

Cyberspace vs. Electronic Environment: The Case of Europe

Elina GAILE-SARKANE

and

Deniss ŠČEULOVS

Faculty of Engineering Economics and Management, Riga Technical University, 1/7 Meza Street,
Riga, LV-1048, Latvia

ABSTRACT

The authors of the article analyze the concept “electronic environment”. Having studied a range of academic literature sources and other sources, the authors of the article have drawn a conclusion that the academic writings do not provide a definition of “electronic environment”. Furthermore, the various opinions among specialists regarding this concept often differ. Meanwhile, there are several explanations of the term “cyberspace” overlapping the concept of “electronic environment”, and these terms are often believed to be synonyms. To understand what the term “electronic environment” means and to properly and correctly employ this concept in entrepreneurship, the authors have performed a lexicographic analysis of this concept by comparing reciprocal concepts. As a result of the research, the authors propose their view on what, in their opinion, “electronic environment” is and what its connection to the concept “cyberspace” is. The topicality of the article lies in the fact that often entrepreneurs and specialists of public and other institutions, when using these terms, imply completely different concepts. It can lead to misunderstanding and misinterpreting the information, as well as to encumbering the understanding of tasks, problems, etc.

Keywords: electronic environment, cyberspace, analyze, entrepreneurship.

1. INTRODUCTION

The aim of the article is to analyze and evaluate the concept “electronic environment”. On a daily basis, this concept is used by entrepreneurs, public and European institutions, consumers, and other market participants. Electronic environment is closely linked to the electronic market activities, as well as to e-marketing and e-business. All of these elements are an intrinsic part of the modern-day business, fostering sustainable entrepreneurship development. The electronic market at

this time is the biggest of the existing markets; moreover, its development is progressing quickly.

In the article, the authors employed various research methods – both qualitative and quantitative: bibliography sources, a lexicographic analysis, the focus group method, etc. The theoretical and practical foundation of the article is based on materials and publications in mass media, including internet resources.

2. ELECTRONIC MARKET AND BUSINESS

Small and medium enterprises (SMEs) in domestic regional markets hold a considerable potential for creating new jobs [1].

SMEs proportion in the overall number of EU companies amounts to 99.8 % [2]. The Europe 2020 strategy has designated an important role to SMEs in creating a healthy European economy. They are at the center of strategic attention [3].

Meanwhile, the EU economic development is closely linked to the e-market development, which is proven by the recent press release of the European Commission “Stimulating growth and employment: an action plan for doubling the volume of e-commerce in Europe by 2015”.

The press release states that “The Internet economy creates 2.6 jobs for every “off-line” job lost, and offers a better choice to consumers, including those in rural and isolated areas. The gains brought by lower online prices and a wider choice of available products and services are estimated at EUR 11.7 billion, equivalent to 0.12 % of European GDP. If 15 % of retail sales were e-commerce and the obstacles to the internal market were removed, the gains for consumers might be as much as EUR 204 billion, or 1.7 % of European GDP. The European Commission finds, however, that there are many obstacles preventing consumers and businesses from investing fully in online services: ignorance or uncertainty about the applicable rules, offers that lack transparency and are hard to compare, and payments and

modes of delivery that are often expensive and unsuitable.

That is why, as part of the “Digital Agenda” and the “Single Market Act” and in response to the request from the European Council to submit a roadmap for the completion of the Digital Single Market by 2012, the Commission has today adopted a Communication presenting 16 targeted initiatives aimed at doubling the share of e-commerce in retail sales (currently 3.4 %) and that of the Internet sector in European GDP (currently less than 3 %) by 2015. By that year online trade and services could account for more than 20 % of growth and net job creation in some Member States (such as France, Germany, the United Kingdom and Sweden).

Michel Barnier, Commissioner for the Internal Market, Neelie Kroes, Commission Vice-President responsible for the Digital Agenda, and John Dalli, Commissioner for Consumer Policy, expressed their ambitious objective in these terms: “In the difficult circumstances facing Europe we must seize every source of activity and new jobs as a matter of urgency. The action plan we are presenting today will create new opportunities for citizens and businesses and will bring Europe much-needed growth and employment. It aims to remove the obstacles which until now have frustrated the development of Europe’s Internet economy.” [4].

All of the aforementioned points to the great importance of the electronic environment in business development within the European Union, including Latvia.

3. ELECTRONIC ENVIRONMENT ANALYSIS

To understand the concept “electronic environment” and to shape one’s opinion on its essence, the authors of the article have performed a lexicographic analysis of the concept, by studying the concept “electronic environment” as such, as well as mutually related concepts.

Electronic environment

The authors of the article have summarized statements, opinions, remarks etc. referring to the concept “electronic environment”.

1. *Some quotes from the EU regulatory enactments available on Eurolex database:*

“...posting on the Internet or installation in any other electronic medium...” “...data processing takes place in an electronic environment where internal borders between the member states have become less relevant...” “...must be included in a document or an electronic environment...” “...and they are prepared in advance as forms – either in paper format or in an electronic environment...” [5].

2. *Phenomenon of electronic environment.*

“Electronic environment enters everything; without it, complex systems would not function. Electronic environment is not a substitute for life. It is a part of life, a satellite, a shadow that is difficult to get rid of. We can carry over any vice to the virtual world, we can turn it into an arena of wars and utopias, superstition and fantasy, you can even try to use the virtual environment as a real warfare tool, but the world of nature, people, and culture, though suffering from it, will not cease to exist in its crude reality, history, and evolution. However, its existence can no longer be imagined without the electronic environment.” [6].

3. *Segmentation of the e-environment market*

Division of goods and services, buyers and consumers of goods and services, or of companies operating in e-environment into specific groups according to specific criteria, to which specific marketing methods can be applied [7].

4. *Analogue and electronic environment*

Differences between the electronic environment and analogue environment are of qualitative nature, and the scope of these differences corresponds to the difference between analytical and imaginative (creative) thinking. The analogue environment of existence (being, subsistence) – a system of subjects (people), which interacts on the grounds of regulations of processing, storing, and transmitting socially defined informal (language, traditions, customs etc.) and formalized (regulatory – legislative basis) information (represented in a figural form).

Electronic existence (being, subsistence) environment – a system of objects (computing technologies, technical and programming means), which interact on the grounds of formal digital information processing, storage, and transmission rules (architecture, standards, machinery parameters, programming languages, etc.), based on objective logical rules. [8].

5. *Electronic environment development (IT technologies).*

Electronic environment development is focused on an analysis of how the electronic environment (functional combination of hardware and integrated software in the real world, i.e. chains, prototypes, or product combinations) operate with regard to their components, subsystems, and software, and how these components can be selected.

The subsystems are pieced together, hardware and software is tested, in order to ensure that the electronic

environment functions in accordance with harmonized specifications. [9].

Authors of the article believe that the word for “environment” in Latvian (“vide”) etymologically derives from the word “vidus” (“the center”), but in essence it has an opposite meaning, i.e. everything that surrounds the center (that surrounds me). In this meaning “environment” is used within a context together with its descriptive adjective (what environment? – electronic environment, natural environment, etc.).

Virtual reality [10]

Virtual reality – is an artificially created, computer-generated world replacing the surrounding reality.

Exploratory virtual reality – choice and restricted content management is possible out of the proposed audiovisual scenarios and versions.

Interactive virtual reality – virtual reality implemented to the full extent. The user is provided a full range of management opportunities, which he or she could and would want to use, if he or she would actually be present in the created artificial world.

Cyberspace

The term is used to denote the discrete world model (virtual reality) created in a computer network (including the internet). The word “cyberspace” (from cybernetics and space) was coined by the science fiction novelist and seminal cyberpunk author William Gibson in his 1982 story “Burning Chrome” and popularized by his 1984 novel “Neuromancer”.

Interaction between people, commerce, and other realities in computer networks, namely, in a form of electronic messages and online commercial services, Cyberspace with its differing locations of interaction is to be considered omnipresent [12].

Cyberspace and virtual communities – cyberspace encourages creation of “virtual communities”, based on shared interests. The activities of these communities are not affected by national geographic boundaries and freedom of speech prevails there, which is not the case for many parts of the world. Online, every user is a potential publicist, free of control that monitors printed and broadcast media [13].

According to Chip Morningstar and F. Randall Farmer, cyberspace is the computational medium in cyberspace is an augmentation of the communication channel between real people; the core characteristic of cyberspace is that it

offers an environment that consists of many participants with the ability to affect and influence each other. They derive this concept from the observation that people seek richness, complexity, and depth within a virtual world [14].

In current usage the term “cyberspace” stands for the global network of interdependent information technology infrastructures, telecommunications networks and computer processing systems. As a social experience, individuals can interact, exchange ideas, share information, provide social support, conduct business, direct actions, create artistic media, play games, engage in political discussion, and so on, using this global network. The term has become a conventional means to describe anything associated with the Internet and the diverse Internet culture. The United States government recognizes the interconnected information technology and the interdependent network of information technology infrastructures operating across this medium as part of the US National Critical Infrastructure [15].

When analyzing various terms of the concept “environment” in various scientific fields, as well as concepts, which are most directly related to the concept “electronic environment”, the authors have come to the following conclusions:

- Electronic environment – is created during the process of mutual interaction between various elements (computer networks, computers and other digital devices and parameters characterizing them, information technologies, internet, information, information carriers, users – natural and legal entities, legislation, etc.).
- The existence of e-environment cannot be affected by (cannot depend on) separate elements (a person, a computer, and so on), it operates independently and on its own.
- Various elements can join and leave the electronic environment at any time and any place. E-environment does not depend on time or geographic boundaries.
- Electronic environment exists in both online and offline mode. After a user, a device, etc. disconnects from the electronic environment, it continues functioning (e.g., information exchange on the internet, information storage on carriers, among other).

- The society interacts with the e-environment similar to the way it interacts with the surroundings, geographic and other environment.
- The e-environment is both tangible and intangible environment, because a part of elements belonging to it can be physically perceived (computers, devices, data carriers, etc.), while others are intangible (information, data, internet, etc.).
- The quality of sovereignty and independence of information in the e-environment – once posted information remains in electronic environment practically forever. The electronic environment features high speed of information circulation.

CYBERSPACE / ELECTRONIC ENVIRONMENT

Description: Comprehensive
A combination of various (by nature) elements (information, computers, e-mails, people, etc.)
Space (beyond space)
Communication referring to all types of information resources
Interaction between people, commerce, and other realities, taking place on the same grounds

Features and peculiarities
Subjects: producers, suppliers, companies, consumers, institutions, etc.
Relative anonymity, non-existent physical and international boundaries, shift in time importance
Speed of information circulation
A part of life of the modern society

CYBERSPACE \cong ELECTRONIC ENVIRONMENT

Fig. 1. Lexicographic presentation of the concept e-environment

The authors of the article have particularly studied the meaning of the concept “cyberspace” within the context

of electronic environment, and as a result have come up with a lexicographic presentation of the concept, schematically portrayed in Figure 1.

In the analysis, as well as when analyzing the outcome of the research about the electronic environment, the authors of the article express an opinion that cyberspace and electronic space are synonymous concepts.

The authors believe that the difference between the concepts lies in their use: the concept “electronic environment” is used in a broader society, however when speaking, in effect, about the electronic environment, the concept of “cyberspace” appears, used by a narrower circle of people. The authors propose to employ also the term “cyberenvironment”, which combines both concepts.

Electronic environment, similar to cyberspace, consists of several elements, just like a set in math.

A set in math is a combination of various different objects in one entirety. The concept of a set is one of the most fundamental concepts in math (also in set theory and logic), which was introduced at the end of the 19th century.

Georg Cantor defined “a set” as follows: we understand “a set” as unification of a range of well-distinguishable objects of our thoughts or vision m in one entirety M , and they will be referred to as “elements” of the M set” [16].

Hence, as the authors of the article have concluded that the “electronic environment” concept is a synonym of the concept “cyberspace” instead of one being a part of the other or vice versa, then theoretically there are two sets, for instance, set A is the electronic environment, while set B is cyberspace. In that case, the relation between two sets A and B can be expressed with the help of an equation:

$$A = B \Leftrightarrow (A \subseteq B) \wedge (B \subseteq A), (1)$$

where:

A – electronic environment

B – cyberspace

From the equation, it derives that A is equal to B provided that A and B are included in each other, which, in essence, is the relationship between the cyberspace and electronic environment.

Up to now, there is no unequivocal formulation of what is the electronic environment and what is cyberspace,

hence, the authors of the article can express the relationship between both of these concepts also as follows:

$$\exists a, b, c: (a \in A) \wedge (a \notin B) \wedge (b \in B) \wedge (b \notin A) \wedge (c \in A) \wedge (c \in B), (2)$$

where:

A – electronic environment

B – cyberspace

a – element pertaining to set A

b – element pertaining to set B

c – element pertaining to set A and set B

The authors of the article believe that the given equations characterize the concepts “electronic environment” and “cyberspace” from the point of view that they are a set of various elements comprising several elements. The equations also show the mutual link between the two concepts.

To examine the statements regarding the electronic environment, the authors of the article organized a focus group.

The focus group included 19 participants, foreign students studying at the Riga Technical University. The age of the focus group members of both genders ranged from 22 to 28. All focus group members are representatives of *NET Generation* [16]. This target audience was deliberately selected because representatives of *NET Generation* are those, who most actively use the electronic environment and who know it well.

The focus group members were presented with 10 discussion questions about the electronic environment and cyberspace. The discussion lasted for 2 hours. It was divided in two stages. During the first stage, the participants were divided into two groups and at the end of discussion, the group presented their opinion.

The opinions of the two groups of participants about what is an electronic environment and what is cyberspace differed during the first stage. Two opinions formed as a result of the first discussion stage: “cyberspace is a part of e-environment” and “e-environment is a part of cyberspace”.

During the second discussion stage, the participants were asked to determine e-environment elements for one group and cyberspace elements for the other group. Participants

of two groups gave nearly the same content elements for both concepts and afterwards concluded that they have been talking about the same thing, only referring to it by using two different terms – cyberspace or electronic environment.

As a result, all focus group members concluded that e-environment is a synonymous concept to that of cyberspace. Thus, they confirmed the assumption of the report authors, namely, that the said concepts are synonyms and they differ only in their application.

4. CONCLUSIONS

To sum up, the authors of the article conclude that the concept “electronic environment” in its essence is a very close concept to that of “cyberspace”. The electronic environment and cyberspace consist of several constituent elements.

Elements of e-environment are information, computers, internet, various devices and gadgets, software and hardware, as well as e-commerce, e-business, e-marketing, etc.

The difference between e-environment and cyberspace concerns only the fields of their use – the concept “e-environment” is used by a larger part of the society, including entrepreneurs, institutions, and users. The concept of “cyberspace” is more used in practice by specialists of math, cybernetics, and other sciences.

The research results help the entrepreneurs and the society in general to bring clarity to the essence of the “e-environment” concept and its use in various contexts, which mention and use this concept.

The authors of the article encourage scientists to research the concepts in more detail with an aim to specify the fields and opportunities of using these concepts. In line with the research outcome, the authors suggest to introduce the term “cyberspace” in practical use as an alternative concept.

5. ACKNOWLEDGEMENTS

This article has been supported by the European Social Fund within the project «Support for the implementation of doctoral studies at Riga Technical University» and the paper has been prepared with support of the ERDF Project „The development of international cooperation, projects and capacities in science and technology at Riga Technical University”, Contract Nr. 2DPR/2.1.1.2.0/10/APIA/VIAA/003

6. REFERENCES

- [1] Ph. Kotler., “**Management**”. 11th Edition. London: Prentice Hall, 2004, p. 479.
- [2] European statistics bureau Eurostat EC, [Electronic resource], viewed on April 23, 2012, <http://epp.eurostat.ec.europa.eu>.
- [3] Europe 2020 targets, [Electronic resource], viewed on May 02, 2012, <http://ec.europa.eu/europe2020/reaching-the-goals/targets/index_en.htm.
- [4] Press release “Stimulating growth and employment: an action plan for doubling the volume of e-commerce in Europe by 2015”, [Electronic resource], viewed on March 28, 2011, <http://data.csb.gov.lv/Dialog/Saveshow.asp> at: <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/12/10&format=HTML&aged=0&language=LV&guiLanguage=en>
- [5] Eurolex data base, [Electronic resource], viewed on March 28, 2012 <http://eurolex.europa.eu/Notice.do?val=562432:cs&lang=lv&list=575505:cs,573872:cs,562432:cs,509902:cs,500394:cs,491182:cs,480913:cs,471553:cs,467488:cs,464174:cs,&pos=3&page=1&nbl=23&pgs=10&hwords=elektroniskāvide~&checktexte=checkbox&visu=#texte>.
- [6] Golofast, V. Голофаст В.Б. “Electronic environment or new savemen” in **Telescope**, Ed. 2, 2002, pp. 13–17, [Electronic resource], viewed on May 3, 2012, <http://www.conflictmanagement.ru/text/?text=382>.
- [7] Gaile-Sarkane, E., “**E-marketing basics**”, Riga: RTU publishing house, 2005, 232 p.
- [8] Voroiskis, F. “**Information technology: a new systematic explanatory dictionary-reference book: an introductory course in computer science and computer technology in terms**”, Moscow : Libereja, 2001, p. 535.
- [9] Develop an Electronic Environment [Electronic resource], viewed on April 12, 2012, <http://www.techlink.org.nz/curriculum-support/Indicators/Learning-Objectives/Digital-Technologies/Develop-an-Electronic-Environment.htm>
- [10] Gibson, W., “**Neuromancer**”. New York: Ace Books, 1984, p. 69. \
- [11] Kins, U., “**Information and communication rights**”. Volume II, Riga: Rutība, 2002, p. 616.
- [12] Reilly, E. D. /editor, “**Concise encyclopedia of computer science**”, Chichester, West Sussex, England; Hoboken, NJ : Wiley, 2004. 875 p.
- [13] Morningstar, Chip and F. Randall Farmer. The Lessons of Lucasfilm's Habitat. The New Media Reader. Ed. Wardrip-Fruin and Nick Montfort: The MIT Press, 2003, pp. 664–667.
- [14] White House, “The National Strategy To Secure Cyberspace”, [Electronic resource], viewed on April 12, 2012, <http://georgewbush-whitehouse.archives.gov/pcipb/p>
- [15] Cantor, G., “**Beiträge zur Begründung der transfiniten Mengenlehre Mathematische Annalen**”, 1895. Volume 46, p. 481.
- [16] Ščeulovs D., Gaile-Sarkane E. New Concept for E-Commerce: Following Requirements of Generations // Uniwersytet Ekonomiczny w Krakowie. **1st International Conference of Students' Scientific Associations, “New Directions in Economics” Proceedings**, Poland, Cracow, 2009, pp. 26–27.