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THE ROLE OF ICT IN THE DEVELOPMENT OF ENTERPRISE’S INTERNATIONAL ACTIVITY

РОЛЬ ІКТ У РОЗВИТКУ МІЖНАРОДНОЇ ДІЯЛЬНОСТІ ПІДПРИЄМСТВ

The globalization of the world economy necessitates the search for ways and means of cooperation beyond the borders of the countries. To be competitive, it is necessary to meet modern business conditions. The absence of a website, an automated inventory management system, a supply tracking system, a customer relationship management system, etc. can slow down development rates, increase costs and reduce profits, loss of suppliers and partners. The implementation of ICT can radically change the ways of functioning and efficiency of the enterprise. It has even become one of the benchmarks in the Global Competitiveness Index. The study analyzed the cost of world trade and found that in the period 1996-2014 their level decreased from 10 to 17% in different regions. An analysis of the structure of world trade expenditures revealed that in the commodity trade, ICT costs take second place after transportation costs and in trade of services - the first place. Research on the use of cloud technologies, such as e-mail, office software, enterprise database hosting, file storage, financial or accounting software, computing capacity for enterprises, CRM systems, by enterprises in EU countries and in Ukraine has made it possible to identify key differences between them. It is suggested to use such forms of ICT and IT products as e-commerce, blockchain and artificial intelligence for the development of international enterprise activity. E-commerce can take the following forms: online stores, announcement services, and online payment systems. Blockchain is proposed to be used for the control and tracking of goods in the global supply chain, the formation of smart contracts with foreign partners, reducing the time of payment for international transactions, eliminating the possibility of replacement or recording of data that is reserved. It is advisable to use artificial intelligence to improve the quality of forecasts of future trends in international markets, for example, changes in consumer demand, risk management in the supply chain in international supply. Thus, it is established that in the international activity of enterprises ICT can simplify and automate business processes, stimulate business to development, implement convenient control systems, reduce the time and financial resources needed to make decisions, break down linguistic and legal barriers in the exit process to markets.

Key words: information and communication technologies, implementation, international activity, e-commerce, blockchain, artificial intelligence.

Глобалізація світової економіки зумовлює необхідність пошуку способів та засобів співпраці поза кордонами країн. Щоб бути конкурентоспроможним, необхідно відповідати сучасним умовам ведення бізнесу. Відсутність веб-сайту, автоматизованої системи

управління запасами, системи з відстежування поставок, системи управління взаємовідносинами з клієнтами тощо може спричинити уповільнення темпів розвитку, збільшення витрат та зменшення прибутку, втрату постачальників і партнерів. Впровадження ІКТ спроможне докорінно змінити способи функціонування та ефективність діяльності підприємства. Воно стало навіть одним з критеріїв оцінки в «Глобальному індексі конкурентоспроможності». Під час дослідження було проаналізовано витрати світової торгівлі та виявлено, що у період 1996-2014 рр. вони в різних регіонах скоротились на рівні від 10 до 17%. Аналіз структури витрат світової торгівлі виявив, що у торгівлі товарами витрати на ІКТ посідають друге місце після витрат на транспортування, а у торгівлі послугами - перше місце. Дослідження напрямів використання хмарних технологій, а саме електронної пошти, офісного програмного забезпечення, хостингу бази даних підприємства, зберігання файлів, фінансових або бухгалтерських програм, обчислювальних потужностей для підприємств, CRM-систем, підприємствами в країнах ЄС та в Україні надало можливість визначити ключові відмінності між ними. Для розвитку міжнародної діяльності підприємств запропоновано використовувати такі форми ІКТ та ІТ продукти як електронна комерція, блокчейн та штучний інтелект. Електронна комерція може застосовуватись у таких формах: онлайн магазини, послуги оголошень та системи оплати онлайн. Блокчейн пропонується використовувати для контролю та відстеження товару в глобальному ланцюзі постачань, формування смарт-контрактів із зарубіжними партнерами, скорочення часу оплати міжнародних трансакцій, виключення можливостей заміни або запису даних, що резервуються. Штучний інтелект доцільно використовувати для покращення якості прогнозів майбутніх тенденцій на міжнародних ринках, наприклад, зміни споживчого попиту, управління ризиками в ланцюзі постачань при міжнародних поставках. Таким чином, встановлено, що в міжнародній діяльності підприємств ІКТ спрощують та автоматизують бізнес-процеси, стимулюють бізнес до розвитку, впроваджують зручні системи контролю, зменшують витрати часових та фінансових ресурсів, необхідний для прийняття рішень, руйнують лінгвістичні та законодавчі бар'єри у процесі виходу на ринки.

Ключові слова: інформаційні комунікаційні технології, впровадження, міжнародна діяльність, електронна комерція, блокчейн, штучний інтелект.

Introduction. It is difficult to imagine our nowadays life without the results of Scientific and Technical Progress. For example, ICT (information and communication technology) significantly simplified and accelerated many business processes, and therefore new approaches and opportunities for managing companies arose. The lack of geographical boundaries in the use of ICTs has given a tremendous impetus to the development of the global economy and international business. The introduction of ICT in the international activities allows to automate many processes, interact with contractors from different parts of the world in real-time, level the factor of different languages, monitor any business processes around the clock, save time and money through the use of electronic document flow and many other advantages. Therefore, in the current economic conditions, to ensure competitiveness in the international arena, the use of ICT for companies is a prerequisite. Considering the comprehensive nature of ICTs, the statistical observations on their use at the global level are carried out by many organizations

such as World Bank, World Trade Organization, OECD, Eurostat, country statistics agencies and others. Both domestic and foreign scientists have devoted their attention to the peculiarities of the use of ICT in business, as well as the impact of ICT on the world economy. However, the issues of use and enhancing the effectiveness of international activities through the use of ICT are not fully covered and need further research.

Setting objectives. The purpose of the research is to investigate the influence of ICT's on the development of enterprises' international activity. To achieve the purpose there were set the following tasks: to identify the types of ICT, to analyze the influence of ICT implementation on the results of foreign trade, to compare the main directions of using ICT's by European and Ukrainian enterprises, and to propose the implementation of specific forms of ICT and IT products, which can improve the international activity of enterprises.

Research methods. During the research, general scientific methods of scientific knowledge were used: theoretical and logical generalization, comparison, systematization, analysis and synthesis, methods of grouping, schematic representation.

Results. Information and communication technology (ICT) - is a general term emphasizing the idea of unified technologies and the integration of telecommunications (telephone lines and wireless telephony connections), computers, software, storage and audiovisual systems that allow users to produce, access, store, transmit and modify information. Accordingly, ICT contains of IT as well as telecommunications, media broadcasts, every types of audio and video processing, transmission, network management and monitoring functions [1]. On the basis of this definition, we can say that the active expansion of ICT began with the creation of the first personal computer, along with the formation of the global Internet.

Today, confirmation of the fact that competitiveness at the global level depends on ICT is the fact one of the 12 pillars of the Global Competitiveness Index is Pillar 3 "ICT adoption" [2]. Growing number of international companies are starting to implement and accelerate the speed of mastering digital business models. The rise of digital technologies promises to further convening international trade. There comes a new era, in which a range of innovations that involves the internet could have a significant impact on trade costs and international trade. The Internet of Things (IoT), artificial intelligence (AI), 3D printing and Blockchain have the capability to extremely change the way we trade, who trades and what they trade. Understanding how these technologies may affect trade world is essential to help maximize the gains. ICT may [3]:

- decrease trade costs;
- decline the value of distance, whether geographical, linguistic or regulatory;
- contribute to searches of products;

- encourage supervising quality and reputation;
- alleviate matching consumer preferences to products.

As can be seen in Fig. 1, in the period 1996-2014, trade costs are reduced annually in all regions. The costs are calculated as a ratio between international and domestic trade. The cost reductions are in the range of 10 to 17% over the period, which is quite significant. The main reason for such a significant reduction in international trade costs is the intensification of globalization processes over the period, which have helped to remove many barriers.

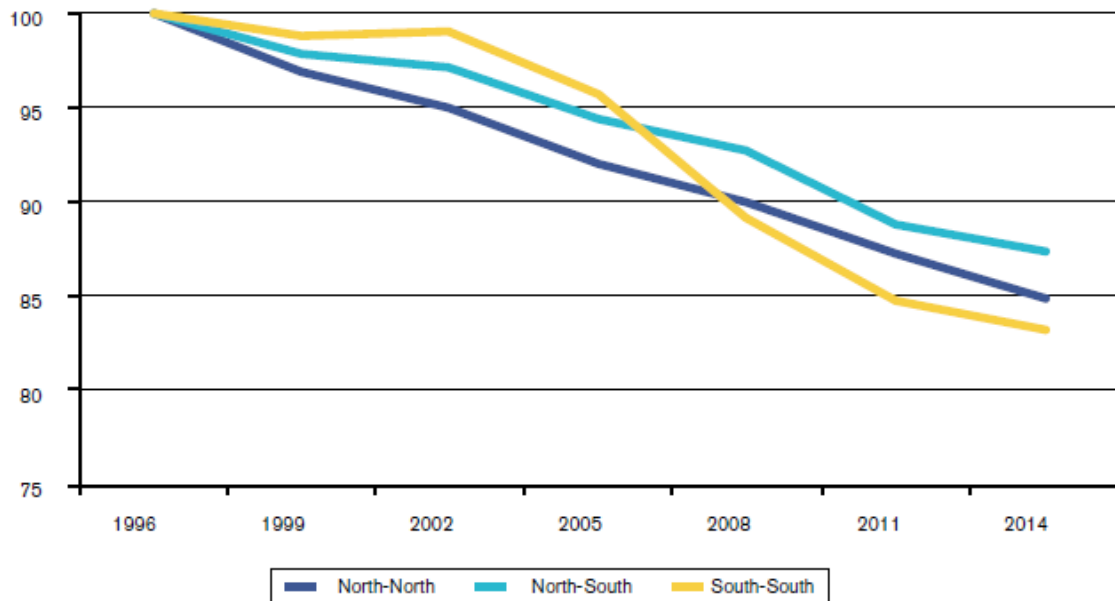


Figure 1- Overall trade costs, 1996-2014

Source: World Bank-ESCAP database on International trade costs, [3].

The cost structure of goods and services is presented in Fig. 2. The main costs for both trade in goods and services are transport costs and information and transaction costs.

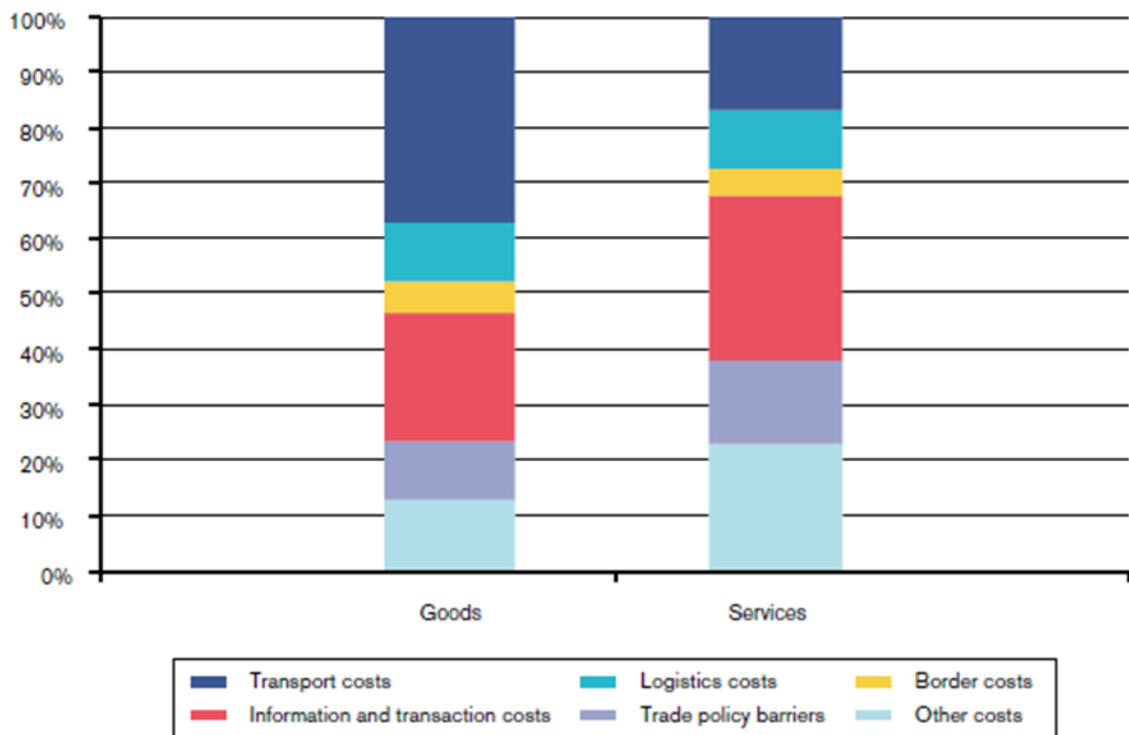


Figure 2 - Trade costs breakdown, based on data from 2014 (percent)

Source: WTO calculations using World Input-Output Database (WIOD) data and methodology from Chen and Novy (2011), [3].

Information and transaction costs include obstacles that firms have to overcome in order to find trading partners, needed data about tastes, regulations and technical requirements, and enforcing contracts. Acquiring information about product standards in a foreign country, distribution channels, and customers' preferences are costly, and these costs grow with cultural and linguistic distance. Moreover, transaction costs are high for cross-border trade because of various institutional frameworks and the need for cross-border financial transactions and currency conversions [3].

ICTs have quickly become an important part of enterprise functioning process: the way they organize their production or service provision processes and their internal or external communication. Internet access is a must-have for nowadays business. In 2018, the large majority (92 %) of EU enterprises used a fixed broadband connection for internet access. But using cloud computing services is a more advanced ICT option, that's why only 1 in 4 (26 %) EU enterprises used cloud computing services. In relation to 2014, this reflects a growing of 7 percentage points. Cloud computing services can conform to a broad spectrum of other business ICT needs. In 2018, nearly 7 out of 10 enterprises (68 %) used the cloud for storing files in digital form. Some 53 % stated, they use it as office software, while 48 % used it to locate their database. Furthermore, by using the cloud, businesses can access relatively much more advanced customer software

applications, e.g. for finances/accounting and for managing information about their customers (CRM) (38 % and 29 % respectively) (Fig. 3).

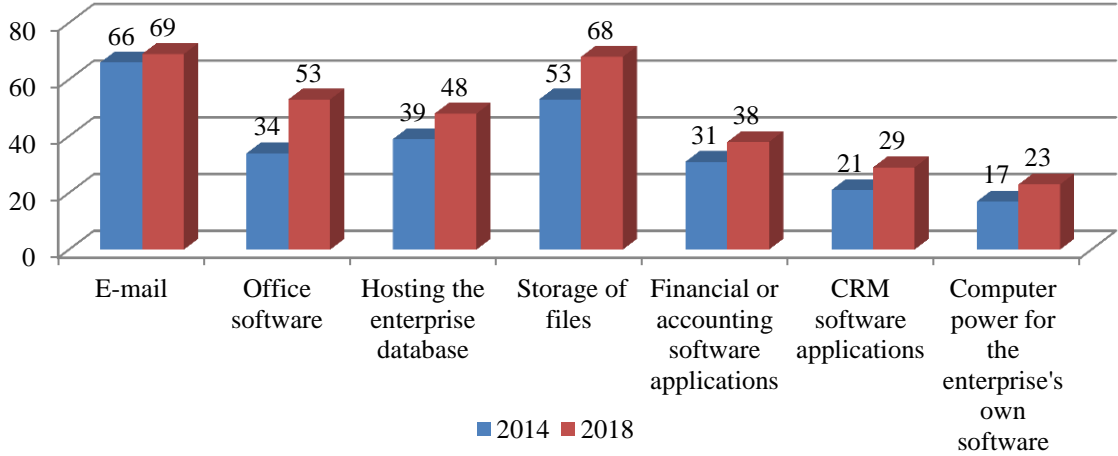


Figure 3 - Enterprises using cloud computing services, by purpose, EU-28, 2014 and 2018 (% of enterprises using the cloud)

Source: Eurostat ([isoc_cicce_use](#)), [4]

Besides, 23 % stated they used the (usually high-performance) cloud computing platforms for computing power for running their own business software applications [4].

The statistics of the ICT using by Ukrainian companies have begun to emerge recently. However, they show an increase in virtually all categories of indicators. For instance, Fig. 4 shows the number of enterprises that used cloud computing services in 2017 and 2018 in compliance with the size of the enterprise and the form of ICT service the enterprise purchased.

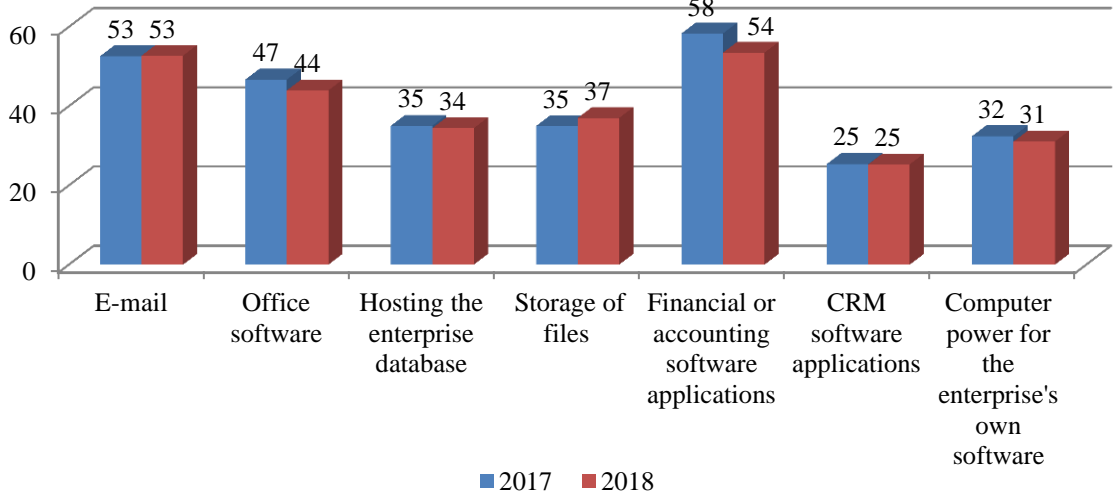


Figure 4 - Ukrainian enterprises using cloud computing services, by purpose, 2017 and 2018 (% of enterprises using the cloud)

Source: generated by the authors according to the data [5]

Comparing Ukrainian and EU enterprises concerning cloud computing services use, it can be noted, the level of using such ICT in EU countries is somehow higher. Purposes for cloud computing services using are also different. The most popular service in EU is E-mail, in Ukraine - Financial or accounting software applications. Such a distribution can perhaps be explained by different types of taxation in Ukraine and in the European Union. In Ukraine, it is more complicated and every company needs a program that would help maintain accounting accounts, while in the European Union the main share of ICT falls on the Email. Of course, you should not underestimate social networks, messengers and chat bots, which can become very useful.

Nevertheless, the EU uses more ICT technologies than in Ukraine. This is not surprising, such a percentage of ICT use in Ukraine was influenced by many factors - political, economic, technological and even demographic. If Ukraine take a successful example and cases of European countries, this can significantly contribute to Ukrainian business.

It is not yet expedient to make a deeper comparative analysis, since the observation period in Ukraine is still very short.

The international activity of enterprises can reduce bottlenecks during managing business processes that can arise in any direction. The volume of foreign trade of domestic businesses are beginning to grow actively, managers have to take care in advance in order to provide the continuity and clarity of the international activities management.

Information and communication technology comprises variety of IT products, which are also widely used in the enterprises's international activity (fig. 4 and fig.5). But there also exist specific forms of ICT and IT products, which can be successfully implemented in international activity. They include E-commerce, Blockchain, and Artificial Intelligence.

E-commerce. E-commerce – is the activity of buying and selling of various products or services through the Internet platforms. Modern e-commerce usually uses the World Wide Web for transactions cycle (such as Amazon, iTunes store)

Collecting information is a costly activity when it involves acquiring information across national borders. These costs can be so high that they can be considered a substantial barrier to trade. E-commerce makes the trade process a lot easier, faster, and less expensive [6]. There can be proposed such ways to implement commercial relations in international activity [7]:

- *Online stores* – the most extensive type of e-commerce. All companies can provide shopping of various products online. After the purchase a company delivers physical goods or gives links to bought services (music, books, education);

- *Announcement services.* Areas that's focused on C2C format. Users can create a product or service card on the platform mentioning the conditions of purchase, defining them in one category or another, according to which buyers can

find his customer. With these services, even the smallest business will be able to find first clients

- *Online payment systems*. Services that offer the opportunity to pay utility bills, fines, medical services, and others. A variant of the implementation of electronic commerce on the example of a site for receiving payments.

Blockchain. It is used for storing and processing personal data and identification, in marketing and computer games. Its implementation in an enterprise's international activity can be expressed in such ways:

- to eliminate the possibility of substituting or writing backdating data. It minimizes corruption risks and guarantees the constancy of information, and also allows you to track all interactions between customs authorities and carriers of goods.

- to control and track all information about the cargo, the clearance form, the bill of lading, insurance, as well as inspection bodies, such as carriers, customs officers and auditors.

- to use smart contracts- it is a computer protocol for the automated fulfillment of contract obligations. It's automatic A smart contract in automatic mode (without the participation of a third party) executes the transaction and monitors its execution subject to the terms of the contract, which are also recorded in the form of a code.

- to reduce the time of a letter of credit transaction from 7-10 days to less than 4 hours.

- to reduce the number of intermediaries between exporters and importers, which contributes not only to acceleration but also to cheaper transactions.

These circumstances are extremely important for small and medium-sized businesses, which often experience difficulties with foreign trade.

Artificial Intelligence (AI). It allows computers to learn from their own experience, to adapt to the given parameters and to perform those tasks that previously could only be done by humans. The biggest impact AI makes on global value chains (GVCs). It can be used in such cases:

- to improve predictions of future trends, such as changes in consumer demand;

- to manage risks along the supply chain.

By implementing to the business better manage complex and AI, one will improve warehouse management, demand prediction, and the accuracy of just-in-time manufacturing and delivery [8].

Implementation of AI can bring many benefits to the company, among which increase productivity and efficiency in packing and inventory inspection;

developing smart manufacturing. It emphasizes on connectivity could open up GVCs to more specific participation by specialized service suppliers in areas such

as R&D, design, robotics, and data analytics tailored to discrete tasks in the supply chain [9].

The main advantages of using AI in international trade are:

- simplified process of interaction (analyzing economics, searching through global internet to find the right partner, forecasting an outcome from each deal);
- using digital platforms to provide an opportunity for small businesses to go global;
- automatization and controlling warehouses, working teams and shipping;
- delegation of non-essential tasks to AI.

Conclusion. During the research, it was found that that ICT makes a tremendous impact on the international activity of enterprises. Thus, in the period 1996-2014 trade costs reduced in the range of 10 to 17%. The main costs for both trades in goods and services are transport costs and information and transaction costs. According to the statistical data, the vast majority of EU enterprises use the internet. The most popular ICTs among EU enterprises are e-mail, storage of files, office software, hosting the enterprise's database, financial and accounting software, CRM, computing power for enterprise's own software (in the order of declining usage volume). Ukrainian enterprises' priorities in using ICTs differ from EU ones: financial and accounting software, e-mail, office software, storage of files, hosting the enterprise's database, computing power for enterprise's own software, CRM (in the order of declining usage volume). All mentioned ICTs can use enterprises of different types of activity. In order to develop the enterprise's international activity, it is recommended to some specific ICTs and IT products, such as e-commerce, blockchain, artificial intelligence, which not only reduce the need in personal contacts but also can improve predictions of future trends, manage risks along the supply chain, simplify the process of interaction, use digital platforms to provide an opportunity for small businesses to go global, a delegation of non-essential tasks to AI.

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