

# **E-BUSINESS AS A COMPONENT OF INFORMATION ECONOMY: EVOLUTION AND FUTURE CHALLENGES**

Letunovska Nataliia<sup>1</sup>, Rybina Olena<sup>2</sup>

<sup>1</sup>PhD, Senior Lecturer of the Department of Marketing, Sumy State University

<sup>2</sup>PhD, Assistant Professor of the Department of Marketing, Head of the Bureau for Quality Assurance of Higher Education, Sumy State University

**Abstract.** Modern development of e-business is considered from the point of view of it as a component of information economy. Theoretical background of Internet sphere concepts definitions is investigated. The development of the Internet is considered by the authors at three levels. Levels of e-economic activity are listed too. The main goals of online business creation are analyzed. The article contains statistics on the level of electronic environment development in Ukraine. It is stressed that UA.net or Internet segment in Ukrainian is among the most common language segments on the Internet. Websites in Ukrainian make up a significant part of the global network. At the same time, among the most popular Ukrainian websites, there are only few sites which main language is Ukrainian. The authors pay attention to consideration of cloud services development. They note that the Internet provides opportunities for the development of activities that have traditionally been perceived as offline, in particular the educational field. The material of the article confirms the great potential of Ukrainian developments in the Internet environment. Examples of successful technological solutions of domestic developers are listed. The authors state that electronic environment greatly facilitates the work of businesses with potential consumers and creates opportunities for easier entry into the market for new players. The authors draw conclusions that the evolution of e-business in Ukraine has already passed a number of stages, but is still in a stage of growth. This market is ready for radical innovations.

**Key words:** electronic business, Internet, information economy, online presence for a company, e-commerce, distance learning at university, international electronic trading.

**Introduction.** Now in the information economy, where knowledge is the most important resource, there is an active process of convergence and integration of communications and technologies in IT (Bilan Yu., et al, 2019) the full impact of information technologies on economic activity (most employees of companies operating on the principles of information economy, are IT specialists (System Administrator, SMM Manager, Internet Marketer, Content Manager, Online Consultant, SEO Specialist, Web Developer, Web Programmer, etc.), and products that are manufactured by these companies are mainly information products and services)). The active incorporation of revolutionary new technologies along with the transformation of the current system of international relations characterize the formation of the global information society at the beginning of the 21<sup>st</sup> century (Fyliuk, H. et al., 2019). The changes in modern society are focused more on the sustainable economic growth. When reviewing the transmission from an agrarian economy towards industrial, knowledge society, organizational knowledge, intellectual capital

acquires greater importance and approval that they are some of the most valuable resources for sustainable economic future (Mikalauskiene A. et al., 2019). The society required new information system that would clarify the previously unexplained and intangible processes. The growing interest in the e-business and commerce coincided with the creation of information economy, movement towards the “Industry 4.0” (Krykavskyy Y. et al., 2019). In particular, in economic activity such tendencies act as a technological platform for concepts of “digital economy”, “electronic activity”, “network economy”.

Recent advances in technologies, fast global competition, and the increasing demand on the side of customers are forcing organizations to re-examine how they can exploit the benefits of information technology capabilities to gain competitive advantage. E-business is becoming one of the fastest growing fields in today’s economy. Most scholars and entrepreneurs predict that it would continue to expand faster and faster. Internet business is a great instrument that can assist in obtaining different competitive advantages over their rivals and improving their capabilities to compete with large firms at the world markets (Hu X., 2019).

In the conditions of rapid development of modern information technologies and their use in all spheres of economic activity the approaches to solving problems of any socioeconomic processes are changing radically. These processes lead to the transformation of the marketing principles and functions and directly of the role of commerce. Each technology cycle is characterized by the existence of technological revolution and leading sectors of the economy (Osmyatchenko V. et al., 2019). Change of technological cycles leads to the transformation of the theory of marketing and its practical application. Particularly, approaches to business management changed due to the application of information technologies. Online business becomes leading. There is a significant development gap between different countries, which is the lack of harmonized relationship between the level of digital technology development and the time taken for introducing digital technologies into business sphere for example (Afonasova V., 2019).

E-business has gained worldwide development. For example, every fifth European business make e-sales. The level of development of the modern Internet environment is demonstrated by the following data: users of the social network Instagram for a minute like about 2.5 million posts. On Twitter they send 9.7 thousand tweets in a minute. Users of YouTube hosting add 400 hours of new video in a minute. People registered in Facebook share more than 216,000 photos in just one minute. Snapchat users can watch 6 million videos in one minute online. Nearly 570,000 new images are uploaded to GIF services, 830,000 new documents are uploaded to Dropbox every day. Siri (cloud-based personal assistant and iOS-adapted question-and-answer system) manages to answer 100,000 questions in just one minute (E-commerce, 2020).

An increase of the e-business share in GDP can become an economic growth driver in every country. For example, BRICS countries today pay great attention to the development of e-commerce and plan to strengthen cooperation in this area (Revinova S., 2019). For the company, the feasibility of doing business on the Internet is determined by the ability to work around the clock any day of the week, no geographical restrictions for work place, minimizing costs (including initial business investments), opportunities for business globalization, equality of access to the market for all businesses, facilitating marketing communications with customers (including interactive communication with them), increasing the speed of call ment operations within the business, reducing the risk associated with the human factor, reduced time-to-market product, no need to pay customs taxes related to electronic payments and others. Consumers also benefit from a number of benefits by using the Internet as a platform to buy goods, including 24/7 availability of business information, confidential receipt of goods and services from companies, purchase of

goods and services at lower prices than at physical points of sale, availability of rare goods and services from foreign markets, unlimited opportunities for communication with representatives of companies, providing access to the purchase of goods and ordering services for people with disabilities, convenience for comparing competitive offers (saving time and financial resources).

The levels of development of the Internet approach within the enterprise can be defined in three levels:

- the first level (only the presence of the company on the Internet (presence of a web page, e-mail box, advertising on the Internet));
- second level (interaction with suppliers and consumers based on the use of the Internet);
- third level (transformation of business processes, when the main part of the action is carried out with the help of Internet technologies).

Developing people's interest towards starting a business plays a vital role in Ukraine in which, for a very long time, private property and free initiative were almost completely suppressed. Electronic technologies give opportunities for young people without huge starting finance capital to launch their private activity in a market (entrepreneurship phenomenon) (Vargas-Hernández J.G., 2013).

The increase of entrepreneurial activities is a major issue on which the sustainability of future growth depends (Belás, J, Dvorský, J., Tyll, L., Zvaríková, K., 2017).

Many businesses, at one stage or another of their development, believe that it is important to expand their presence in the eyes of the target consumer with the wide range of tools the Internet can offer. Nowadays, there is a belief that every company that wants to be successful in its customer acquisition activities should have at least a minimal presence on the Internet (having a business site, periodically launching online advertising, a company page on social networks (at least one), etc.). Separate services allow businesses to provide information about themselves to consumers, to deal with reviews (because experts estimate that consumers are about 1.7 times more likely to respond to companies who respond to reviews than those who ignore them). This service, for example, is a Google My Business service that enables businesses to present themselves on Google pages, including Search and Maps. Company representatives have opportunity to respond to customer reviews, post photos using this service.

**Literature review.** With the spread of internet usage, electronic business has gained huge attention in the academic literature. Theoretical and methodological basis of the sphere of electronic business is developed in the works of a small number of Ukrainian scientists (Polivanov V., Dmitrieva N., 2018), (Malitska G., Melnik O., 2018), (Zaitseva O., Bolotinyuk I., 2015), (Sytnik I., Genyk S., 2016), (Bashynska I., Lytovchenko I., & Kharenko D., 2019). Among the foreign scientists who have been involved in various issues of the development of e-business, can be called (Apăvăloaie E.-Iu., 2014), (Yaser Ahangari Nanehkaran, 2013), (Maureen Semu Kabugumila, Lushakuzi S., Jacqueline E. Mtui, 2016), (Dimitrios Maditinos, Dimitrios Chatzoudes, & Lazaros Sarigiannidis, 2014), (Pilinkiene V., Kurschus R.-J., Auskalnyte G., 2013), (Delina R., Tkáč M., 2015), (Roudposhti V.M., Nilashi M., Mardani A., Streimikiene D., Samad S., & Ibrahim O., 2018), (Samašonok K., Išoraitė, M., Leškienė-Hussey B., 2016), (Pabedinskaitė A., Šliažaitė V., 2012) and others. Due to its volatility, the amount of thorough and up-to-date research in the field of e-business is very small. Some aspects of e-commerce development and online projects are noteworthy and determine the relevance of this study.

Polivanov V., Dmitrieva N. believe that online business covers the fields of information law, electronic money, technical and software, internet marketing, information management, online logistics, online insurance, tourism, online banking and online trading (Polivanov V., Dmitrieva N., 2018). Malitska G., Melnik O. consider e-business at the third level of e-commerce

functioning and define it as the development and implementation of new forms of interaction between market participants. Also, it is a new way of exchanging information ((Malitska G., Melnik O., 2018).

Scientists of the work (Maureen Semu Kabugumila, 2016) define electronic business as the conduct of commerce in goods and services, with the assistance of telecommunication and telecommunication-based tools such as the Internet. E-commerce they identify as a sub component in e-business. Yaser Ahangari Nanehkaran states that electronic activity is comprised of three levels such as infrastructure, services, products and structures (Yaser Ahangari Nanehkaran, 2013).

In most scientific studies, the Internet is defined as an additional channel for the effective pursuit of economic activity of various directions. Internet business is often identified with e-commerce, often without differentiating between these concepts of the information economy.

We agree with (Sytnik I., Genyk S., 2016) that the development of online activity is influenced by a variety of factors and objective circumstances. This development is individual for each country. Therefore, it is advisable to identify trends in Internet business development in Ukraine separately from other countries. Scientists of the work (Pilinkiene V., 2013) claim that electronic business improves business processes through the automation and optimisation of usual business process.

Analysis of various studies shows that is a lack of investigations analyzing whether positive electronic business impact leads to the stable competitive advantages on the market.

**Methodology.** The research methods are formed by an analysis of the scientific and business literature. The authors use quantitative method. The questionnaire was used to identify the attitude of the research participants towards the sphere of electronic business and advantages that it gives to entrepreneurs. Statistical analysis methods were used to process the obtained research data: commonly exploited applications worldwide, use of Internet by Ukrainian enterprises, volume of cloud services with forecast, leading e-commerce product categories purchased by shoppers in Ukraine, popularity of various sources in the Internet among Ukrainians. Statistical data analysis was carried out using Excel version 2010.

**Results.** The basic goals of a company transition to the Internet environment may be different. In addition, under the current conditions of rapid development of Internet technologies, the company from the very beginning of its existence can be represented exclusively in the virtual environment. It has become commonplace, for example, for shops to sell their products without having their own warehouses, using the services of third-party carriers, placing their own storefronts on the Internet, etc. All key processes of a business are performed remotely without binding to the physical locations of goods.

Supported by that development such as invention of mobile phone and internet, caused a faster exchange of information (Amelia A., 2014). Internet business is made possible by the development and continuous improvement of search engines. According to the statistics of 2019, Internet browsers have become the second most popular application in the world (Fig. 1). The market of developed countries is in its maturity phase, and the competition among eCommerce players is extremely high and cost-intensive. Marketplaces like Amazon and AliExpress are flourishing, while many stand-alone retailers struggle to find their USP as brand and store loyalty are decreasing and cart abandonment rate in the industry is at 75%. Increasing brand engagement can be achieved through community building (e.g., ASOS Marketplace), loyalty programs, and a seamless mobile and desktop user experience.

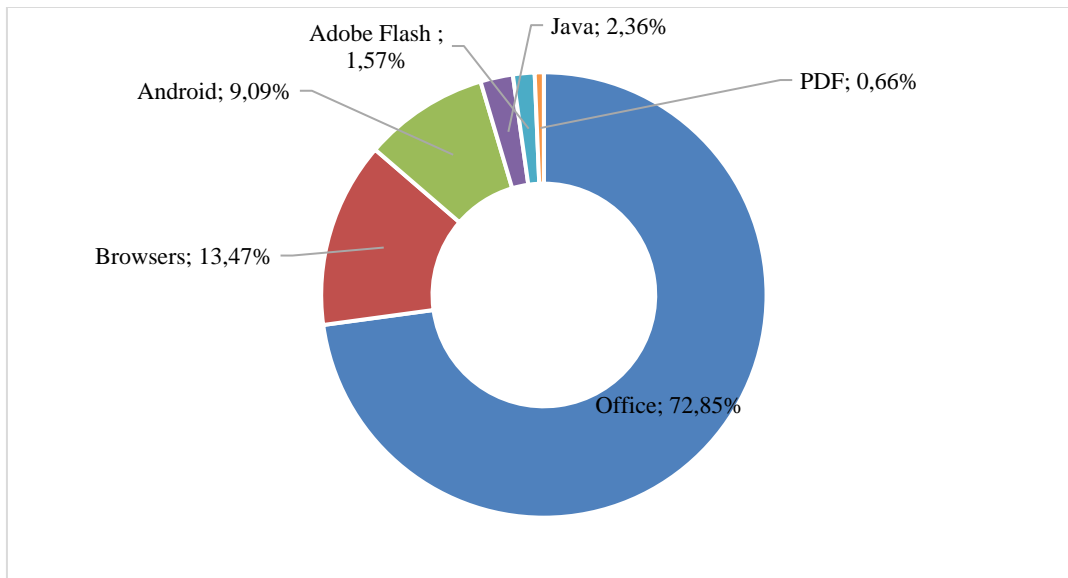


Fig. 1 – Most commonly exploited applications worldwide as of 3<sup>rd</sup> quarter 2019 (formed with the use of (Statista, 2019))

The main goals of organizing an online presence for a company include:

- information support of existing non-electronic business with the purpose of creating another advertising and information channel, facilitating communication with partners, forming a positive image of a company that uses modern technologies. For example, creating a corporate site. This approach is typical for the B2B industrial market;
- organizing the sale of goods and services of an existing non-e-business through the Internet in order to use the Internet for advertising and product marketing (the so-called “new retail” was proposed by the founder of Alibaba Group, Jack Ma in 2016). For example, creating an online website with the possibility of ordering products online (such as Ukrainian Epicenter supermarket chain with their website 27.ua or the bookstore chain “Bookstore E” with the book-ye.com book ordering website. Or other example of the resource f.ua, which grew from a small kiosk to one of the most visited online stores in Ukraine;
- creation of a company that sells products exclusively on the Internet for the purpose of realization in the electronic environment of a complete business cycle of activity. That is, such a business is completely remotely implemented, including payment settlements, dealing with customer reviews and claims, consulting). Nowadays, there are more and more examples of companies entering the market within the framework of such rules of operation. On the Ukrainian market, one of the first online stores was Rozetka. In addition, examples of businesses created for this purpose include the Ukrainian online photobank Deposiphotos, which mediates between photo authors and their buyers;
- business with advertising goals when creating an online resource with a segmented audience to further sell its contacts to advertisers. Site contains content of interest to the target audience in order to attract the maximum number of users (for example, if the resource is visited by at least 1 000 unique Internet users) with further search and attract advertisers who are willing to pay for contact with the audience of this site. This method of monetization is typical for many information resources, resources that provide free services, such as Ukrainian online site with publications “Na chasi”, which tells about business and entrepreneurship.

There are examples of companies in Ukraine that have expanded their presence to physical stores from the online model. For example, in contrast to Bookstore E, the bookstore Yakaboo, which started its business with an online store, also opened offline store in 2019.

Quite often e-commerce is identified with e-business, although e-business is the most generic concept. It includes any form of interaction between market actors by means of digital technologies: exchange of information; conducting marketing research; establishing contacts, for example, between potential customers and suppliers; pre- and after-sales support, such as providing detailed information on products and services, answering customer queries, etc .; sale of goods and services; electronic payment, in particular using electronic payment systems; product distribution, including delivery management and tracking for physical products, direct delivery of products that can be distributed electronically; ability to organize virtual enterprises (a group of individual professionals or even independent companies for joint business activities); implementation of business processes jointly managed by company and its trading partners; management of information flows within an enterprise. Online sales are in the sphere of e-commerce, and the customer acquisition and retention process already cover e-business as a whole. It is not enough for a successful sales person to have a website. It also needs to attract the attention of potential consumers. For example, if a company sells home appliances online, then collectively it is an e-business, because when a visitor sees it, the first thing that catches his eye is the design of the site and the navigation that helps him find what he needs. The information provided must eliminate any doubt of the site visitor to turn it into a buyer. So far, no cash transactions have been made. It's not e-commerce yet, it's e-business. And only after the purchase we say that a company and a consumer have established relationships in the field of e-commerce. Levels of e-economic activity are listed in Fig. 2.

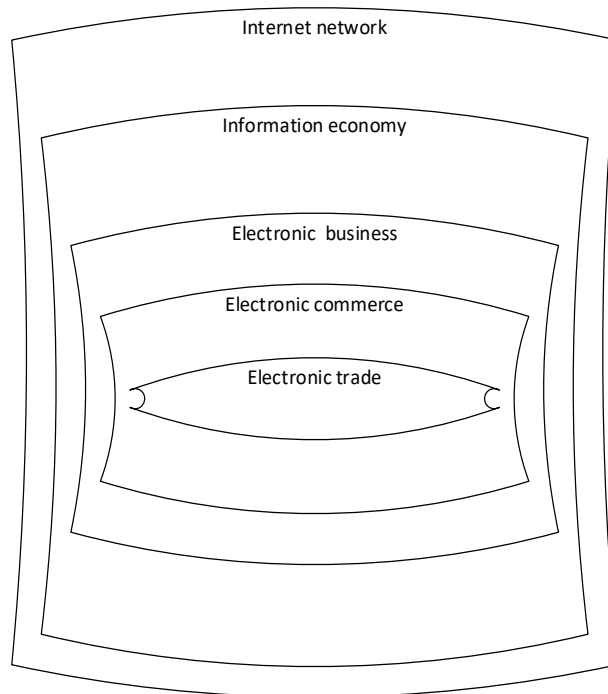


Fig. 2 – Constituents of the electronic sphere in their relationship (formed using (Stebлина V., 2019))

E-commerce changes every year, both in terms of technology and business approach. In particular, multichannel marketing (making the most of all available customer acquisition channels), niche specialization, e-commerce festivals (Double 11 in China, Cyber Monday in the US, etc.) is gaining increasing popularity. The issue of business ethics in conducting economic activity in the electronic environment is of particular relevance today too (Kiss L. B., 2019).

The electronic environment in Ukraine is developing at a slow pace, but domestic entrepreneurs are trying to keep up with the neighboring countries in this field. The first Ukrainian site was launched in 1997 (UANet, 2020). Currently, the UAnet or Internet segment in Ukrainian is among the 30 most common language segments on the Internet. Websites in Ukrainian make up about 0.2% of the global network (Davidaviciene V., 2019). At the same time, among the 25 most popular Ukrainian websites, there are only 4 sites which main language is Ukrainian. Among Ukrainian enterprises that used the Internet, in 2017, the largest number used it for sending and receiving emails (Fig. 3a), and enterprises using social media mostly used social networks (Fig. 3b). Social media becomes an integral part of life that helps reach modern generations of consumers. Results of scientific studies indicate that usage of social networks is effective for the formation of image of employer. This is important because there are clear links between workplace attractiveness, usage of social network and image of an employer (Most popular sites, 2019).

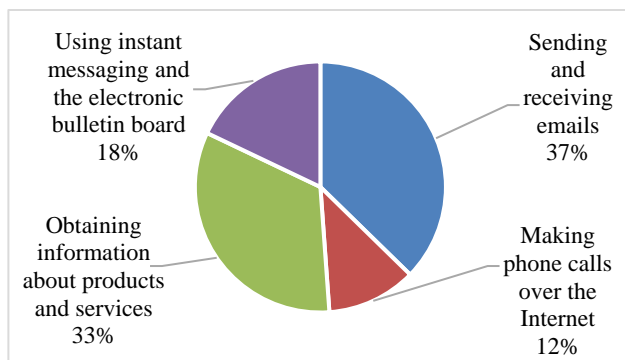


Fig. 3a – Using of the Internet by Ukrainian enterprises in 2017 (built using data from (Statistical Yearbook, 2018))

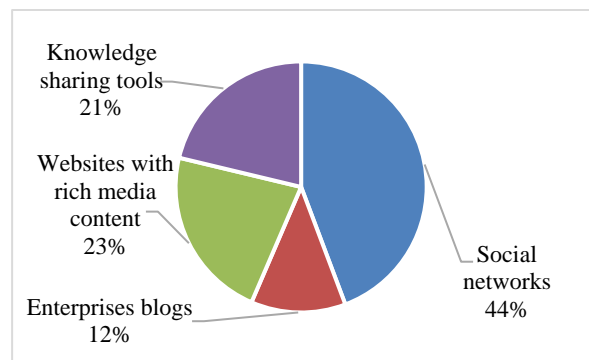


Fig. 3b – Using of social media by Ukrainian companies in 2017 (built using data from (Statistical Yearbook, 2018))

In 2019, trends are changing, including the popularity of cloud services and their use in business processes. According to the data, the volume of the cloud services market is growing rapidly (Fig. 4). So, we can conclude that the Ukrainian Internet has the potential for development, but there are still a lot of steps to be taken to become a leader in the global space of the Internet.

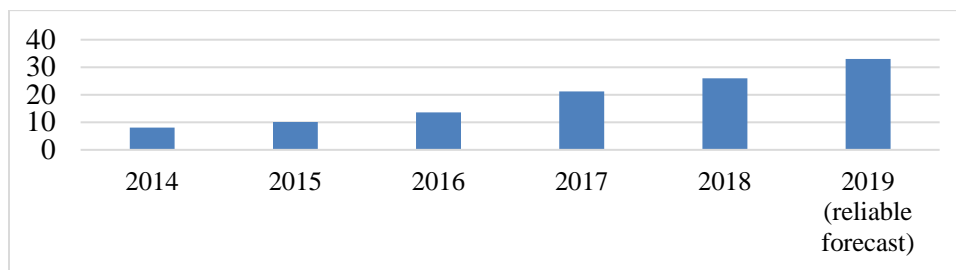


Fig. 4 – Volume of the cloud services market in Ukraine, million dollars USA (built using data from (Agieiev M., 2019), (Dainovskyi Yu.A., 2019))

Overall, 2019 proved to be a success for the global internet startup market (according to statistics, among the IT sectors most invested in 2019 were electronic financial services, e-commerce, data analytics and SaaS). The Ukrainian startup Grammarly also stood out, attracting \$ 90 million (Ukraine B2C, 2019).

In addition to Grammarly, Ukraine has already implemented a number of successful Internet startups, including:

**Preply.** Despite the fact that the competition in the educational projects market is high, this online tutor search service, launched in 2013, is developing successfully. Initially, it was intended as a service for learning English, but in the process of trial and error the creators changed its concept several times. It is now an online marketplace where you can find a tutor in 24 languages.

**Restream.** A streaming service that allows users to stream video content across multiple platforms and social networks (including the most popular video channels such as Facebook, YouTube, Twitch, Mixer, LinkedIn). The main service of it is cloud online broadcasting, which allows the author to broadcast videos to various streaming video sites.

**PatentBot.** Digital assistant for online trademark registration. This service checks name of a new trademark. If name is free, it helps to draw up necessary documentation. It helps to save up to 80% of the time, as well as paying lawyers.

**Na'Vi** (full name – Natus Vincere, which translates from Latin as “Born to Win”). Ukrainian multi-game eSports organization. The development of technologies, such as streaming services, gives the opportunity for mass viewing of competitions with greater involvement of sponsors, investments.

**Prom.ua.** Ukrainian marketplace, on the platform of which entrepreneurs have the opportunity to create online stores and / or place their products in the general catalog, to receive SEO promotion services, to advertise their products within the internal budget of ProSale.

**Jooble.** A search engine that aggregates job postings from job boards, newspapers, corporate career pages, and recruitment agencies. The search engine starts the site search by entering the city and job title. Filters allow you to sort your ads by city, date, salary, and company name. The ad search algorithm considers hundreds of parameters and selects relevant vacancies for user. By clicking on an ad, user is redirected to a relevant company page where he/she can find employer contacts and submit a resume.

**TicketForEvent.** An online service that enables event organizer to automate registration and questionnaire of visitors on their website, accept payment from their clients and secure them with electronic tickets / badges. The service is focused on various events by type and scale: exhibitions, conferences, forums, trainings, seminars, cultural and entertainment events.

**Hubbub.** An online platform that is a social network where people communicate by recording and exchanging short voicemails “bubs”.

**Address.ua** is a real estate portal. The site contains a complete and reliable database of homes for sale and rent. The ads go through a rigid system of control before posting on this resource.

A special place in the market of Ukraine is occupied by online stores, which now became popular not only for the purchase of goods, such as electronics, household appliances, clothing, cosmetics, but also food, baby goods, home goods and so on. Market leaders by number of visits include such projects as Rozetka, Allo, Citrus, Comfy, Make UP, Foxtrot, 27.ua, kasta.ua, f.ua, Moyo, Eldorado, Intertop. At the same time, it is natural that projects that place clothes, shoes, cosmetics, jewelry in the catalogs (Bonprix, kasta.ua, Leboutique, Make UP, zolotoyvek.ua) are leading by number of visits. The rapid development of information communication technologies has expanded the possibilities for marketing communication (Sabaitytè J., 2019). In order to



increase electronic business competitiveness and carry out effective marketing activities, it has therefore become important to acquire knowledge about e-consumers and to identify their preferences in purchase. Most popular categories of goods that were interested and purchased in Ukraine are shown in Fig. 5. In general, visually buying preferences in Ukraine are similar to a triangle. The triangle shows the trend of increasing purchases in certain categories. According to this approach, if purchases in the fashion category have already reached an important maximum, and for sales growth is not projected, then significant sales growth can be expected in sales of travel services online, goods for children, furniture.

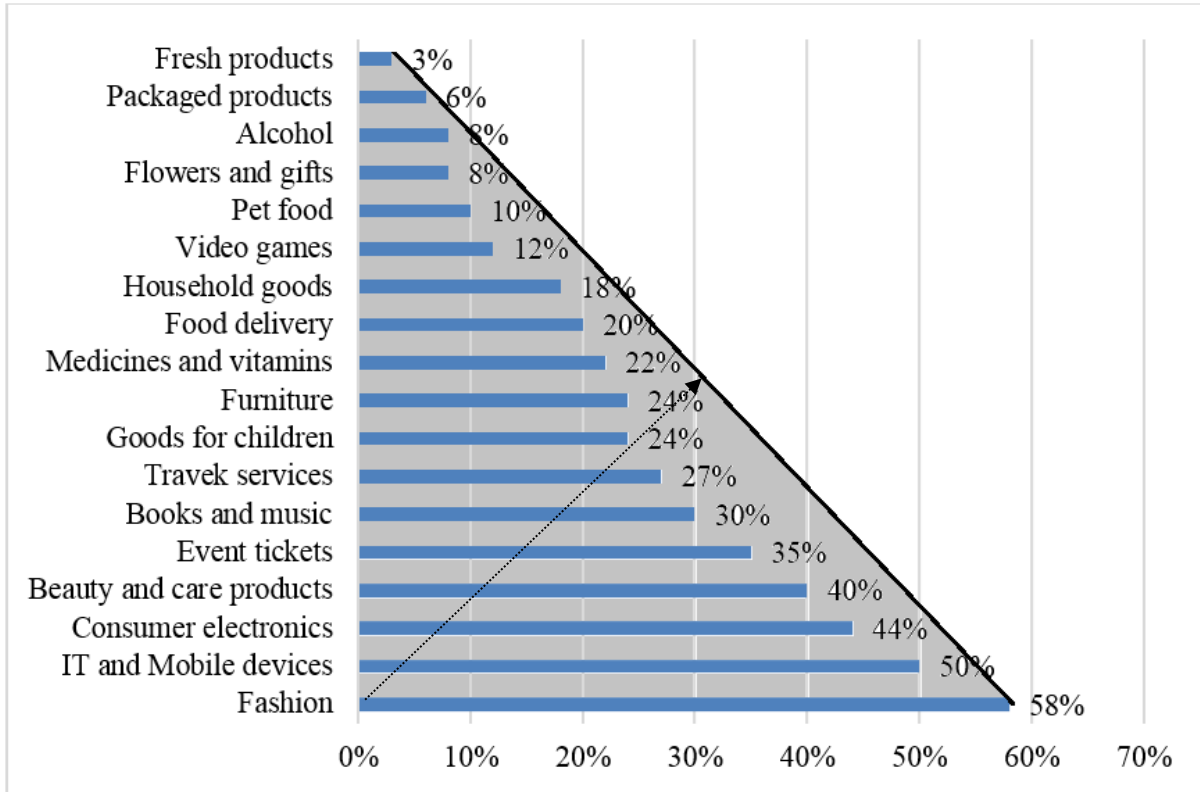


Fig. 5 – Triangle of leading e-commerce product categories purchased by shoppers from Ukraine in 2018 (formed using data from (The e-commerce market, 2018))

Note: does not add to 100% due to multiple answers possible

In 2019, trends are shifting in favor of the increasing popularity of shopping for atypical categories in Ukrainian e-market. For example, the Ukrainian medicines search and delivery service Liki24.com. In fact, this service is not an online pharmacy. It is like a mediator between drugstore and consumer. Also, every consumer has the opportunity to order the service “I’ll take it myself”. This is a good aggregator for finding the right medication.

If in 2018 the Ukrainian e-commerce market grew by 30%, showing the second growth rate in Europe, in 2019, the e-commerce market grew by 17% to UAH 76 billion. At the same time, the size of the average check of one purchase decreased by 7-10%, and the cost of delivery increased and is 5-15% of the cost of goods. However, online commerce shows faster development than regular retail (Educational institutions, 2019).

In Ukraine, the Internet provides opportunities for the development of traditionally offline

organizations such as, for example, a university. A system of distance learning is becoming more and more popular. Distance learning has already been introduced by such universities in Ukraine as the Ternopil Ivan Puliui National Technical University, Odesa National Academy of Food Technologies, Khmelnytskyi National University, State Fiscal Service University of Ukraine and others (Sumy State University, 2018). Sumy State University e-learning information system is provided by a complex of the software and information environments: automated distance learning system, Examiner open online course platform, blended learning platform, open educational resources, electronic catalog, institutional repository. The system includes online studio providing two-way audio and video communication for lecturer and student, recording and online broadcasting of training videos (Statista, 2019).

Thanks to international electronic trading platforms more and more opportunities for establishing own business for entrepreneurs in Ukraine are opened. This type of activity is especially popular for individuals as purchases in foreign online stores with the subsequent delivery of goods to end consumers. Plenty of sites such as next.co.uk, sportsdirect.com, decathlon.co.uk, hm.com, mountainwarehouse.com, lidl.de, carters.com, amazon.com, 6pm.com, calvinklein.com, zara.com provide favorable conditions for cooperation and periodic promotional offers in the case of wholesale purchases of goods. The popularity of browsing websites for reviewing goods at online stores is one of the main components in the sources used by Ukrainians on the Internet (Fig. 6).

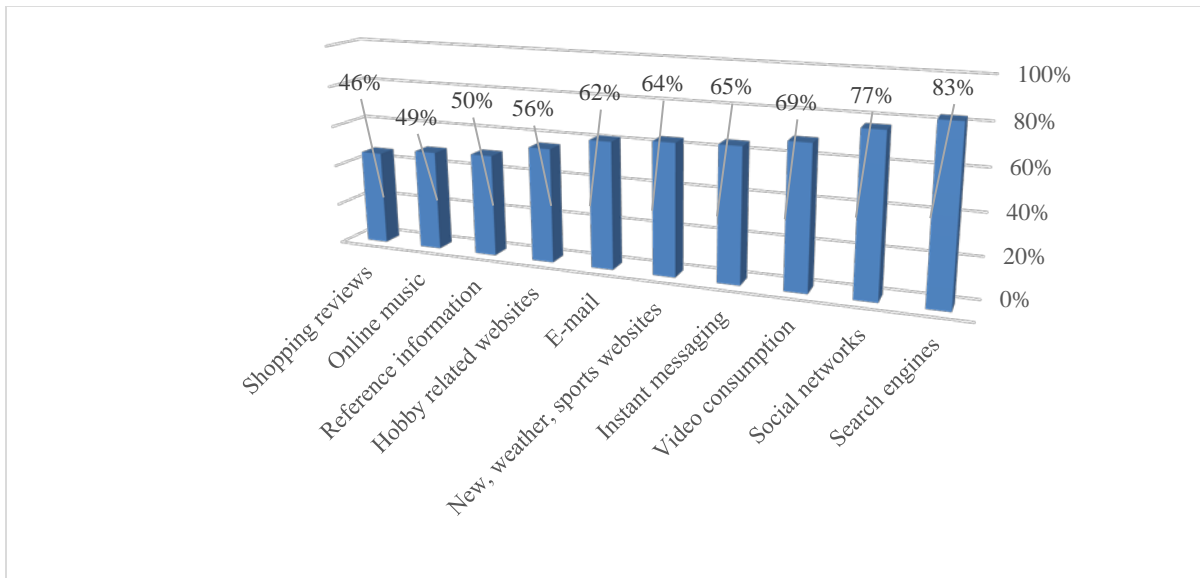


Fig. 6 – Popularity of various sources in the Internet among Ukrainians in 2018 [31]

We can conclude that the worldwide accessibility to the Internet is one of the defining phenomena of the present times reshaping the world as we know it (Kirichenko L., 2017).

**Conclusions.** The evolution of e-business in Ukraine has already passed a number of stages, but is still in a stage of growth. The Ukrainian market is ready for radical innovations in this field. Most Ukrainian companies are “scouting” according to the classification of innovation behavior types by Miles and Snow. They try to follow trends and changes in the market to use them to improve own business.

We understand that internet technology is no longer an extension of the business, it became the main driving force of change. Modern companies operating in various sectors change their way of

doing business to take advantage of the power of the internet technologies. We conclude that electronic businesses are built due to a rapid distribution of information. There is also a premise for the continuous change that, by its nature, requires constant improvement and innovation.

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**Letunovska N., Rybina O., Zienina-Bilichenko A., Klochko T. E-Business as A Component of Information Economy: Evolution and Future Challenges. Proceedings of the 35th International Business Information Management Association (IBIMA), ISBN: 978-0-9998551-4-0, 1-12 April 2020, Seville, Spain, p. 7854-7872 (WoS).**