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PROBLEMS OF THE US AND CHINA ICT SECTORS IN TERMS OF MACROECONOMIC PROCESSES

Economic development of the modern society is strongly associated with the rapidness of formation and development of information and communication technologies (ICT). In recent years, the expansion of broadband Internet channels, high quality mobile phones and a sharp boost of communication possibilities in general have been happening in all the countries, including the developing ones. The result revealed the growing similarity of rates within which information technologies and quality characteristics of the economy are formed. Software has a major influence on today's China. In its dispute with the US China is competing in this area, raising the world economic processes and technology to a new level.

Keywords: information and communication technologies; China; the US; world trends.

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ПРОБЛЕМИ СЕКТОРІВ ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНИХ ТЕХНОЛОГІЙ США І КИТАЯ З ТОЧКИ ЗОРУ МАКРОЕКОНОМІЧНИХ ПРОЦЕСІВ

У статті показано, що економічний розвиток сучасного суспільства суттєво пов'язаний зі швидкими темпами становлення та розвитку інформаційно-комунікаційних технологій (ІКТ). За останні роки у всіх країнах, у тому числі тих, що розвиваються, можна спостерігати розширення мереж широкосмугових Інтернет-каналів, високу якість мобільних телефонів, стрімке збільшення можливості спілкування тощо. Результати дослідження виявили зростаючу схожість темпів формування інформаційних технологій і якісних характеристик економіки. Програмне забезпечення має серйозний вплив на сучасний Китай. Китай може конкурувати в цій галузі з США, що сприятиме виходу світових економічних процесів та технологій на якісно новий рівень.

Ключові слова: інформаційно-комунікаційні технології; Китай; США; світові тенденції.

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ПРОБЛЕМЫ СЕКТОРОВ ИНФОРМАЦИОННО- КОМУНИКАЦИОННЫХ ТЕХНОЛОГИЙ США И КИТАЯ С ТОЧКИ ЗРЕНИЯ МАКРОЭКОНОМИЧЕСКИХ ПРОЦЕССОВ

В статье показано, что экономическое развитие современного общества в небольшой степени связано с быстрыми темпами становления и развития информационно-коммуникационных технологий (ИКТ). За последние годы во всех странах, в том числе развивающихся, можно наблюдать расширение сетей широкополосных Интернет-каналов, высокое качество мобильных телефонов, резкое увеличение возможности общения и т.д. Результаты исследования выявили растущее сходство темпов формирования информационных технологий и качественных характеристик экономики. Программное обеспечение оказывает серьезное влияние на современный Китай. Китай может конкурировать с США в этой области, способствуя выходу мировых экономических процессов и технологий на качественно новый уровень.

Ключевые слова: информационно-коммуникационные технологии; Китай; США; мировые тенденции.

Problem statement. Analysis of any economic situation requires facts, which must be based on general theoretical and methodological grounds. The economic

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development strategy in the world is closely associated with some global assumptions: the unity of the world and its interdependence are growing, while the "computer networks and telecommunications are gradually forming a global market where competition intensifies, innovations in the economy are primarily related to computer technology, and innovation influences the development of the economic theory itself" (Abramova, 2006). The above features should be considered in the analysis of such an important field of confrontation between the US and Chinese economies, as ICT. It would be relevant to quote R. Aaron that "depending on the time and circumstances, international relations are dominated by either the direct struggle or a competition of intellect in strategies or a dispute... the degree of rivalry of states and the competition of ideologies are greatly increasing, which multiplies their bellicosity" (Aaron, 2000: 260, 874).

Recent publications analysis. The struggle to expand the sphere of influence also occurs at the economic level, resulting in competition for expanding markets and resources in general. But now the situation is that the "size of Chinese economy will be equal to that of the US in 2035 and surpass it in half by mid-century. This will entail some unclear, but potentially painful strategic implications for the United States and will require changes in economic and military fields" (Keidel, 2008). The battle of the giants of economy and innovations in the ICT sector is the subject of much attention, not only by expert practitioners in business and politics, but also social scientists working on the processes taking place in the economic sphere, which, in turn, affect the development of human potential. Especially valuable among them, in our opinion, are the researches by J. Attali (2006), Y. Huang (2012), D. Korten (1998), A. Keidel (2008), D. Steinbock (2013) etc.

Research objective. The prevailing relations in the current system of the ICT development are not accidental: the contemporary civilization has such a defining feature as industrial character. From the very beginning of its formation its leading side was the creation, improvement and application of various tools. One only had to bring them to perfection, which is what we currently observe in the world. As for the role of state in the development of engineering and technology, there is also some historical background, peculiar for each region, and common to the entire world. The contribution of countries, regions and some corporations in this process will eventually become purely virtually as the interdependence increases and labor division becomes purely functional.

But this will happen in the future, as for the present ICT development, it happens in several directions: research and theoretical developments, especially in software, business and trade, i.e. yielding real income and profit, the solution of military and strategic, social and political problems; preservation of the natural environment and the survival of humanity. In different countries, the emphasis on one or another direction of development and application of ICT depends on the country's economic strengths and strategic development objectives it sets on the regional and global levels. The consideration of these issues at the level of confrontation of powerful economies – the US and China, is of undoubted scientific interest and practical importance.

Key research findings. It is known that today's society continues to evolve thanks to the development of ICT. Over the past few decades there has been a sharp increase

in the quality and availability of mobile telephony, Internet and broadband communication in all the countries. This erases barriers in achieving the goal of "information society for all", adopted by the leaders of many countries during the top-level World Summit on the Information Society (World Summit on the Information Society).

Special attention should be paid to the fact that global revenues of leading telecommunications companies in 2012 amounted to 1.861 trln USD, having increased by 3.5% within a year (in 2011 they increased by 9.5%). The world's largest telecom companies have maintained their positions: the 3 leaders include the Japanese NTT Group (134.1 bln USD), the American AT&T (127.4 bln USD) and Verizon (115.8 bln USD). Spanish group "Telefonica" (80.1 bln USD) gave its fourth position to "China Mobile" (88.9 bln USD). 20 leading telecom companies from 66.5% of the sector revenue and serve more than 4.275 bln users (100 major telecom companies in the world, 2012).

The importance of the ICT development is proven by the attention of international community; in particular, we should note the creation of special structures within the UN for the analysis of the situation and proposals. The 2012 UNCTAD report states that "the volume of software production in China grew from 7 bln USD in 2000 to 285 bln USD in 2011, with up to 90% of the products supplied to the domestic market. A significant part of the local production belongs to the software for ICT devices and other products (which are often successfully exported from China to the world markets), or is developed to meet the rapidly growing demand for ICT within the domestic economy" (Report of Information Economy, 2012: 7, 8).

Regarding the position of the ICT sector in the United States, there is a number of other advantages: the possibilities of domestic companies in the software/IT services sector are twice bigger, government purchases of software and IT services are more than 3 times larger, the demand at the export markets is two times less limited, the scale of computer software piracy are at the zero level (Report of Information Economy, 2012: 8). Thus, the general trend of the ICT development in developed countries, including the United States, is associated with historically defined prospects of scientific, technological and economic development, the possibilities for using both domestic and external markets.

The country that inherited its centralized economy from the socialism has found the strength to carry out systematic structural changes in management and organization of telecommunications and eventually managed to break forward. However, "despite the presence of dynamic domestic market, high human potential, integration into the East Asian economic area and the implementation of orders outsourced by Japan, China has its weaknesses: lack of organizational and managerial expertise required to conduct high quality outsource development, a relatively low level of English proficiency, domination of small companies with low turnover" (High technologies and the ICT). And this is no coincidence. As pointed out by D. Korten at the end of the previous century China had a lot of problems: "in 1997, experts warned that the deepening inequality and rising unemployment threaten China's social stability. Generating about 18% of ozone-depleting substances in the world and being the largest producer of greenhouse gases after the United States, China is also one of the most polluted countries in the world. According to the World Bank estimates, more than 2 mln people die each year in China from the harmful effects of pollution, about

8% of China's GDP is lost every year due to the damage to life, health and property from air and water pollution. If you subtract the depletion of resources and the cost of fighting crime and corruption, the real rate of economic growth will be insignificant" (Korten, 1998: 72).

Within a short period of time a lot of great and balanced work has been done on the economic restructuring in China, and "in the long run a more balanced nature of the Chinese ICT sector will be able to create in China more favorable conditions for innovative development, including in the field of software development, and perhaps eventually shift the export focus from software development to the development of Chinese own software that would be highly competitive at the world market" (High technologies and the ICT).

As demonstrated by the history of development of the ICT sector in China, nothing would have happened without direct investment of foreign capital and without the cooperation with the world's leading corporations in this sector. Cooperation takes place not only in scientific and industrial areas, but also in trade. Competition is strong in all these areas. Consider, for example, the main trends in the development of the ICT business in the United States and China. Every developed country like the United States focuses all its efforts on the development and production of unique ICT products and their subsequent export. As soon as a technology becomes expensive for a developed country because of the labor-intensive, large-scale and costly operations, it is transferred to Asian countries where labor is cheaper. According to the theory of the innovative product life cycle, it turns out that the country that invented a technology decides to import it, rather than producing at home. This explains the large share of finished equipment in the US imports.

Developing countries such as China and South-East Asia, strive to maximize their production in the ICT sector. For example, China buys large quantities of component parts, which will later be used in production. As a result, it has huge export volumes of finished telecommunications and computer products. By importing components China gets a huge amount of added value, created within the country, as the cost of a finished product is much higher than the cost of imported component parts.

What is the place of the US at the global ICT market? The high rank of the US exports is explained by the value of high-quality products manufactured in all 3 areas. Products from the United States are characterized by high quality, innovation, recognition and brand loyalty worldwide. China's economy is specialized in cheaper mass production of products known in the world and are of high demand. Very few new products are coming out of China. Nearly 82% of China's high-tech exports comprise of the products based on foreign technologies and components manufactured in developed Western countries. The small rest of China's exports account for proprietary Chinese technology (National Science Board. Science and Engineering Indicators, 2006).

The situation in the US is as follows: in engineering, computer and exact sciences more than 41% of all graduate students of American research universities are foreigners residing in the United States. The majority of these young professionals come from China and India. This points to an assumption that the scientific base will be created in these countries in the future (National Science Board. Science and Engineering Indicators, 2006).

It's a fact that there are currently 3 providers of information technology standards in the world – the US, Europe and Japan. The US dominates because almost all the world leading IT companies are based in this country. Japan mostly applies and develops American standards, and Europe wants to develop independently many areas of ICT. It succeeded in the field of cellular communication and business software. Recently, China started to qualify for the role of the exporter of information technology standards. In general, experts forecast the progressive development of Chinese economy and science in the field of ICT, when it clearly competes with leading countries in this field, such as the US, Japan and South Korea.

Experts say that "after decades of intense globalization, development at the periphery of production capacities and exploiting cheap labor in emerging economies, with the advent of ICT industries and scientific establishments in large economies such as China and India, the old dominant system of the ICT development has not only collapsed structurally, but also dispersed geographically" (Steinbock, 2013).

Let's take a look at the regional participation of these countries in sales and distribution of products and technologies as exemplified by the South Caucasus countries, particularly Azerbaijan. It is a fact that a number of well-known US companies, including CISCO, INTEL, HP are currently operating in Azerbaijan. Joint projects are being implemented not only in the ICT sector; they also include transport sector and agriculture. The launch of a communications satellite was directly aided by the US, and the launch of the second similar satellite has already been planned (Azerbaijan and USA have agreed on cooperation in several areas).

The cooperation in the ICT has a great development potential here, given the US dominant position in this field throughout the world.

As a side note, the cooperation between Azerbaijan and China is carried out in other areas apart from the ICT sector. There are more than 20 legal partnership acts, including the agreement on encouragement and mutual protection of investments, avoidance of double taxation, cooperation in customs etc. Today "in various sectors of the Azerbaijan's economy there are 69 enterprises with Chinese capital" (Azerbaijan and China are expanding their trade and economical cooperation). The trade turnover between the two countries reached 1.2 bln USD in 2012. Experts say that further investments are necessary (Commodity turnover between Azerbaijan and China increased 600 times).

It is also a fact that trade cooperation of Azerbaijan with South Korea, in addition to Japan in the ICT sector is also gaining a significant turnover. Thus, we can safely admit that cooperation is expanding; gaining momentum in all of these directions, but at the same time it is subject to the processes of world economic and political development in the globalizational context. All the mentioned countries have positive prospects; however the pace of development still differs, mostly in China's favor.

What are the general conclusions? The ICT sector in the US is the locomotive for the rest of the global world. The issue of budget deficit has become crucial to the States. The only area with a tendency to develop is the ICT. Much of the research and inventions are made by the companies on the territory of technoparks, so they play a key role in enhancing the US competitiveness at the global market (Abramova, 2006).

As pointed out by Zh. Attali, in the US "in the coming decades new technologies will be improved, productivity increased, armament will be modernized to protect the political interests of the country, ensuring its access to raw materials and maintaining its strategic influence. The United States will maintain their technological leadership through strong governmental investments aimed at their strategic enterprises, particularly in the military field" (Attali, 2006).

Chinese ICT market hasn't been fully saturated, although each year company revenues grow in the national economy. Thanks to government support of ICT Chinese companies started leading at international markets, currently squeezing out competitors. However, for a few more years, Chinese ICT imports will not have high volumes, as many manufacturing and research institutes need technological upgrading that the majority of Chinese firms are unable to provide.

There are immense prerequisites for competitiveness growth and overall development of Chinese manufacturing. At the communication product markets, China is already a reliable and competitive manufacturer, also regarding office equipment and computer equipment. The best representatives of this industry are Chinese companies such as Lenovo, which demonstrates an effective marketing strategy, innovations etc. Activity diversification is a competitive advantage of Chinese companies. After their success at the computer products and telecommunication network markets, Chinese companies found themselves in growing market segments such as tablet PCs, smart phones and other mobile device technologies.

Chinese market is filled not only with large companies that have high ranks among the world suppliers of ICT products, but also smaller companies already operating at foreign markets or just the beginners. International markets of ICT equipment are extremely competitive, while launching a product to them doesn't have any particularly strict requirements. To compete with powerful players at the market, Chinese companies should have sufficient technical and scientific expertise, financial resources, which will support the high quality of their work, including the level of additional costs of establishing an attractive price level etc.

However, experts warn about the weak prospects for the development of Chinese economy, associated with microeconomic indicators (performance reduction, lack of resources for a number of private sector firms), in the bottom we see the commitment to a business model based on low costs rather than technology and improvement, weak corporate and technical development of the corporate sector (Korten, 1998: 59).

However, China already ranks high at the world market of ICT products due to its economy's focus on the export of computer and telecommunications equipment. The most likely prospects for the development of relations between China and the US in the field of ICT are not associated with rivalry, but with the search for the ways of mutually beneficial cooperation. The world is global, and the possibilities of the information society to build good business are limitless. And, both the US and China understand this.

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КНИЖКОВИЙ СВІТ



СУЧАСНА ЕКОНОМІЧНА ТА ЮРИДИЧНА ОСВІТА ПРЕСТИЖНИЙ ВИЩИЙ НАВЧАЛЬНИЙ ЗАКЛАД **НАЦІОНАЛЬНА АКАДЕМІЯ УПРАВЛІННЯ**

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Організаційно-економічні аспекти інноваційного оновлення національного господарства: Наук. монографія / М.М. Єрмошенко, С.А. Єрохін, В.М. Шандра, О.І. Гуменюк та інші; За наук. ред. д.е.н., проф. М.М. Єрмошенка і д.е.н., проф. С.А. Єрохіна. — К.: Національна академія управління, 2008. — 216 с. Ціна без доставки — 22 грн.

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