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# INDICES OF TALENT AND CREATIVITY AS INDICATORS OF THE LEVEL OF DEVELOPMENT OF KNOWLEDGE ECONOMY

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*The level of people's talent and creativity is being recognized as one of the main indicators of country's socio-economic growth in the global economy. There are different techniques to determine the level of development of knowledge economy; the most efficient method among them is a complex assessment based on the global talent and creativity indices.*

Globalization of markets, expansion of information and communication technologies (ICT) in everyday life, prevalence of the innovation component in the production and distribution of high technologies, growing importance of specialized knowledge, application of all types of knowledge in various economic activities, emergence of new creative industries — all these trends are playing a significant role in the current development of knowledge economy.

Nowadays the leading countries are trying to create optimal conditions for building a postindustrial society by increasing investment in human capital. This gives them an advantage in the technological and intellectual development, as well as rapid growth in living standards. The main aspects of development of knowledge economy were considered by the leading scientists such as D. Bell, J. W. Cortada, P. Drucker, J. H. Dunning, F. Machlup, A. Toffler in their research papers.

The degree of countries involvement in the knowledge economy is normally determined by the Knowledge Economy Index (KEI) created by the World Bank. This index is based on a simple average of four sub-indices, namely: economic incentive and institutional regime (EIR), innovation and technological adoption, education and training, as well as information and communications technologies infrastructure [4].

According to the ranking of 146 countries calculated in 2012 on the basis of the Knowledge Economy Index, Sweden with the index of 9,43, Finland (9,33), Denmark (9,16), the Netherlands (9,11), Norway (9,11), New Zealand (8,97), Canada (8,92), Germany (8,90), Australia (8,88), Switzerland (8,87) are the world's

most advanced knowledge economies [4]. These countries are characterized by their particularly strong performance in the economic incentive and institutional regime and innovation and technological indicators. Defining the leading countries in the context of sub-indices, Singapore takes the first place in the EIR ranking, Switzerland — in the innovation and technological indicators, Australia and New Zealand are strong performers in the education index, and Bahrain takes the dominant place in the ICT ranking.

Despite the fact that the World Bank's knowledge assessment methodology is quite common in the analysis practice of current global development trends, it doesn't take into account the people talent and creativity.

In the near future talent will be an important component of the countries and companies long-term competitiveness, which can be explained by the widening gap between their hiring needs and the availability of suitable talented workforce. Therefore, further sustainable development of the countries in the global economy will depend on the abilities to attract high-skilled people.

It should be noted that the Global Talent Index (GTI), which was created by the Economist Intelligence Unit, shows the ability of countries to develop human talent and attract talented people to production activities. This index is calculated for 60 countries. The GTI is based on a collection of data that has been grouped into the following categories: demographics, compulsory and university education, quality of the labor force, talent environment, country's openness, proclivity to attracting talent.

According to this index, the USA with a GTI score of 74,2, Denmark (64,7), Finland (63,2), Norway (61,9), Singapore (60,2), Australia (60,1), Sweden (59,5), Hong Kong (59,1), Switzerland (58,5), Israel (58,3) and the Netherlands (58,3) top the list [6]. It should be mentioned that both developed and developing countries are represented in the ranking of countries with the highest talent index.

The USA takes the first place in the GTI because of a strong educational system (82,9) and high-quality labor force (88,8) [6]. For example, such universities as Harvard University, Stanford University, Massachusetts Institute of Technology (MIT), that are ranked in the top 500 in the world, are located in the US, as a result, they prepare graduates with the high intellectual potential to compete in the knowledge economy. Also the USA government creates an optimal environment to produce and develop creative employees by supporting the innovative projects and protecting the private property.

Such European countries as Denmark, Finland, Norway and Sweden dominate in the GTI ranking, due to substantial investment in education from primary to tertiary level. The technical and linguistic skills of their labor force are also particularly strong.

Australia ranks number six, due to its excellent university education and a high-quality labor force. Singapore and Hong Kong occupy a stable position in the ranking due to their openness to international trade and large-scale foreign investments, allowing for a high-quality labor force and an excellent ability to attract talent.

According to the GTI Report: The Outlook to 2015, while the USA will continue to have a strong position in educational system and proclivity to attract talented people, the point gap between America and other nations will shrink. In 2015 Canada is expected to change its position in the index, rising six places, and will occupy the eighth place in the GTI ranking due to increased investment from the oil and gas industry [6]. Canada's rank will improve in such key indicators as language skills of the labor force, protection of intellectual and private property. European countries will save their rankings in 2015. Substantial employment growth, facilitation of labor laws, and easing of wage regulation will help France and Germany talent market to adapt more quickly to structural changes in the economy.

Brazil, Russia, India and China (BRIC) emerging markets, generally rank in the bottom half of the GTI today and are predicted to remain in that position in 2015. Brazil is likely to improve its position in the ranking, due to increase in educational spending and develop-

ment of language skills among the country's labor force. In 2015 Russia is expected to remain its place at 34, if it improves its overall index by 2,3 points. Despite India's growing employment opportunities, its position in the GTI wouldn't change, due to the low level of compulsory education. As the GTI forecast shows China's index is projected to increase by 5,2 points, due to Beijing's openness to attract foreign high-skilled specialists, and the increasing quality of compulsory and tertiary education systems [6].

In 2015 Ukraine will improve its position in the GTI, moving from position 43 to 42 [6], due to high quality of compulsory (81,8) and tertiary education (57,4), but the situation related to the demographics and talent environment indicators, which are important in determining the competitive position of the country, is quite difficult.

Another indicator that helps determine the extent of the involvement of countries in the knowledge economy is the Global Creativity Index (GCI). This index was created by Richard Florida, director of the Martin Prosperity Institute. The GCI evaluates and ranks 82 countries on three key criteria — technology, talent and tolerance.

According to the latest edition of the Global Creativity Index, Sweden takes the first place on this index due to the high level of technological development and sufficient number of high-skilled workers in the country. The USA with the GCI score of 0,902, Finland (0,894), Denmark (0,878), Australia (0,870), New Zealand (0,866), Canada (0,862), Norway (0,862), Singapore (0,858) and the Netherlands (0,854) are countries with the highest rating of creativity, where the factors like technology and innovation, talent and education, openness and tolerance guarantee long-term economic prosperity [2].

In accordance with the GCI Report, technology is a key indicator of economic progress. The Technology Index is based on the combination of three measures, namely: number of patents granted per capita, research and development spending as a percentage of GDP, and number of researchers per capita.

Finland takes the first place in the Technology Index, ranking the first in researchers, the third in R&D investment, and the fourth in innovation, because of the strong ICT sector that includes leading Finnish innovative firms such as "Nokia Corporation" (a multinational communications and information technology company), "Alma Media" (a media company), "Elektrobit Corporation" (an information technology company), "Elisa Oyj" (a telecommunications company), "F-Secure Corporation" (an antivirus and computer security company), "Tieto Oyj" (an IT service company) [5].

Japan takes the second place, ranking the fourth in R&D investment, the third in researchers, and the second in innovation due to Japanese companies such as "Mitsubishi Group", "Toyota Motor Corporation", "Hitachi Ltd", "Sony Corporation" that have built reliable, subsequent generations of products, from high quality cars to consumer electronics.

The USA is the third in this index due to the appropriate infrastructure for entrepreneurial venture capital finance, for example, in Silicon Valley, where high-tech start-ups turn into global giants, including "Hewlett-Packard Company", "Microsoft Corporation", "Apple Inc.", "Google Inc.", and "Yahoo Inc.".

Israel takes the fourth place. Sweden, Switzerland, Denmark, South Korea, Germany and Singapore are included in the top ten of the Technology Index.

The second criterion that evaluates a country's ability to generate, attract, and retain skilled people is the Talent Index. The Martin Prosperity Institute measures this index as a combination of two factors: average level of educational attainment and the percentage of the country's workforce in the Creative Class. The level of educational attainment is measured as the share of the population in the proper age group that has engaged in tertiary education. While Finland takes the top spot with 90,8 % and South Korea takes the second (89,8 %), New Zealand, Sweden, the United States, Norway, and Denmark round out the top ten [2].

The Creative Class Index is measured as a share of creative professionals of the total workforce. The Creative Class is composed of scientists, engineers, university professors, architects, poets, whose economic function is to create new

ideas and products. In the knowledge economy the creative labor force is characterized as computer literate, well-trained in handling data, developing algorithms and simulated models, and innovating on products, processes and systems [3]. According to the Creative Class Index, fourteen countries have 40 % or more of their workforce in the Creative Class. Singapore with creative class share of 47,3 % has the highest creative ranking, followed by the Netherlands (46,24 %), Switzerland (44,84 %), Australia (44,52 %), Sweden (43,88%), Belgium (43,84 %), Finland (43,35 %), Norway (42,11 %), and Germany (41,57 %) [2].

The demand for STEM (science, technology, engineering, mathematics) specialists among the creative class is expected to increase across the globe. For example, in the USA, the demand for STEM professionals is projected to increase by 16,8 % by 2020, adding nearly 1,3 million new STEM jobs to the workforce. Such companies as "Facebook Inc.", "Amazon.com Inc.", "Cognizant Technology Solutions Corp.", and "Apple Inc." will need to fill upwards of 650 thousand new jobs by 2018 to meet their growth projections, where two-thirds of the new employees will be STEM talent. The South Korean government is investing 200 billion USD into a new national smart grid project that is expected to create 500 thousand STEM occupations. In the UK, experts forecast an 80 % increase in demand for biological science graduates and a 49 % increase in demand for mathematical science and computing graduates until 2017 [1].

The Creative Economy Report 2010 shows that world exports of creative goods and services continued to grow, reaching 600 billion USD in 2010 [3]. While the biggest part of creative products is produced in developed countries, such as Germany, the USA, the Netherlands, Canada, Belgium, Italy, the share of developing countries is only 43 % in the volume of global creative exports (fig. 1) [8; 9].

Creative industry has great potential for both developed and developing countries seeking to diversify the economy and contribute to the output of domestic entrepreneurs to global markets.

According to the overall Talent Index, Finland and Sweden are taking the first and the second place, Denmark the fourth, and Norway the sixth. Singapore ranks the third, with New Zealand the fifth and Australia the seventh. The United States is the eighth, just ahead of Greece and Slovenia in the ninth and tenth positions [2].

The third key indicator of country's economic growth is the Tolerance Index that is based on the data from Gallup surveys of public openness to immigrants, racial and ethnic minorities and sexual minorities. Tolerance is a key component for several reasons. First, tolerant and open societies are more attractive to creative people who make a significant contribution to the knowledge economy today. Second, the labor market has become global for this category of labor, openness and tolerance being important factors for a country or a city to become a place of work and life for smart, talented and enterprising people. Third, the ideas bring economic effect if the society is open to new information and knowledge. A number of tolerant cities and regions including Silicon Valley in California;

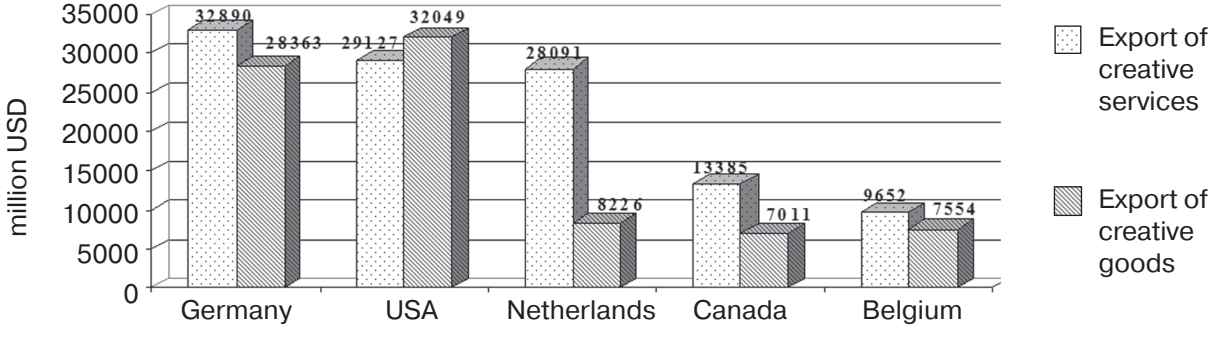


*Fig. 1.* **Top 5 exporters of creative goods and services in 2010** [8; 9]

*Table 1*

**The world's most advanced knowledge economies** [2; 4; 6]

| The Knowledge Economy Index | | | The Global Talent Index | | | The Global Creativity Index | | |
|---|---|---|---|---|---|---|---|---|
| Rank | Country | Index | Rank | Country | Index | Rank | Country | Index |
| 1. | Sweden | 9,43 | 1. | USA | 74,2 | 1. | Sweden | 0,923 |
| 2. | Finland | 9,33 | 2. | Denmark | 64,7 | 2. | USA | 0,902 |
| 3. | Denmark | 9,16 | 3. | Finland | 63,2 | 3. | Finland | 0,894 |
| 4. | Netherlands | 9,11 | 4. | Norway | 61,9 | 4. | Denmark | 0,878 |
| 5. | Norway | 9,11 | 5. | Singapore | 60,2 | 5. | Australia | 0,870 |
| 6. | New Zealand | 8,97 | 6. | Australia | 60,1 | 6. | New Zealand | 0,866 |
| 7. | Canada | 8,92 | 7. | Sweden | 59,5 | 7. | Canada | 0,862 |
| 8. | Germany | 8,90 | 8. | Hong Kong | 59,1 | 8. | Norway | 0,862 |
| 9. | Australia | 8,88 | 9. | Switzerland | 58,5 | 9. | Singapore | 0,858 |
| 10. | Switzerland | 8,87 | 10. | Israel, Netherlands | 58,3 | 10. | Netherlands | 0,854 |

aerospace and automotive engineering clusters in Munich, Germany; pharmaceutical and biotechnology industrial parks in Hyderabad, India; electronics and digital media centers in Seoul, South Korea; petrochemical and energy industry in Brazil are more attractive to creative people [7].

In the countries with the highest Tolerance Index such as Canada, Ireland, the Netherlands, New Zealand, and Australia 60 % of respondents find their country a good place for ethnic and racial minorities.

According to the analysis of talent and creativity indices, countries which occupy top positions in the Knowledge Economy Index, the Global Talent Index and the Global Creativity Index have higher levels of economic output, entrepreneurship, and overall economic competitiveness. Therefore, Sweden, Finland, Denmark, Norway, the USA, the Netherlands, Australia, Singapore are countries with high knowledge economy development level (tab. 1) [2; 4; 6]. The economic growth of these countries is based on the flow of innovation, constant technological improvement, production and export of high-tech products with a high added value, and higher levels of human development.

To conclude, we should note that in the future the "talent wars" will appear between developed and developing countries. The main reasons include, firstly, the worsening of the demographic situation in Western Europe and the USA; secondly, significant lack of employees with "soft skills" such as adaptability, creativity, leadership and flexibility; thirdly, the shortage of highly qualified labor force with multinational experience in the rapidly growing economies such as China and India; fourthly, the attraction of talented people from international companies in the emerging Chinese companies by offering a potential recruit a 30–40 % pay increase from their previous position. The shortage of talent will increase competition between countries, therefore the best employees will move to regions and companies that provide them with the best opportunities.

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*The main trends such as stimulation of people's creativity by the developed countries; involvement of talented specialists in the processes of social production; growing demand for creative and highly skilled labor in the global market, typical for the period of the knowledge economy formation, have been analyzed. The levels of knowledge economy development in several countries and their evaluation, based on global ratings, have been defined.*

*Проаналізовано основні тенденції, які властиві періоду становлення економіки знань, а саме: стимулювання розвитку творчого потенціалу макросоціумів у провідних країнах світу, залучення талановитих людей до процесів суспільного виробництва, зростання попиту на світовому ринку на працю креативних та висококваліфікованих спеціалістів. Визначено рівень розвитку економіки знань в окремих країнах світу та здійснено його оцінку на основі глобальних рейтингів.*

*Проанализированы основные тенденции, которые характерны для периода становления экономики знаний, а именно: стимулирование развития творческого потенциала макросоциумов в ведущих странах мира, вовлечение талантливых людей в процессы общественного производства, возрастание спроса на мировом рынке на труд креативных и высококвалифицированных специалистов. Определен уровень развития экономики знаний в отдельных странах мира и произведена его оценка на основе глобальных рейтингов.*

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