International Conference of
Economics, Finance and Accounting Studies

International Conference of Economics, Finance and Accounting Studies is a double-blind peer-reviewed, open-access journal published to reach excellence on the scope. It considers scholarly, research-based articles on all aspects of economics, finance and accounting. As an international congress aimed at facilitating the global exchange of education theory, contributions from different educational systems and cultures are encouraged. It aims to provide a forum for all researchers, educators, educational policy-makers and planners to exchange invaluable ideas and resources.

The Analysis of Worldwide Indexes to Measure Digital Development of Countries

Tal'atova Diyora Boxodir qizi
Scientific Researcher of Kimyo International University in Tashkent, Uzbekistan
diyora2711@gmail.com

ABSTRACT

The process of digitalization, which is becoming one of the important conditions for economic development in the 21st century, has created the need for its comprehensive assessment and in-depth analysis. There are various international methods and indicators for determining the impact of digitalization and digital economy development programs on society, which are used in different countries, each of which is characterized by the formation of an average indicator by summarizing various digitalization-related factors. The aim of the article is to analyse various methodology and indicators for measuring the level of digitalization in a country's economic development. Particularly, digital indicators such as ICT Development Index, Digital Economy and Society Index, IMD World Digital Competiveness Index, Digital Economy and Society Index, e-Intensity, Networked Readiness Index, Global Cybersecurity Index, The UN Global E-Government Development Index and The Global Innovation Indexes were analyzed and compared according to its measurements.

Keywords: ICT Development Index, Digital Economy and Society Index, IMD World Digital Competiveness Index, Digital Economy and Society Index, e-Intensity, Networked Readiness Index, Global Cybersecurity Index, The UN Global E-Government Development Index, The Global Innovation Index.

The process of digitization, which is becoming one of the important conditions for economic development in the 21st century, has created the need for its comprehensive assessment and in-depth analysis. There are various international methods and indicators for determining the impact of digitization and digital economy development programs on society used in different countries, each of which is characterized by the formation of an average indicator by summarizing various digitalization-related factors. Indicators such as the ICT Development Index, the Digital Economy and Society Index, the IMD World Digital Competitiveness Index, the Boston Consulting Group's Digital Economy Index (e-Intensity), the Networked Readiness Index, the Global Cybersecurity Index, the UN Global E-Government Development Index, the E-Participation Index, and the Global Innovation Index summarize various economic indicators of countries and form a list of digitally advanced or backward countries.

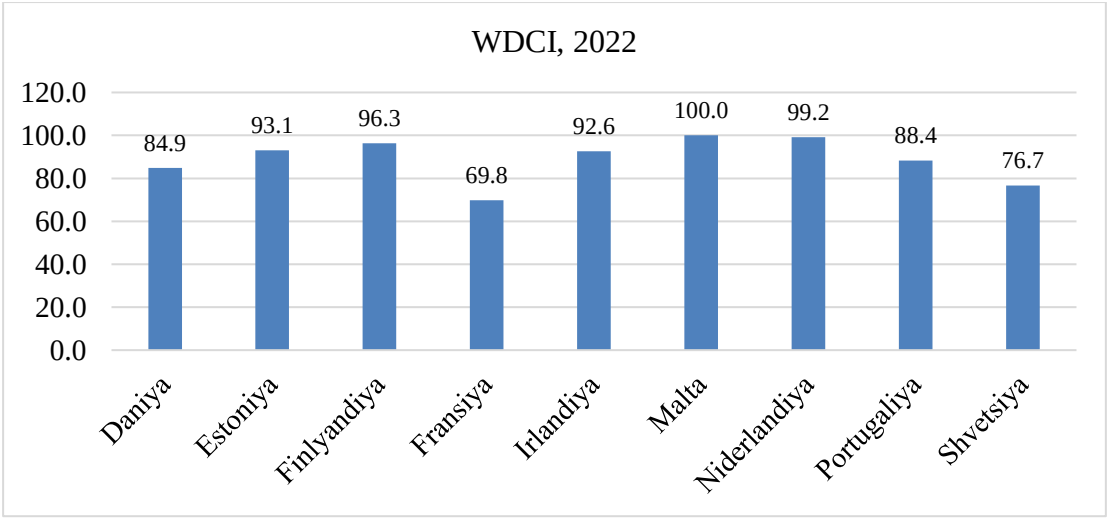
This study employs a comparative analytical approach, combining quantitative analysis of

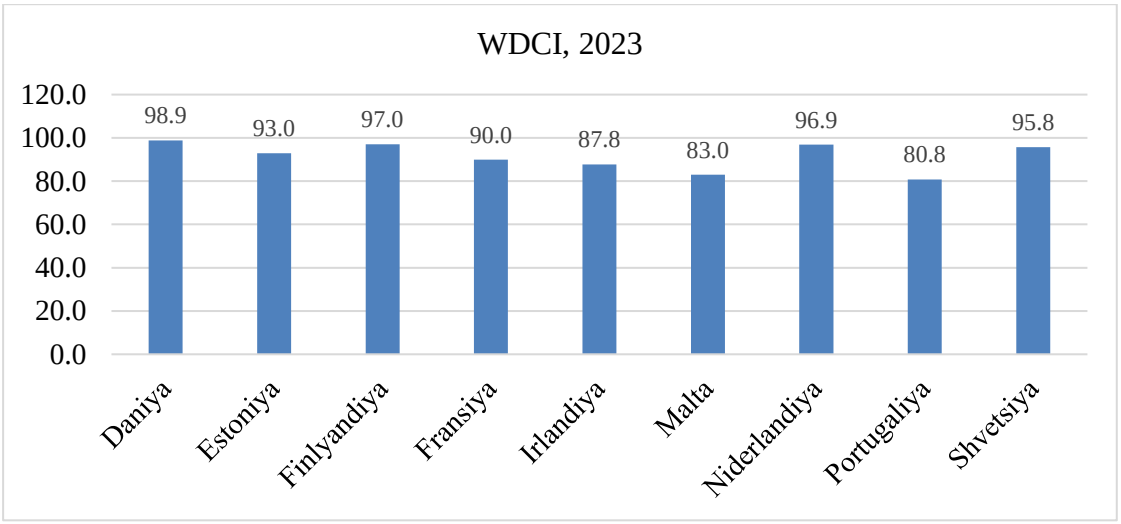
secondary statistical data with desk research of international methodological frameworks for assessing the level of digitalization in national economies.

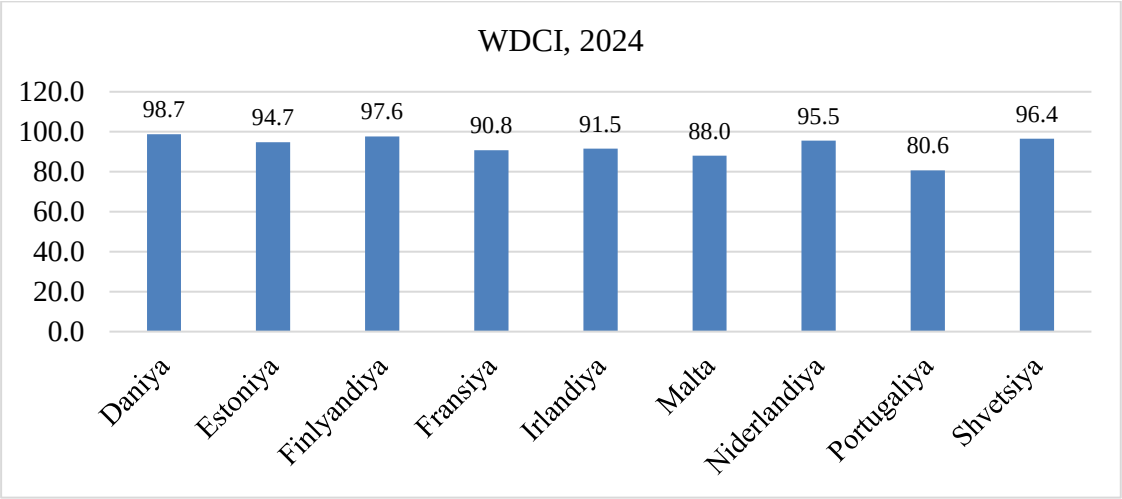
The Digital Economy and Society Index (DESI) is a European Union-published digital index that aims to compare, analyze and identify trends in the digital performance of 45 countries, combining 24 different data sets published by the European Union since 2014. The index is aligned with the four pillars ("skills", "infrastructures", "business", "government") set out in the Commission's proposal for a European Union "Roadmap to a Digital Decade", and serves as a basis for setting targets for a country's sustainable digital transformation.

The Digital Economy and Society Index is formed by calculating the overall arithmetic mean of the above indicators, that is, this "S" is calculated for a country as follows:

*DESI(C) = Human Capital (C)*0,25 + Network (C)*0,25 + Digital Technology Integration (C)*0,25 + Digital Society (C)*0,25* (1).







Picture 1. Ranking of countries by Digital Economy and Society Index.

The World Digital Competitiveness Index, proposed by the Swiss IMD business school, assesses the extent to which a country is developing and implementing digital technologies that are transforming the economy and society for the better. The Digital Competitiveness Index is determined by the average sum of three sub-indices, which indicate the level of digital literacy, technology and future readiness.

The WDCI ranks the economies of 64 countries. This index is calculated based on 34 statistical and 20 survey data, based on a total of 54 assessment criteria. These are summarized into 9 sub-indices, respectively, and these sub-indices are divided equally into 3 sub-indices (digital literacy, technology and future readiness), as mentioned above.

One of the indicators that reflects the global digital development process in the world is the Digital Intelligence Index (DII) developed by Tufts University. Based on this index, the digital development indicators of more than 90 countries are studied, and as a result of the analysis, a Digital Trust and Digital Evolution rating are compiled. Digital Evolution studies the economies of countries into 4 areas (Figure 1.5): 1. “Stand Outs” (“leading” countries) are a group of countries with a highly developed digital economy and high growth rates. The population of such countries actively uses the conditions provided by the Internet. Due to the fact that their digital infrastructure has been developed for many years, the economies of these countries have stable growth rates. On the other hand, due to the increasing complexity of introducing new innovations, such countries need to introduce continuous digital innovations in order not to stop developing digital technologies. The economies of countries such as Singapore, the United States, Hong Kong, the Republic of Korea, the UAE, Taiwan, and Germany belong to the economies of this region.

State of Digital Evolution		
	“Stall Outs”	**“Stand Outs”**
	Finland, Denmark, Switzerland, Iceland, Netherlands, New Zealand, Australia, Canada, Austria, Belgium, France, Japan, United Kingdom	Singapore, USA, Hong Kong, Taiwan, Republic of Korea, Germany, Estonia, UAE, Israel, Malaysia, Qatar
	“Watch outs”	**“Break Outs”**
	Slovakia, Italy, Hungary, Greece, Romania, North Africa, Turkey, Costa Rica, Mexico, Colombia, Jordan, Philippines, Bosnia, Sri Lanka, Egypt, etc.	Latvia, China, Poland, Bahrain, Saudi Arabia, Chile, Bulgaria, Thailand, Uruguay, Russia, Georgia, Azerbaijan, Argentina, Vietnam, Indonesia, India, Kazakhstan, Kenya, Morocco, Bolivia, etc.
	Digital Evolution Momentum	

Picture 2. Ranking of countries by digital evolution.

2. “Stall Outs” (“countries with a “slow growth rate”) — this group includes countries whose growth rates have slowed down in recent years, but have developed digital economies. In order not to lag behind in economic development, these countries need to follow the example of countries in the “Stand Outs” category. The economies of countries such as Finland, Denmark, Switzerland, Norway, Japan, Austria belong to the “Stall Outs” group.

3. “Break Outs” (“promising” countries) — countries in this group, although they have a lower rating in terms of digital development, have high development rates. Rapid growth trends and the conditions created for digital development in the country attract investors. These countries include China, India, Indonesia, Saudi Arabia, Kenya and Russia, and they have the potential to enter the “Stand Outs” group in the future.

4. “Watch outs” – the economies of countries in this group have serious problems due to low digitalization rates and slow development rates. “Watch out” economies include the economies of countries such as Nigeria, Uganda, Sri Lanka, Romania, North Africa, and Brazil.

The following factors are used to study the digital evolution in groups: demand for digital infrastructure, supply that meets this demand, institutional environment and innovation.

One of the most widely used integral indicators in the field of digitization of government administration is the e-Government Development Index (EGDI), which is calculated by the UN every 2 years for all 193 member states of the organization. This index was first calculated in 2001. The index is based on statistical indicators of the government's assessment of national websites and its participation in the information society. From a mathematical point of view, the EGDI is the normalized arithmetic mean of three independent indicators, including (1) the scope and quality of online services (Online Service Index, OSI); (2) the state of development of telecommunications infrastructure (Telecommunication Infrastructure Index, TII); (3) the specific human capital index (Human Capital Index, HCI):

$$\text{EGDI} = 1/3\ (OSI_{normalized} + TII_{normalized} + +HCI_{normalized}) \quad (2)$$

Here, the OSI index represents national websites providing government services: the national portal, the e-services portal, the e-participation portal, and the relevant portals of the ministries of education, labor, social services, health, finance, and the environment through indicators based on the study and evaluation.

The next component of the e-government index, the TII index, is the arithmetic mean of the following 5 indicators: (1) the number of Internet users per 100 inhabitants; (2) the number of fixed telephone lines per 100 inhabitants; (3) the number of mobile subscribers per 100 inhabitants; (4) the number of wireless broadband connections per 100 inhabitants; (5) the number of broadband connections per 100 inhabitants. The components of these indicators change over time due to the emergence of modern digital technologies (for example, since 2008, the number of televisions has not been taken into account when calculating the TII).

The HCI index is an index that measures the literacy level of the population, which is determined on the basis of 4 statistical indicators, namely: (1) the literacy rate of the older population; (2) the gross coefficient of enrollment in general primary, secondary and higher education institutions; (3) expected years of education; (4) average years of education.

The study shows that the index covers countries accounting for 93 percent of global GDP and 80 percent of the population and provides a global picture of progress in digital transformation.

Countries such as Denmark, Finland, the Republic of Korea, New Zealand, Sweden, Iceland, Australia, Estonia, the Netherlands, the United States, the United Kingdom, Singapore, the United Arab Emirates, Japan and Malta are among the countries with the highest EGDI indicators.

It should be noted that for the successful digitization of the national economy, it is important to analyze the digitization systems of leading countries with extensive experience in this regard and implement the results in practice, adapting them to the country's conditions. It is important to

achieve the goal of achieving sustainable economic development in the long term based on the creative application of successful experiences of foreign countries in the national economy.

REFERENCES

1. United Nations. E-Government Survey 2024. Accelerating Digital Transformation for Sustainable Development. New York, 2024. 178 p.
2. OECD. Digital Economy Outlook 2024 (Volume 2): Strengthening Connectivity, Innovation and Trust. Paris, https://doi.org/10.1787/3adf705b-en.
3. O'zbekiston Respublikasi Prezidenti huzuridagi Statistika agentligi "O'zbekiston Respublikasi yillik statistik to'plami 2013-2022", Toshkent, 2023.
4. Europian Comission. Digital Economy and Society Index (DESI) 2022. Methodological Note. R. 4. https://digital-strategy.ec.europa.eu/en/policies/desi.
5. Smart Nation 2.0: A Thriving Digital Future for All. Ministry of Digital Development and Information. Singapore. October, 2024. 92 p.