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TRENDS AND PROSPECTS OF OPTIMIZATION OF THE WORLD INFORMATION TECHNOLOGY MARKET DEVELOPMENT IN GLOBALIZATION CONDITIONS**Stavytska Alla***Dnipro National University named after Oles Honchar*

Information technologies, as a field of knowledge, which are set of processes and ways of developing and producing information systems, products and services, have been developing dynamically since the middle of the twentieth century. Such rapid pace of IT development gradually formed a separate information technology market. At the beginning of the XXI century the world information technology market has become one of the key in the global economy, which has embraced the entire civilized part of humanity through its involvement in the production, distribution, exchange and consumption of information. The urgency of the article is due to the fact that the rapid development of the world information technology market has formed the need to determine the prospects for its optimization. The author determines the trends and prospects of the development of the world information technology market at the appropriate managerial levels, namely, global, macro, meso, micro and personal levels. Appropriate managerial levels reveal trends and prospects for all market participants. The author proposes optimization measures for the further development of the world information technology market in the plane of already investigated managerial levels.

Keywords: perspectives, trends, optimization measures, global information technology market, managerial level, IT services, development

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ТЕНДЕНЦІЇ ТА ПЕРСПЕКТИВИ ОПТИМІЗАЦІЇ РОЗВИТКУ СВІТОВОГО РИНКУ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ В УМОВАХ ГЛОБАЛІЗАЦІЇ**Ставицька А.В.***Дніпровський національний університет імені Олеся Гончара*

Інформаційні технології, як сфера знань, що є сукупністю процесів і способів розробки та виробництва інформаційних систем, продуктів та послуг, динамічно розвивається з середини ХХ ст. Такі швидкі темпи розвитку ІТ поступово сформували окремий ринок інформаційних технологій. На початку ХХІ ст. світовий ринок інформаційних технологій постав одним із ключових у світовій економіці, який охопив усю цивілізовану частину людства за рахунок її залучення у виробництво, розподіл, обмін та споживання інформації. Актуальність статті обумовлена тим, що стрімка динаміка розвитку світового ринку інформаційних технологій сформувала необхідність визначення перспектив щодо його оптимізації. Автором визначено тенденції та перспективи розвитку світового ринку інформаційних технологій за відповідними управлінськими рівнями, а саме – глобальним, макро, мезо, мікро та особистісними рівнями. Відповідні

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управлінські рівні розкривають тенденції і перспективи для усіх учасників ринку. Автором запропоновано оптимізаційні заходи для подальшого розвитку світового ринку інформаційних технологій у площині вже досліджених управлінських рівнів.

Ключові слова: перспективи, тенденції, заходи оптимізації, світовий ринок інформаційних технологій, управлінський рівень, ІТ послуги, розвиток.

Actuality of issue. The rapid development of the world information technology market has formed the need to determine the prospects for optimizing this process, taking into account the interests of participants at various managerial levels. Global threats and challenges of the world information technology market, along with the need to develop civilized regulatory measures, determine the relevance of the study and formulate a task for scientific research.

Analysis of the previous researches. The problems of trends and prospects of the development of the world information technology market were studied by Ukrainian scientists: Y.M. Bazhal, L.M. Batsenko, N.I. Galan, Y.V. Gava, D.V. Dubov, K.I. Ladichenko, A.E. Litvin, T.Y. Morozova, S. E. Sardak, H. S. Terletska and others. Russian and foreign specialists also paid special attention to the strategies of development of the world IT market, in particular: V. Agapov, K. Kondratiev, A. Kuznetsov, L.V. Pan, Etzkovitz H. But the authors have insufficient attention paid to the calculation of the projected values of further development of the world IT market, the conceptual framework for optimizing the dynamic development of its segment-forming components and individual national IT markets, which requires a more detailed approach to addressing these issues.

The purpose of this article. The purpose of the article is to determine the constructive trends and prospects for optimizing the development of the world information technology market.

Statement of the main research. The deployment of a global perspective on social development will result in further aggravation of potential public threats and the formation of new challenges that will be felt in all accounting dimensions of the human life environment. In the natural dimension will be the depletion of minerals and mineral resources; in biological - the genetic influence on man and mutations of flora and fauna; in the technical - the further production of high technologies, new information products and services, the deepening of the international division of labor and scientific and technical exchange, standardization and unification of global technological transactions;

in the economic - the intensification of competition, the redistribution of property and finance, the growth of virtual and fictitious capital and resources in the spheres of production, distribution, exchange and consumption; in social - the transformation and virtualization of values, spheres of social needs, interests, relationships, culture, art and sports; in managerial - the concentration of global managerial, regulatory and theological influence [1,2].

According to expert estimates, in the sphere of information technologies in the middle of the second decade of the XXI century the following global trends are identified which are formed by scientific, technical, industrial, market, organizational, regulatory and other factors [3; 4; 5]:

- permanent increase in device capacity and data rates (will necessitate timely upgrades of technology and communications to maintain information security and competitiveness);

- increasing use of cloud technologies in business (small businesses spread products Microsoft Azure, Amazon web services, Google Cloud Platform, and in the average - great individual and hybrid clouds);

- growing mobility business (the company less dependent on locations and by integrating technical means are able to remotely control internal and external processes);

- distribution of large data technology (based on the use of BigData there is an opportunity to purchase the finished results of behavior analysis and behavior of consumers BigData-as-a-Service);

- the growth of the "Internet of Things" (example according to the International Telecommunication Union in 2020 the number of people connected network devices will be more than 6 times the number of Internet users (25 bn. against 4.5 billion units. "connected" people);

- forming infrastructure "Internet of Things" (by increasing internet connection technical devices need standardization and adaptation of protocols and interfaces to optimize interaction and convenience);

- reduction of human participation in technical communications (due to increased M2M traffic ("traffic from machine to machine");

- strengthening information security (in the information society increases the need for permanent protection of data from external intrusions and internal leaks data);

- increase in the number of "smart devices" (expected to increase the number of devices that can control various processes);

- the spread of 3D-printing (in various fields, from medicine to construction is expected to increase reproduction technologies aimed at individual and bulk products);

- enhancing business involvement in IT-projects (there is cooperation on traditional business IT companies to establish joint and combined projects);

- development of online training (this trend is gradually transformed into a conceptually strengthen the machine learning);

- increasing the share of electronic payments (growing volume of electronic payments and there are more financial interaction formats).

The above identified trends in the global information technologies, in turn, determine the direction of the global market. Also, the current and strategic direction of the world IT market can be identified based on the total resource management and the global economy.

*Table 1 - Trends of the development of the world information technology market**

№	Management level	Trends
1	Global level	The global IT market will grow with the current pace without experiencing significant negative impacts from crisis phenomena until 2030. (the number of new IT products, IT services and IT technologies will increase, as a result of which demand and supply, the number of market entities, volume of transactions, costs, investments and turnover of money will increase, new market segments will be formed); there will be a strengthening of integration of IT technologies in all social sectors (e-government, healthcare, education, etc.) and political life; the catalyzing role of the IT market development will belong to transnational corporations
2	Macro level	The rates of certain national IT markets will be constrained because of macroeconomic instability in the countries; in some developing countries, the IT market will grow vigorously, including through the transfer of American and European companies its capacity in these countries; the vast majority of countries will lose economic, political and informational independence from the actions of powerful transnational corporations; Developing countries, lacking sufficient economic, educational, scientific and technological capabilities to create a high-tech information society, will be increasingly lagging by the level of informatization and national IT potential in comparison with developed countries.
3	Meso level	IT market segments will quickly recover from crises and will continue to evolve; the demand for the development of a scientifically sound methodology on the problems of estimating the value of an IT company and the management of the value of IT companies in IT markets will be formed; IT markets will gradually adopt a clear structural formalization and unification of structuring entities; unevenly developed segments of the IT market (including hardware market, software market and IT services market) will develop at different rates in the global and regional dimensions; the development of IT markets will cause structural and functional changes in other markets (primarily in the financial market, labor markets and educational services); cloud services will be distributed everywhere

№	Management level	Trends
4	Micro level	IT companies will continue to be the most expensive companies in the world; they will actively increase the segment of IT services, especially due to the increased using of Saas technology and the collection and analysis of data in real time; replacing stationary software with online services will take place; the production of information and communication equipment, the volume of IT outsourcing services will increase
5	Personal level	The volume of purchases of mobile devices (tablets, smartphones, etc.) will increase; the volume of those wishing to get professional education and to work in the IT market will increase

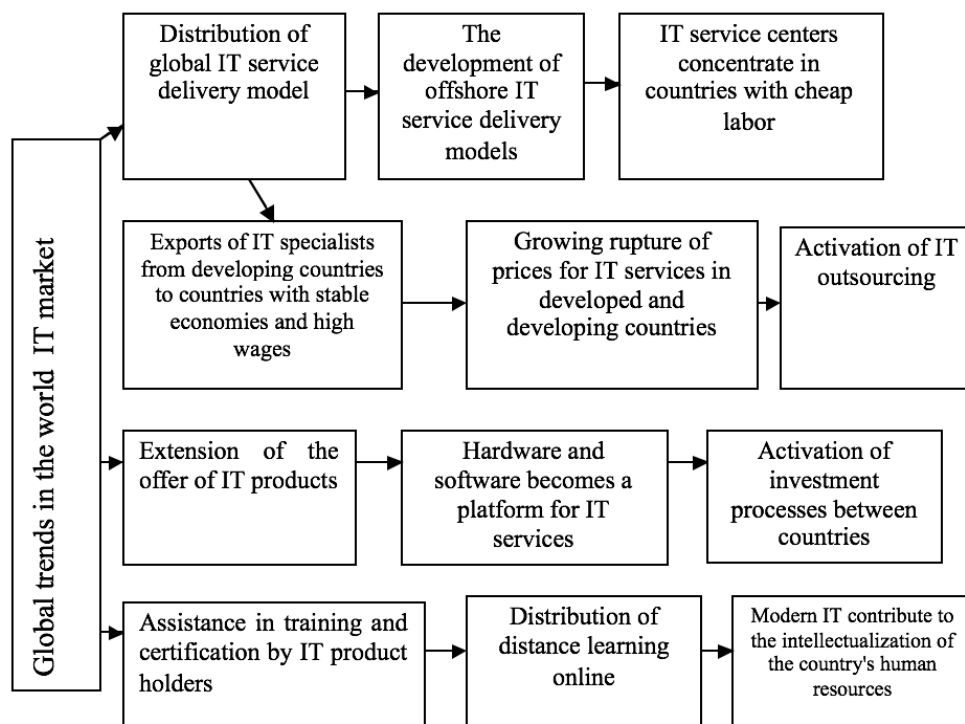
** author's working according to sources [6; 7; 8; 9; 10; 11; 12;13]*

In the long run, it will be observed on the world information technology market:

- predominance of TNCs in the IT field;
- distribution of the global model of IT services provision;
- the main countries that will continue to use IT will be the USA, China, Japan, Germany (they will account for more than 60% of the world's information technology market capacity);
- the penetration of information technology in all spheres of human life.

Schematically, the prospect of further evolving functioning of the world information technology market is illustrated in fig. 1.

Fig. 1. *The prospects of evolving functioning of the world information technology market **
** author's working*



Expansion of the offer of hardware and software segments of the world IT market and their opportunities to turn IT services into a basic platform for the

further evolution of the world information technology market. At the same time, in many countries due to the massive use of IT technologies, there is a problem of shortage of skilled personnel. Such negative phenomena can be minimized by intensifying the training of IT professionals, including through distance education online.

The high payroll of IT professionals will generate export of IT experts from developing countries to countries with a stable economy and the highest wages. Such phenomena create opportunities for the development of offshore models of IT services, which, for the benefit of IT-owners, will be concentrated in countries with cheap labor.

Consequently, by spreading the global model of IT services, the world IT market can develop dynamically and has a great success compared to other commodity markets. In the context of globalization, the boundaries and significance of national IT markets will disappear, but only continue to grow the phenomenon of the world IT market in its global sense.

The perspective of the conceptual framework for the further development of the world IT market is the IT service and software segment, which will be further dependent on both buyers and sellers of IT products and IT services. The supply side provides IT infrastructure and products. As soon as they are available, it is necessary to develop skills and knowledge to use them and turn them into powerful instruments of socio-economic development. As it is the expansion of IT service offerings, it is possible to modernize the government, healthcare system and business processes. Then citizens, households and legal entities may enjoy the benefits of applications and information technology services that they appear as a result.

Reasonable state policy is necessary to ensure that information technologies (namely, software) do not create new threats of world cybercrime and information danger, but on the contrary they create the maximum benefit, and also contributed to the transition to the information society of other countries.

Yet, in the context of globalization, the inevitable problem is digital backwardness third countries (insiders) who, due to their economic capacity can not fully join to the information society. Therefore, in this case, the appropriate policy of the IT leaders countries should be conducted, which may include national strategies, universalization of legislation, coordinated international regulation and cooperation, and appropriate incentives and assistance for insider countries. Since the ultimate goal of activating the world

information technology market is to effectively and efficiently use IT, which will be reflected in the socio-economic benefit (impact) for the whole society and its individual participant [15].

Thus, at the global level, strengthening the coordination of international organizations and government governments should provide:

- optimization of international legislation in the field of information technologies;
- working of unified standards for information technologies;
- development and implementation of a common policy in the areas of: access of the general public to information technology, protection of intellectual property and counteraction to piracy.

At the macro level, the main measure to overcome market destruction in the state is the construction and improvement of national information policy. The ability of the country's realizing its intellectual and information potential and maximizing the benefits of the IT industry can be determined by many parameters, in particular:

- the quality and flexibility of the legislative framework;
- effectiveness of state regulation in the field of informatization;
- the availability of stable Internet connections and their growing bandwidth;
- sufficient amount and level of qualification of labor resources;
- creation of access for citizens to modern information technologies.

At the same time, all optimization measures should ensure the enhancement of information security and protection of intellectual property. In this context, important attention should be paid to the fight against intellectual piracy. At the beginning of the XXI century "Reducing global piracy rates - from 40% to 30% - could give 1.5 million new jobs for four years, 64 billion dollars tax revenues, 400 billion dollars economic growth "[23].

On the mezzo level, it is expedient to implement the individual formation of a system of sectoral-regional interaction of a new type, which should provide for the adaptation of the triangular subjective basis of innovation development "business state-science" [16; 17; 18; 19; 20] to the features of the local business environment in an expedient format, combining and expanding the range of key subjects such as "enterprises", "power structures" and "universities", according to the features of the business environment of the region. This interaction in the conditions of global informatization should be based on the principles of self-organization, coordination and efficiency.

At the micro level, the development and improvement of the corporate information system involves the conceptualization, construction and permanent adaptation in the company of information activities (information subsystems, information processes, information resources) within the framework of internal organization (scope of activity, strategic guidelines, strategy, policy, available capabilities and internal organizational imperatives) and external organization (state of informatization in the industry and in the presence markets) requirements.

Under conditions of globalization, countries are forced to take into account global trends and determine the strategic directions for the development of national economies. This aspect is relevant for Ukraine, which undergoes permanent macroeconomic transformations throughout the period of independence, which is complicated by the violation of territorial integrity and the military conflict since 2014.

In this context, it should be noted the priority role of human resources (both citizens of the country, and part of the productive forces of society) and take into account that in the twenty-first century the creative function of human resources begins to be the determining factor in social development, where the "creative-innovative person" appears to be the basis, so that up to 40% of GDP is formed in economically developed countries [21].

Accordingly, intellectualization and informatization are a prerequisite for the development of the national economy and should foresee in the current period a conceptual prioritization in the paradigm of national development [21] and receive adequate support at the expense of rational allocation of financial resources for science more than 2% and for education more than 5% of GDP, as well as employment of 75-80% of labor resources in the field of intellectual work (characteristic of economically developed countries) [22].

Intellectualization and informatization of the national economy of Ukraine in the conditions of globalization require complex and balanced changes in: legal, scientific and technical, educational, budgetary, financial and credit, production, distribution, foreign economic, demographic, migration, social, insurance, investment, housing, communal, informational, innovative, socio-cultural and other policies [2]. Therefore, it is necessary to realize that the state of the national economy will affect the market of information technologies of Ukraine, and the strategic directions of development of the national IT market of Ukraine should become logically consistent with the above main areas.

Conclusions. Under conditions of globalization, countries are forced to take into account global trends and determine the strategic directions for the development of national economies. The goals of activating the world information technology market are to effectively and efficiently use IT, which will be reflected in the socio-economic benefit (impact) for the whole society and its individual participants.

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