

Factors of the development of international e-commerce under the conditions of globalization

Vitalina Babenko¹, Zdzisław Kulczyk², Irina Perevosova³, Olga Syniavska⁴, and Oksana Davydova⁵

¹V. N. Karazin Kharkiv National University, Department of International E-Commerce and Hotel&Restaurant Business, Kharkiv, Ukraine

²Bronice I. Z.Kulczyk & M.Kulczyk, civil copartnership, 68300, Lubsko, Poland

³Ivano-Frankivsk National Technical University of Oil and Gas, Entrepreneurship and Marketing Department, Ivano-Frankivsk, Ukraine

⁴Sumy State University, Department of Economic Cybernetics, Sumy, Ukraine

⁵Kharkov State University of Food Technology and Trade, Department of Hotel and Restaurant Business, Kharkiv, Ukraine

Abstract. The article discusses the theoretical foundations of the development of global e-commerce in the processes of globalization. The analysis of the definition of the concept of e-commerce, identified its varieties. The authors investigated the main trends that have developed in the e-commerce market, and provide statistical indicators. In addition, the factors that influence the process of development and distribution of e-commerce in the world are identified. Also highlighted the main problems that do not allow the process of distribution of e-commerce technology to develop the maximum rate.

Introduction

The current state of the economy of any country depends largely on accurate estimation, forecast, effective planning and e-commerce management. The modern system of Internet trading is a complex integrated organizational and production system, the components of which are constantly changing, interacting with each other. Achieving these goals in the face of growing competition between e-commerce leads to an increase in the volume and complexity of production processes, analysis, planning, management, internal and external relations with suppliers, intermediaries, etc.

However, e-commerce systems in the process of dynamic development of the company can be considered fully justified and adapted without the use of modern approaches to economic-mathematical modeling.

This, in turn, is an effective means of theoretical processing and practical synthesis of mechanisms and tools for e-commerce systems. Note that there are scientific studies devoted to the problems of e-commerce management, various economic and mathematical models and methods for finding managerial decisions. However, the problem of economics and mathematical modeling of adaptive management of electronic trading systems in conditions of uncertainty, taking into account the influence of the factor has not yet been solved and is an actual topic of the study.

The development of Ukraine's integration policy in the sphere of e-commerce depends to a large extent on the development of integration processes in the context of the globalization of the world economy and the dominance of open economic systems. Being one of the

members of the world community, Ukraine can not be separated from the transformation of the recent integration processes in the sphere of e-commerce. Historical relations of cooperation, which connect Ukraine with the countries of the post-Soviet area, in particular, are undergoing serious changes due to the socio-political situation of our country over the past four years.

The concept of e-commerce

The rapid development of e-commerce creates problems for firms trying to develop e-commerce strategies. This is especially difficult given the seemingly uninterrupted flow of new information technologies and software applications. However, companies are promoting their e-commerce strategies, partly fearing that they will lose customers over competitors if they do not have e-commerce strategies [9].

Since its appearance on this planet, e-commerce has attracted much attention from scientists and researchers. There were no limitations in determining the e-commerce of scientists, researchers and other authors. Therefore, it is necessary to make a brief overview of the existing definitions of this concept.

According to Roger Clark, e-commerce is defined as the trading of goods and services through telecommunication and telecommunication tools [16].

Jerry Ellison also defines e-commerce as an electronic contract for the exchange of values using information and communications technology [10].

E-commerce is also defined as doing business online, selling goods and services that are delivered offline, as

* Corresponding author: vita.babenko@gmail.com

well as products that can be “digitized” and delivered online such as software [4].

Anil Khural defines e-commerce as the use of computer, Internet and general software to send and receive product specifications and drawings; applications, purchase orders and invoices; and any other type of data that needs to be passed on to customers, suppliers, employees or the public [1].

Summarizing all the studied definitions and existing concepts, we can define e-commerce as:

- 1) in the narrow sense, e-commerce is financial transactions carried out through the Internet and private communication networks, during which purchases and sales of goods and services, as well as money transfers are made. A transaction in electronic commerce can be a simple confirmation of the desire and possibility of purchasing with a credit card and following the transfer of the necessary amount from one account to another;
- 2) in a broad sense, e-commerce is any form of business relationship where interaction between actors occurs through the use of Internet technologies [3].

Even though e-commerce has become a separate sector of the economy, much attention is paid to the legislative regulation of this concept. Thus, in 1997, in accordance with the resolution of the General Assembly of the UN adopted a Model Law “On e-commerce”. This legislation is a recommendation and, above all, should be used by the states as a basis for the development of national legislation.

So, one of the most progressive countries, where legal regulation of e-commerce relations began, is the United States. The current legislation in the state “Fundamentals of Global E-Commerce” regulates the following aspects of relations in the field of electronic commerce:

- 1) the transformation of the global Internet network on environment, subject to market laws and mechanisms for the implementation of communications and the redistribution of goods and services between different entities;
- 2) promotion of the development and use of electronic payment systems for the full “digitization” of payments;
- 3) promoting the development of web services for e-commerce;
- 4) establishment of minimal state interference in the electronic segment of the economy (the principle of self-regulation of e-commerce)
- 5) confronting non-tariff restrictions on e-commerce on the Internet [18, 11].

Next, other countries which hold leading positions in the field of communication and information technology (Canada, Japan, Singapore, Australia) were supported and developed all these principles according to US law in their own legislation.

It is necessary to note that in the theory of e-commerce, this sphere can be distinguished by the models selected on the basis of the parties of economic relations and on their interaction between each other. The most common among them are:

- 1) business-to-business (B2B) – any activity of some companies in providing other manufacturing companies with accompanying services, as well as goods and

services intended for the production of other goods. This field of activity is focused on obtaining benefits (profits) from the provision of services or the sale of goods, where the “objects” are services or goods, and the “subjects” are organizations that interact in the market field. Here organizations and (or) individual entrepreneurs act as “seller” and “buyer” of services or goods [17];

2) business-to-consumer (B2C) – the term for commercial relations between private individuals, the so-called “end” consumer. It is also a form of electronic commerce whose goal is direct sales for the consumer (end user, individual) [22];

3) consumer-to-consumer (C2C) – e-commerce of the end consumer with the end consumer, in which the buyer and the seller are not entrepreneurs in the legal sense of the word. Usually, a third party is involved in such commercial relationships – an intermediary who organizes a trading platform, such as an online auction, website-advertisements about buying/selling, etc. Also, an intermediary may be the guarantor and/or executor of the payment. The intermediary is not the guarantor of receiving goods, but in some cases may affect the resolution of controversial situations. Also, the mediator does not participate in the promotion of goods, the seller does this independently [22];

4) business-to-government (B2G) – relationship between business and government. An example of B2G-systems can serve as a system of electronic procurement, which, recently, has become especially popular in Ukraine (based on international experience in the framework of globalization processes) [22, 14];

5) consumer-to-government (C2G) – the direction which used to organize direct interaction between the government of the country and the final consumer. For example, in the US, almost all taxpayers filed a declaration of income through the sites of tax departments [22];

6) mobile commerce (m-commerce) – the process is carried out using handheld computers or smartphones via a remote (Internet, GPRS, etc.) connection. Mobile commerce, as a rule, is a software and hardware solution for automating processes of interaction with remote users [13].

Main worldwide e-commerce trends

In general, the intensity of use by various subjects of possible e-commerce services, first of all, correlates with such indicator as the number of Internet users in the country. Let’s analyze this indicator (Fig. 1).

Of course, given the high population density and the rapid spread of information technology, Asia occupies a leading position. Also, it is worth noting the countries of Europe and America, since these regions are highly developed, and the introduction of Internet technologies is part of the active improvement of business efficiency.

Talking about the retail e-commerce sales worldwide, we can see that in 2017 retail e-commerce sales worldwide amounted to 2.3 trillion US dollars (Fig. 2). The top 3 online stores’ revenue (amazon.com,

apple.com, walmart.com) amounted to almost 100 billion US dollars in 2017 [20].

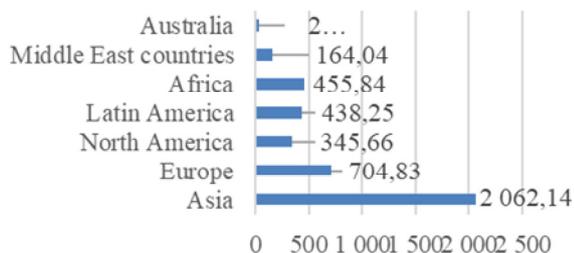


Fig. 1. The number of Internet users by the regions (01.01.2018, million people) [19].

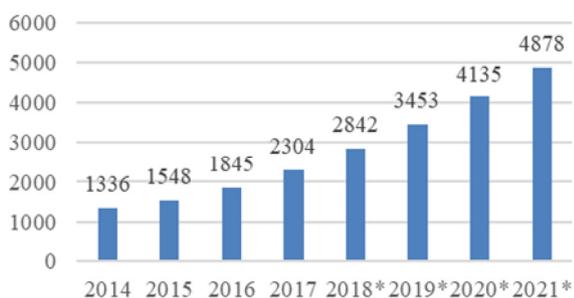


Fig. 2. Retail e-commerce sales worldwide from 2014 to 2021, * - forecast (in billion U.S. dollars) [19]

Throughout the world, e-commerce is a much-growing area without signs of a downturn in 2019 and even in subsequent years. It remains a popular choice for investment and new businesses, and further growth will foster the development of user-friendly development techniques, technologies and, of course, increased competition.

Speaking of analysis in terms of e-commerce segments, by the close of 2017, B2C ecommerce sales will hit \$2.3 trillion worldwide. B2B ecommerce, on the other hand, will reach \$7.7 trillion. Those two data points represent a 234.78% difference in market size [8].

Given the growth in globalization, the fact that the US share in global e-commerce sales is steadily declining is not shocking at all. However, many enterprises do not consider how fast this decline really does.

Where the United States once reigned in e-commerce, it is expected that by 2020 their share will be 16.9% (compared with 22.2% in 2015).

As a result, the lion's share of global e-commerce sales of B2B, in particular (84%), currently resides outside of the western continent, such as North America and Europe (16%).

If the rapid growth of other countries is not enough to stimulate the support of an international approach, the easing of the West is another way to wake up any unwilling team members or leaders.

An analysis of the share of e-commerce in global retail sales volumes also shows a tendency for rapid growth (Fig. 3).

Conducting an analysis of the e-commerce market in the context of existing e-commerce models shows that B2B global sales reach \$7.7 trillion USA in 2017

(Fig. 4). So, B2B e-commerce market is more than twice bigger than B2C, and it continues to grow.



Fig. 3. E-commerce share of total global retail sales, * - forecast [19]

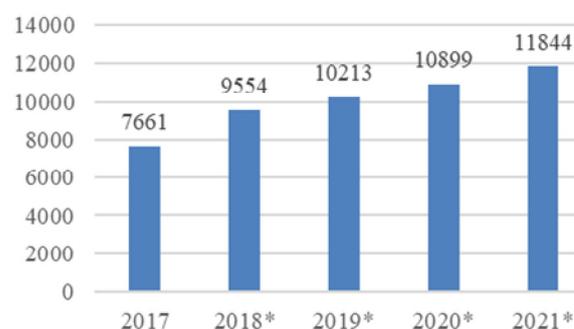


Fig. 4. B2B e-commerce volume, * - forecast (in billion U.S. dollars) [19]

Given that Ukraine is also actively joining integration into globalization processes, it also occupies not the last positions in the rate of penetration of Internet technologies. In general, about 67% of Ukrainian Internet users visit websites related to e-commerce. If to analyze the growth rate of e-commerce in Ukraine, then they, in recent years, far exceed the growth rate in Europe. This is primarily due to a sharp increase in the level of Internet penetration in Ukraine, as well as the distribution of Internet users by age and income. So, for users with income levels above the average, it reaches almost 100%, a similar situation in the age group 15-45 years, which provides a significant proportion of active Internet buyers [19]. Also, experts note that in 2017 only 9% of Internet users did not buy nightly Internet. Thus, the overall growth in e-commerce has allowed Ukraine to gain primacy among European countries in 2016-2017. This trend will continue for no more than 2 years, as the growth rate of the penetration rate of the Internet decreases as its absolute value increases. This, in turn, has a significant impact on the dynamics of online commerce volumes [19].

E-commerce and globalization

It is expected that globalization and e-commerce will change the economic structure of nations. The expected economic surplus is mainly influenced by the two above-mentioned factors. In literature, the new structure is usually called knowledge economy, new economy or

e-economy [1]. E-commerce not only reduces communication costs, but also increases the flexibility to find actions.

Globalization of the firms is announced as a key factor in the spread of e-commerce. It is expected that large global companies are likely to use e-commerce more intensively than less global firms. Companies, faced with foreign competition, are under great pressure to adopt technologies such as e-commerce that will allow them to protect or expand market share and work more efficiently.

Companies conducting business outside their own country may be more interested in lowering operating costs (such as information search, negotiation and performance monitoring) with the help of information technology. With the help of the Internet for transactions and coordination, it can save time and money on delivery of goods, using rich information flows to simplify and optimize the flow of physical goods in the supply chain.

It is often assumed that the introduction of e-commerce is a global process managed by a common set of participants. However, there is a theoretical basis for the assumption that some industries and activities will seek global convergence, while others will be marked by local differences [2].

Based on a combination of theory and empirical findings, we assume that globalization has a different impact on the introduction of e-commerce between B2B and B2C, and global companies are more involved in B2B and fewer global companies engaged more in B2C. Because B2B e-commerce is the overwhelming majority of e-commerce, as higher B2B levels implemented by global firms will be a minor advantage of local firms in B2C, which leads to greater overall acceptability of e-commerce by global firms. In this section, we can conclude that:

- 1) Companies that are global have a higher overall adoption rate for e-commerce.
- 2) Companies that are global have a higher level of adoption of B2B e-commerce.
- 3) Companies that are global have low B2C e-commerce adoption.

In general, the following key factors can be identified that have a significant impact on the development of e-commerce:

– Trust. Trust can be a key factor in B2C. This gives consumers confidence that they are buying goods or services, even if the electronic trader is unknown. It encourages the wider use of e-commerce technologies, facilitates the process of electronic transactions, increases the adoption of e-commerce, leads to increasing the consumer affection, increases customer satisfaction, introduces the concept of loyalty, supports a long time-relationship with customers and helps to gain a competitive advantage. Future purchases can be motivated, and price increases are permissible. This reduces customer concern about the confidentiality of information and helps clients tolerate irregular errors committed by an electronic trader [15].

– Quality. Perceived quality of goods and services has two aspects: technological, which refers to the delivered service, and functional, which refers to the way the

service is provided. Response rate, offer renewal, and site performance are technical. Interactive communication in the network, personalization of communication with the client, as well as service, development of new forms of access for customers relate to the functional aspect of quality perception. The quality of the product / service is determined by the client's perception of the quality of all available information about the product / service provided by the website.

– Government intervention. The role of the government in the development of e-commerce in the context of globalization is defined as that which facilitates the basic requirements for the development of e-commerce. These include providing secure online payment options, providing reliable ICT infrastructure, providing educational programs and raising awareness through various means, such as the media and educational institutions.

– Accessibility. As the Internet is rapidly becoming the main source of information and services, the well thought out content and design of the e-commerce website has become imperative for citizens to have constant access to public information and increase their participation. E-commerce sites today can serve as a tool for communication and for relationships with customers and the general public. Information and personal data can be easily transferred to external stakeholders [12]. In addition, scientists define the availability of the Internet as an incentive for people to use, perceive, understand, direct and interact with the network and the outside world. International Standardization Organization (ISO) has identified accessibility as “the convenience of using a product, service, environment or object with the widest range of opportunities”.

Existing problems in the development of international e-commerce

Despite the above factors, which have a significant progressive impact on the development of e-commerce, there are also certain obstacles that delay the process of distribution of e-commerce technology.

First of all, this is a technical barrier. Many technical difficulties still prevail and are clearly seen as major challenges to the growth of global e-commerce. In addition, this group of problems included problems of infrastructure development or problems at the organization level related to the integration of new e-commerce solutions into existing outdated systems, standard problems, problems related to Internet capabilities, security problems, etc.

In addition, in both the real sector and e-commerce, a process such as corruption has a significant negative impact. Corruption is hampering electronic commerce; corruption is a huge problem for international trade in general, often in connection with customs procedures, and is associated with everything from bribery to the disappearance of items. Both small and large businesses emphasize this problem. An increasing number of enterprises believe that e-commerce is particularly

sensitive to corruption, as many small parties that are “easier to deploy” often go, and electronic merchants often do not have staff to be able to follow any problems. One company explained that it decided to leave the Chinese market, and the other - that it did not begin to sell to Russia because of corruption. In addition, Turkey, Ukraine and other countries of Eastern Europe were mentioned as problematic in relation to corruption in e-commerce.

And the last, but extremely significant factor that can be identified, is the cognitive barrier. Most analysts argue that the cognitive barrier is the most serious among other forms of barriers in developing countries and countries with economies in transition. Effects such as ignorance and uncertainty serve as cognitive feedback. In most developing countries enterprises, technological resources, lack of awareness and understanding of the existing potential, underestimation of risk and inertia often lead to a negative assessment of the entire e-commerce system. Another reason for the cognitive barrier is unfortunately connected with the increasing general and computer illiteracy and the lack of English language skills. It is known that the majority of software, human-computer interfaces and content on the Internet is available in English. It is estimated that more than half of the population of developing countries and countries with economies in transition (including Ukraine) cannot speak the official language (in English) of their countries, especially the older generation.

Speaking specifically about Ukraine, the country is actively increasing its position in world rankings related to the speed of the introduction of e-commerce. But for Ukraine, as well as for other transition economies, the main barrier for the further development of e-commerce is the presence of large foreign players. The biggest “problem” is the growing popularity of such a service as AliExpress. It can also be explained by a wide choice of offers, better services, the ability to pay hryvnia credit cards and being lower than the price offers. The difference in prices on foreign and domestic sites reaches 100%. Since February 2017, this company has changed the conditions of delivery to Ukraine altogether, canceling free delivery, but in return it provided consumers with the opportunity to track the passage of goods all the way from the seller to the buyer. According to a study [6], the majority of buyers agree to pay extra for this option, as well as for speeding up the delivery, since prices, however, turn out to be much lower.

Investigation of the factors of influence on integration into the world e-commerce market

An important part of the study of the prospects for the development of county's integration into the international e-commerce system is the process of selecting a system of indicators that will allow to assess such integration.

The introduction of the principles of e-commerce in business relationships of any level is subject to many factors. The most important factors are the general state of the country's economy; the world market situation; the

economic status of major partners; level of state regulation of foreign economic activity [2]. To characterize these factors and assess their impact on country's integration processes in the international e-commerce system, it is important to choose appropriate set of indicators. Since the main focus of e-commerce is mainly on trade activity, this system of indicators will be such that determines the trade and economic status of integration associations: x_1 – export within the association; x_2 – total export; x_3 – import within the association; x_4 – total import; x_5 – direct foreign investments, internal and external flows and reserves (annual); x_6 – GDP; x_7 – total annual trade; x_8 – total volume of trade; x_9 – balance of payments, current annual operations accounts.

In order to establish the importance of the impact of selected economic development indicators on the differentiation of integration associations, we will construct a discriminatory function (for standardized data in 2017). Thus, the model of differentiation in the development of integration processes in the global e-commerce market in 2017 has the form:

$$f(x) = -8,67098x_1 - 6,36273x_2 - 9,60139x_3 + 21,273x_4 + 1,50212x_5 - 5,68611x_6 - 11,567x_7 - 0,450606x_8 + 0,167332x_9.$$

The analysis of the weighting coefficients obtained as a result of the discriminant analysis allows us to draw certain conclusions regarding the impact of the factors in integration processes:

$$x_4 > x_7 > x_3 > x_1 > x_2 > x_6 > x_5 > x_8 > x_9.$$

Thus, the constructed model and the carried out quantitative analysis allow us to see a significant difference in the importance of the influence of certain factors on the process of integration of the regions of the world into the system of international e-commerce.

Conclusions

E-commerce technology has helped companies differently. This not only helped businesses and firms sell their products and services around the world and easily, but also helped customers make purchases at any convenient time and everywhere.

Since its existence, until now, there were no restrictions on the search for advanced technologies that would meet the current situation of e-commerce by experts and enterprises. This means that the e-commerce we see today will not be the same in the next five years. E-commerce will see enormous growth and advances in technology, as it continues to grow stronger in business both in developed and developing countries.

As they say, “growing brings many benefits and problems”, so we have to put ourselves in a better position to cope with the challenges that accompany the growth of e-commerce technologies.

In this paper the main factors and key problems of development of international e-commerce under the conditions of globalizations were defined. In addition, a

discriminant analysis of selected factors was conducted and a model of differentiation in the development of integration processes, on the basis of which we can clearly see the importance of selected indicators in the process of integration into the world e-commerce market, was calculated. Also, it is proved that Ukraine is not an exception and also follows the trends in the introduction of e-commerce methods in all forms of business. The processes of globalization have also touched the online sphere, which will undoubtedly become the driving force in the development of this sphere and, possibly, the smooth displacement of the relative sector.

References

1. Anil, K.: Introduction to e-commerce. <http://www.ddegjust.ac.in/studymaterial/mcom/mc-201.pdf> (2019). Accessed 2 Mar 2019
2. Babenko, V., Pasmor, M., Pankova, Ju., Sidorov, M.: The place and perspectives of Ukraine in international integration space. *Pr. and Persp. in Man.* **15**(1), 80–92 (2017). doi:10.21511/ppm.15(1).2017.08
3. Babenko, V., Syniavska, O.: Analysis of the current state of development of electronic commerce market in Ukraine. *Tech. Aud. and Prod. Res.* **5**, 40–45 (2018). doi:10.15587/2312-8372.2018.146341
4. Coppel, J.: E-Commerce: Impact and policy challenges. *OECD Ec. Dep. Work. P.* **252**, 45–60 (2000)
5. Efendi, J., Kinney, M.: Marketing Supply Chain Using B2B Buy-Side-E-Commerce Systems: Does Adoption Impact Financial Performance? *Ac. of Mark. St. J.* **17**(2), 73–81 (2013)
6. European B2C E-commerce Report. <https://www.ecommerceuropa.eu/app/uploads/2016/07/European-B2C-E-commerce-Report-2016-Light-Version-FINAL.pdf> (2017). Accessed 2 Mar 2019
7. Global B2C E-commerce Report. https://www.ecommercewiki.org/wikis/www.ecommercewiki.org/images/5/56/Global_B2C_Ecommerce_Report_2016.pdf/ (2017). Accessed 3 Mar 2019
8. Global Ecommerce: Statistics and International Growth Trends (Infographic). <https://www.shopify.com/enterprise/global-ecommerce-statistics> (2018). Accessed 12 Mar 2019
9. Jason, H., Frank, D., Jay, A.: Adoption of E-commerce strategies for Agribusiness Firms. In: Selected paper at the American Agriculture Economics Association Annual Meeting. Tampa (2000)
10. Allison, J.: E-commerce: Exactly what is it. <http://www.drjerryallison.hubpages.com> (2015). Accessed 13 Mar 2019
11. Melnichuk, O.S.: Global tendencies of development of e-commerce. *Sc. Works of NDFI.* **1**(66), 58–69 (2014)
12. Moon, M.J.: The Evolution of E-Government among Municipalities: Rhetoric or Reality?. *Pub. Admin. Rev.* **62**(4), 424–433 (2002)
13. Nanekaran, Y.: An Introduction To Electronic Commerce. *Int. J. of Sc. & Tech. Res.* **2**(4), 190–193 (2013)
14. Nemat, R.: Taking a Look at Different Types of E-commerce. *W. App. Prog.* **1**(2), 100–104 (2011)
15. Pittayachawan, S., Singh, M., Corbitt, B.: A multitheoretical approach for solving trust problems in B2C e-commerce. *Int. J. of Net. and Vir. Org.* **5**(3), 369–395 (2008)
16. Clarke, R.: Electronic Commerce Definition. <http://www.rogerclarke.com/EC/ECDefns.html> (2015). Accessed 12 Mar 2019
17. Sheremet, A.D.: Forms of e-commerce and its composition in the digital economy. *Bul. of Dnip. Nat. Un. of Rail. Tr. N. after. Ac. V. Lazaryan.* **41**, 311–315 (2012)
18. Sydorova, O.V.: Regulation of e-economic activity in foreign countries. *Prob. of the Mod. Ec.* **2**, 97–100 (2011)
19. The Statistical Portal. <https://www.statista.com/> (2019). Accessed 13 Mar 2019
20. Top online stores by revenue. <https://ecommercedb.com/en/ranking/ww/all> (2019). Accessed 13 Mar 2019
21. Totonchi, J., Kakamanshadi, G.: Globalization and E-Commerce. Paper present at the 2nd International Conference on Networking and Information Technology, 2011
22. Tsarev, V.V., Kantarovich, A.A.: Economics, organization and planning of commercial activities of Internet companies (2001)