be included in computer networks. There can be mobile phones, iPod, iPhone, etc., which are a fundamentally different group. For certain simplicity we will talk only about computers.

There are many different types of networks that can be distinguished according to various aspects. These factors may be determined by the network, this network arrangement, its combination, etc. The types of networks can be combined into larger units with the same or different arrangement, creating homogeneous or heterogeneous networks. While large purely homogeneous networks are rather scarce, the number of heterogeneous networks is large due to many different arrangements. Examples of the most heterogeneous network is the Internet [2].

## 2 Problem Formulation

Internet as a means of transmission provides a huge amount of data, information and knowledge, which can be used.

Vastness of the Internet and the huge number of available resources are prerequisites for its use. However, we must realize that when searching for relevant information we can also come across the pages of dubious quality, even illegal sites which may impair the mental and moral development

particularly of youth (promotion of racism, violence, etc.).

When obtaining information from the Internet one can be subject to all kinds of communication noise. In electronic communication we usually lack non-verbal communication, which would effectively support the encoding passed message.

Textual communication provides for only mere content of the communication for the sake of its brevity, thus may induce its connotation, which may cause the communication noise. Eg even seemingly simple sentence "It is warm today." can be decoded in two ways, if we do not know the context: as an expression of satisfaction or dissatisfaction with the temperature. Forms of redundancy needed for better understanding and communication is disappearing in the decoding due to the aforementioned brevity. To some extent this can be compensated by using emoticons, but this leads to the suppression of natural language and may give rise to other problems.

A significant problems in the social sphere is related to the digital divide and the resulting uneven current opportunities for all people in the globalized world [6].

The importance of obtaining quality information leads people to try to get all information available. In many cases, information is shifted from the auxiliary level aiding to achieve a certain objective to the objective itself.

In terms of psychology, overloading people with information plays a significant role in human life in terms of its quality, when a permanent influx of information through communication, especially electronic and mass media, overburdens the mental capacity of an individual.

Misunderstanding acquired information leads to stress and anxiety at many people. One then spends too much time looking for clarification or additional information and explanation.

Unfortunately, an inverse relationship applies in electronic communication. The more time a person spends in electronic communication and other activities on the computer, the less time he or she spends with family and friends. This reduces the number of persons belonging to his social circle. This in turn can lead to feelings of loneliness and to depression [5].

The rating of the quality of service was based on the research of e-business companies that operate in the field of audiovisual resources. We have concentrated on electronic marketing oriented at professional customers. These customers are not only interested in the mere existence of any audiovisual means in the menu. They do not care

about the existence of the product without a detailed description of its characteristics. They are interested in how and under what conditions they can use a particular product or service, what the optimal use would be, what expenses they should expect in connection with all technical means of learning to think. Of course, those customers are interested in detailed technical parameters of equipment. We should assume that the supplier of technical teaching aids presents all information to the specialist customer, who is able to understand it. Information plays an important role as instruments and equipment with identical or nearly identical parameters can be produced by several manufacturers. The focus of a customer on a particular brand can often be misleading. If the client does not understand the data submitted, the supplier should provide expert advice and assistance. The information presented on the website can therefore be seen as a basic expression of willingness of the supplier to provide all the knowledge and information to the customer.

If e-commerce on its website offers to supply certain, in our view a key element of the product range in the field, we will consider it as an existing service. But if this offer is not accompanied with a detailed range of specialized data specifying the suitability of the instrument or device, the effectiveness of the service would be identified as zero for the needs of professionals. For e-commerce, it can be assumed that on the basis of an offer submitted electronically the customer would order certain goods directly. The required information must be available in advance. Thus we will proceed to the evaluation of the quality of service using the scale with two values (dichotomous scale) for each monitored component of the service provided.

In this way, we will evaluate what the professional level of the marketing offers of the supplier is. The purpose of such offer is not to provide the customer with dozens of names, prices and photos. An important role here is played by the parameters, suitability, information value of offers and the serious approach to the customer [8].

A simple example might be a microphone. Their names, prices and photos do not impress everyone. An expert is likely to ask about the above-indicated parameters; however, a layman is usually directed by the brand or price of the product and need not even suspect that the specified device (in our case, the microphone) would not be suitable for the intended purpose. It is important that in this case that the contractor offers to assess the type of microphone, its polar pattern, frequency range

(frequency response), sensitivity, or a description of the purpose of use, etc.

This way, we will rate separate items included in two areas that we call (a) work with sound, and (b) work with images.

Statistical calculations concluding the evaluation of every item will result in the assessment of the standard error of estimates, which was achieved during the evaluation. In addition, we set the interval of expected modal values with 95% reliability.

Hypotheses upon which we began our research, are based on our current knowledge and assessment, in which we have participated in some way. This is why we will be more accurate and therefore closer to reality if our hypotheses are formulated negatively.

Hypothesis A1 - Companies supplying audiovisual means do not provide quality service.

Hypothesis A2 - The customer has to rely on incomplete information of internet shops.

Hypothesis A3 – the level of services of online stores in the Czech Republic is low in the area of sound and video projections.

We assume that the presentation of parameters for the purchase of audiovisual equipment via famous website e-commerce suppliers does not contain vital information for the specification of important parameters.

### 3 Problem Solution

In the research, we have included a total of 21 online shops selling audiovisual products. Of these are 13 companies, which can be classified among the top suppliers of audiovisual media in the Czech Republic. The remaining 8 companies were specialist dealers [4].

#### 3.1 Overhead projector

Overhead Projector is an analogue device for projecting handwriting, text, drawing or painting or printed or photographic transparencies. Each overhead projector can be characterized mainly by two data. The first defines the type of OHP with respect to its manipulation. At the same time its robustness is associated with the second data as a more robust OHP can have a higher luminous flux.

#### 3.2 Data Projector

Data projectors are currently one of the most important elements of the equipment of presentation

rooms. There are many different data projectors, which always have specific characteristics and are designed for specific purposes. The biggest differences now lie in resolution data projectors and their light output.

Types of a data projector is based on the type and number of image chips. The most significant chips are former CRT, later LCD, and newer DLP and LED.

Realistically achievable contrast in projection is a common effect of several factors of light and technical conditions.

#### 3.3 Interactive Whiteboards

Basically, there are three basic types of interactive whiteboards.

Viewing distance plays a very important role. Considering the room, the location and distribution of seats should reflect as much as possible the circle and angle of proper and good visibility.

#### 3.4 Blackboard and flipchart

For boards and flip charts it is particularly important what their distance from the audience (students) is. It should be at least twice the diagonal of a whiteboard or flipchart, a maximum of six times of the diagonal. For reasons of good visibility it is desirable and suitable that this information is provided for ignorant potential users.

#### 3.5 TV and monitor

Basically we distinguish five types of monitors - CRT, LCD, LED, O-LED, plasma monitor.

For the viewing distance it is necessary to preserve that where the monitor has a side ratio of 4: 3, the minimum viewing distance should be three times, and the maximum viewing distance five times of the diagonal of the screen. The side ratio of 16: 9 requires the minimum distance to be 3.6 times and 6.1 times the maximum distance of the diagonal of the monitor.

#### 3.6 Speakers, speaker systems

Speakers and speaker system affect the sound quality in the classroom or hall.

A speaker type determines its principle of work.

The directional characteristic determines the sound pressure dependence on the direction of radiation. It is the measurement for the horizontal

and vertical level of listening. In the literature it is also called radiation diagram. In lay terms and very simply put, this diagram illustrates the best possible listening area.

The frequency range is determined by the frequency characteristic that defines the sound pressure dependence of the frequency. It can be presented numerically in a simplified form as the interval defined by the upper and lower frequency, the difference is called bandwidth [7].

### 3.7 Microphones

High-quality microphone ensures the high quality of the transmitted audio signal at the source of sound. Just like in the case of photos, this quality cannot be later significantly improved.

The microphone type determines its principle of work.

The directional characteristics of microphones determine their potential use with regard to the scan direction of sound.

The frequency range is similar to a given speaker frequency characteristics that defines the output voltage and frequency of the sound at a constant sound pressure level. It can be presented numerically in a simplified form as the interval defined by the upper and lower frequency, the difference is called bandwidth. With microphones it is important to know the frequency response over the graph, because it can be used in professional work.

## 4 Research results

The research results presented by the technical parameters of equipment suppliers on the web e-commerce sites are in Table 1

Shaded values in the table indicate that the observed data can be regarded as sufficiently reliable. The observed data correspond to the 95% reliance interval. The value obtained (greater than 50%) indicates that the majority of Czech suppliers of technical teaching equipment and complete solutions classrooms and halls states, or does not, the important parameters for the selection and purchase of technical teaching aids or their components.

If the value is not in the table tinged and is printed in bold, it means that the majority of Czech suppliers of technical teaching equipment and complete solutions classrooms and halls states, or does not, the important parameters for the selection and purchase of technical teaching aids, or their

parts, but the figure is not detected as sufficiently reliable.

Table 1: Research reported parameters

<b>Audiovisual resource</b>				
<b>Parameter</b>	<b>stated</b>	<b>not stated</b>	<b>The standard error of estimate</b>	<b>95% reliability of interval</b>
<b>Overhead Projector</b>				
- type	4,8	<b>95,2</b>	4,6	86,1-100
- lighting technical conditions	0,0	<b>100</b>	0,0	100
<b>Data projector</b>				
- type	<b>57,1</b>	42,9	10,8	36,0-78,3
- lighting technical conditions	4,8	<b>95,2</b>	4,6	86,1-100
<b>Interactive Whiteboards</b>				
- type	4,8	<b>95,2</b>	4,6	86,1-100
- viewing distance	0,0	<b>100</b>	0,0	100
<b>Board and Flipchart</b>				
- viewing distance	0,0	<b>100</b>	0,0	100
<b>TV – monitor</b>				
- type	<b>100</b>	0,0	0,0	100
- viewing distance	0,0	<b>100</b>	0,0	100
<b>Speakers</b>				
- type	16,7	<b>83,3</b>	6,2	71,1-95,4
- directional characteristics	0,0	<b>100</b>	0,0	100
- frequency range	<b>100</b>	0,0	0,0	100
<b>Microphones</b>				
- type	8,8	<b>91,2</b>	4,9	81,6-100
- directional characteristics	0,0	<b>100</b>	0,0	100
- frequency range	8,8	<b>91,2</b>	4,9	81,6-100

Source – author, 2012

Selected data from our research, which we stated in table 1, show that most contractors do not act fairly towards all customers. Some customers probably do not even have the necessary knowledge and experience. An exception may be only experts

who know about the required parameters and find them before buying them, such as the manufacturer's website. There are not reported in some crucial parameters sold devices, e-commerce websites do not even notice the different functions of principles. Buyers can later be unpleasantly surprised by very different properties of high-quality devices.

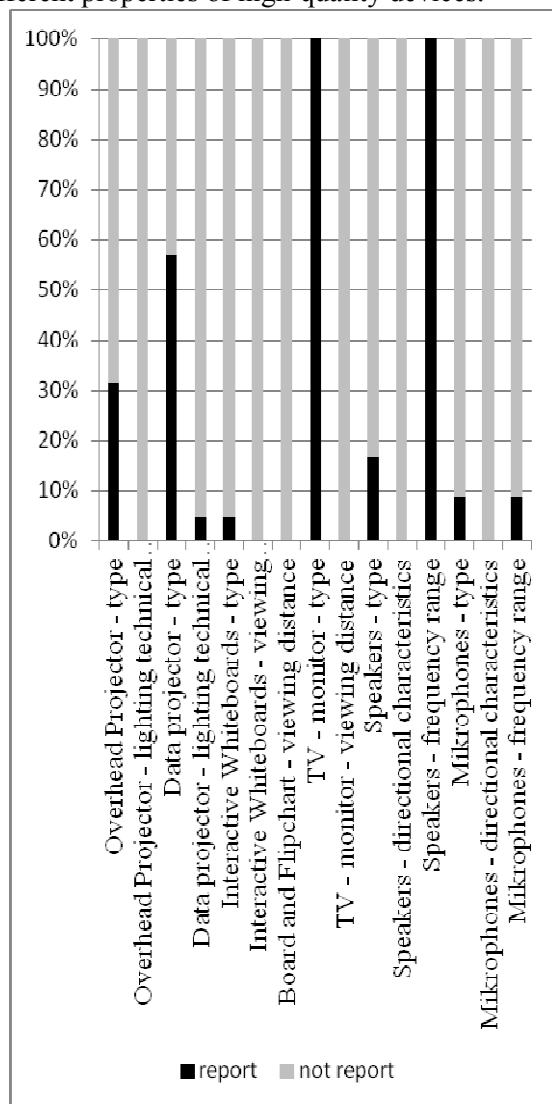


Fig. 2: Research reported parameters

Source – author, 2012

## 4 Conclusion

Hypothesis A1 – confirmed

Online shops supplying audiovisual means do not provide quality service. The hypothesis was confirmed and can be statistically demonstrated that they do not place very important information for the selection of a particular audiovisual device, see Table 1.

Hypothesis A2 – confirmed

The customer has to rely on incomplete information of online shops of supply companies. The hypothesis was confirmed in the same manner as A1

hypothesis. The customer would have to look for the necessary information in other places than at the supplier's.

Hypothesis A3 – confirmed

The service level of online stores supplying audiovisual resources in the Czech Republic is low in sound and video projections. This hypothesis is again associated with the verification of the hypothesis No. 1. It can be assumed that if the online store (vendor) information relevant to the operation of the technical means of learning is not provided in the sale, it is probably not important. Another possibility would be that the supplier intentionally damages the customer if he fails to provide the information.

## References:

- [1] Sedivy, J., Hubalovsky, S. Education of student's project team cooperation using virtual communication supported by LMS system. In *Interactive collaborative learning (ICL), 2011: 14th international conference*. Piscataway: IEEE, 2011.
- [2] Silerova, E., Havlicek, Z. Moznosti vyuziti e-learningu v systemu celozivotniho vzdelavani. In *Media4u Magazine* [online] Vol.7, No.1, 2011, pp. 43 – 46. Retrieved from <http://www.media4u.cz>.
- [3] Hubalovsky, S., The system approach to teaching of algorithm development. In *WSEAS/IASME Applied computing conference 2010 (ACC'10)*, Timisoara, WSEAS Press, 2010.
- [4] Drtina R., Perspektivy a omezeni 3D technologii v oblasti vzdelavani. In *Media4u Magazine* [online] Vol.9, No.X3, 2012, pp.3–9. Retrieved from <http://www.media4u.cz>.
- [5] Krpalkova Krelova, K., Kristofiakova, L. Vplyv IKT na kvalitu vyucovacieho procesu, In *Media4u Magazine* [online] Vol.4, No.1, 2008, pp. 20-23. Retrieved from <http://www.media4u.cz>.
- [6] Slaninova, G., Stasova, L. Mediální vzory současných žáků a studentů. In *Media4u Magazine* [online] Vol.6, No.3, 2010, pp.72–82. Retrieved from <http://www.media4u.cz>.
- [7] Drtina, R. - Lokvenc J. Ozvučovací systémy pro velká auditoria, část 7. In *Media4u Magazine* [online] Vol.6, No.3, 2009, pp.38–49. Retrieved from <http://www.media4u.cz>.
- [8] Mocanu, A.-M. Litan, D. Olaru, S. Munteanu, A. Information Systems in the Knowledge Based Economy, In: *WSEAS Transactions on Business and Economics*. Vol. 7, No.4, 2010.