

UDK 339.7

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### ANALYSIS OF GLOBAL TRENDS IN THE DEVELOPMENT OF THE IT FIELD

The article focuses on the current global trends in development of IT. It analyses global expenditure in IT in 2014-2016. It considers education programs of world's most promising universities to highlight the new directions of development in IT: information security, robotics, artificial intelligence, biometrics and engineering etc., studying world's leading countries in IT: the USA and China. And it also defines the key studies and technologies of considered universities to observe the current and the future needs of the global market.

**Key words:** IT, information and communication technologies, information security, software.

Задорожнюк Н.О.

### ДОСЛІДЖЕННЯ СВІТОВИХ ТЕНДЕНЦІЙ РОЗВИТКУ ІТ-СФЕРИ

В статті розглянуто сучасні світові тенденції розвитку ІТ-сфери. Проаналізовано світові витрати ІТ-сфери за 2014-2016 роки. Розглянуті програми навчання в найбільш перспективних університетах світу, які дозволяють виявити сучасні напрямки розвитку ІТ-сфери: інформаційна безпека, робототехніка, штучний інтелект, біометрія і інженерія тощо. Визначені ключові дослідження та технології розглянутих університетів, які відображають сучасні і визначають майбутні потреби світового ринку. Досліджено лідерів ІТ-сфери: США та Китай.

**Ключові слова:** ІТ-сфера, інформаційно-комунікаційні технології, інформаційна безпека, програмне забезпечення.

Задорожнюк Н.А.

### ИССЛЕДОВАНИЕ МИРОВЫХ ТЕНДЕНЦИЙ РАЗВИТИЯ ИТ-СФЕРЫ

В статье рассмотрены современные мировые тенденции развития ИТ-сферы. Проанализированы мировые расходы ИТ-сферы за 2014-2016 годы. Рассмотрены программы обучения в наиболее перспективных университетах мира, которые позволяют выявить современные направления развития ИТ-сферы: информационная безопасность, робототехника, искусственный интеллект, биометрия и инженерия и тому подобное. Определены ключевые исследования и технологии рассмотренных университетов, которые отражают современные и определяют будущие потребности мирового рынка. Исследованы лидеры ИТ-сферы: США и Китай.

**Ключевые слова:** ИТ-сфера, информационно-коммуникационные технологии, информационная безопасность, программное обеспечение.

**Problem statement.** Nowadays, the competitiveness of a country cannot be increased on the global market without the development of IT and therefore without the development of its complementary fields. IT is a field that provides the development of global economies as a whole, thus the research in IT are not only relevant but also necessary.

**Review of recent studies, which address the same problem.** Studies connected to research in IT are becoming one of the main issues addressed by researchers in their studies. Abramova's A.V. [1] and Nikitenkova's M.A.[2] research analyze the role of the USA in global IT market; Brodskiy's N. [3] and Kondratieva's K.A. article highlights the global trends of IT-development; Kusnezova's G.V. [5] articles focuses on the development of IT in the Republic of Belarus. However, in numerous scientific articles mentioned above, the current global trends of IT are not fully analyzed.

**Goal of the article.** The goal of this work is research of modern global trends in IT.

**The main material:** Modern market trends demonstrate that big corporations have a huge impact on IT development on global level. It is because those market participants do not only reprocess information, but they also have a crucial influence on national and global economics. Another important idea is that nowadays global informatization and computerization of various sectors of global economics is growing, causing the development of IT. According to the previously mentioned trends, the global expenditure represented in Table 1 play an important role in IT studies and its future development.

Table 1

Global expenditure on IT market in 2014-2016

| Sectors of the IT market | Volume of world's expenditure of the IT field by years |      |      | Deviation (increasing + / decreasing -) of world's expenditure of the IT field in 2016 / 2014 |             |
|--------------------------|--|------|------|---|-------------|
|                          | 2014   | 2015 | 2016 | Absolute, \$billions  | Relative, % |
| 1. Hardware              | 693  | 645  | 588  | -105  | 84,8        |
| 2. Data-center systems   | 142  | 171  | 170  | +28   | 119,7       |
| 3. Software              | 314  | 314  | 333  | +19   | 106,1       |
| 4. IT-services           | 955  | 865  | 899  | -56   | 94,1        |
| Total                    | 2104   | 1995 | 1990 | -114  | 94,6        |

Note. Calculations based on source [7]

According to the calculations in table 1, a significant reduction of the global cost on hardware can be observed, while for data center systems and software the cost was increasing in 2014-2016.

The specialists in the field provide the development of IT, thus special attention should be paid to education by increasing its quality and by providing future specialists with laboratories and opportunities to participate in studying advanced technologies etc. IDC analysts predict the expenses on information security will increase up to 100 billion dollars by 2020 [7]. As a result, there is a need of analyzing the world's most promising universities in the IT field (table 2).

Table 2.

The most promising world's universities in the IT field

| University name                                   | Educational programs   | The main research interests and technologies  |
|---|--|---|
| 1. Zurich – Swiss Federal Institute of Technology | - Theoretical informatics;<br>- Information security;<br>- Software engineering;<br>- Software development;<br>- Robotics;<br>- Distributed system;<br>- Visual computing;<br>- Bioinformatics;<br>- Management systems. | Special attention is paid to mathematics, chemistry and physics. The research is focused on information processing, energy, climate changes.      |
| 2. Ecole Polytechnique Federale de Lausanne       | - Engineering;<br>- Cryptography;<br>- Communications;<br>- Coding;<br>- Mobile networks.  | Prepares specialists in micro technologies and communication systems engineers. IT studies are based on the School of computer and communication. |
| 3. Massachusetts Institute of Technology          | - Artificial intelligence;<br>- Computer systems;<br>- Applied physics;<br>- Biometrics and engineering.   | The research is focused on artificial intelligence and robotics.  |
| 4. Stanford University                            | - Computer sciences;<br>- Software;<br>- System technologies;<br>- Artificial intelligence;<br>- Robotics.   | Has the most high-tech manufactures, 18 laboratories, and research centers.   |

Continuation Table 2.

| 1   | 2   | 3   |
|---|---|---|
| 5. Carnegie Mellon University in Pittsburgh | - IT and information security (MSIT-IS);<br>- IT and mobile systems (MSIT-MOB)<br>- IT and software management (MSIT-SM). | Studies innovations in IT, robotics and artificial intelligence; innovative mobile systems, services, devices and developed apps. World's leader in generating of revolutionary ideas and creating and promoting business startups. |

Note. Based on source [8]

The previously mentioned educational programs of the most promising world's universities enable us to determine the current directions of the IT field development: information security, robotics, artificial intelligence (AI), biometry and engineering, etc. Using the information from the table 2, we determined the most important research and technologies of the mentioned universities, which show us the current needs of the world's market and define its future.

At the end of 2016, the global IT market fell by 0.3%, with a total volume of deliveries of \$ 1.99 trillion. It should be noted that the market of IT-services has become more active for mergers and acquisitions (M&A), thus the volume of corresponding investments has doubled. The most of these contracts were signed in North America and Europe. The main trends on the market of IT-services in 2016 were the following: large cyber-attacks, which increased the demand on actives in the information security field; the popularity of outsourcing the development of M&A market in the IT-services field; the popularity of cloud-based projects, which has become more attractive and a priority for investors. The European IT market is characterized by the high amount of the IT-contracts, which emphasizes the demand on the new IT-infrastructure [7].

The development of the IT field in the world is characterized by the ICT Development Index, which is calculated with the methodology of the International Telecommunication Union based on 11 indicators. This Index shows the achievements of the world's countries in ICT development. Thus, based on the data found in [9] the leaders in the rating by the ICT Development Index for 2015 and for 2016 are: South Korea (8.93); Denmark (8.88); Iceland (8.86); Great Britain (8.75) and Sweden (8.67). Therefore, these countries are leading by the next indicators: access to ICT, usage of ICT, population's knowledge about these technologies, etc.

China and USA should be highlighted among the countries that develop and use advanced IT. The development of the entrepreneurship and innovations was one of the most prioritized directions in China, especially in the IT field in 2015, and in 2016, it was the implementation of different startups. The Chinese government took concrete measures aimed at supporting entrepreneurship and innovation by optimizing administrative processes, establishing an innovation foundation, and introducing preferential tax facilities. As a result, foreign research centers became more active. For example, in 2015 Beijing Automotive Industry Group has established a technical center in Silicon Valley, which was responsible for the software development. With the implementation of the project-initiative named "Made in China 2025", an increase of Chinese foreign investments are expected in sectors declared as a priority by the Chinese government, including the developments in the IT field, robotics, biomedicine, aerospace equipment, etc. A special attention is given to the IT field through the implementation of "Internet Plus" strategy. Informational computer technologies (ICT) are the key in the promotion of innovations in China, because they include the whole range of services and technologies, which enable information management. The number of Chinese companies has increased in the ICT sector, and they started to research the foreign markets to determine the investment opportunities to get access to the leading technologies and knowledge.

USA is one of the leaders in the IT field and has a range of advantages: a developed infrastructure and human resources; a highly developed economy and a competent legislation in the IT field witch is able to provide a solid protection of the author and intellectual property

rights. The main innovation fields in 2016 in USA were and still are mobile technologies and tables; analytics, which gives the ability to analyze an object in real time and to process a big volume of data; data visualization; new concepts and technologies for integration and stimulation of new innovative projects. However, the rapid development of the IT field leads to certain problems related to issues of trust and security in the implementation of transactions within the new electronic services. Besides, as the experience of the USA has shown, the mere mastering of modern ICT is not enough to ensure a positive economic effect at the macro level. Government support is needed for the IT field development by creating and building up the national institutional potential for forming and spreading knowledge. Thus, there are principles of a new politics in ICT field applied in the USA for the economic development of the country, an analysis of ICT usage is being conducted for the creation of innovations aimed at improving people's lives and at increasing the competitiveness of the US economy.

**Conclusions.** Thus, the level of the IT field characterizes the development of a country in the global context. The achievements in the field of information technologies facilitate the modernization of the processes and transformations in other sectors, thus stimulating its development. They also enable modern products and services to meet the market demands better and the companies to reduce operations expenses, increasing the global efficiency of economy.

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UDC 339.9

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### FINANCIAL SYSTEM OF GREECE AS A DETERMINANT OF ECONOMIC WELL-BEING OF THE COUNTRY

The article reveals the peculiarities of functioning of the financial system of Greece. The article consists of an analysis of the relationship between the level of economic well-being of the country and the level of development of the financial system of the country. As a result of the analysis, indicators of financial development in Greece that have an impact on the country's economic prosperity have been identified.

**Key words:** financial system, economic well-being of the country, Greece, economy

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