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Research Article

The effect of digitalism on the economic growth and foreign trade of creative, Information and Communication Technology (ICT) and high-tech products in OECD countries

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Abstract

The use of digital technologies has come to the fore in every aspect of life due to closures, social distance and bans during the pandemic period. Today, digital technologies are used in many sectors and their importance is increasing day by day. While digitalism refers to the increased use and integration of digital technologies, ICT appears to have a profound effect on economic growth and foreign trade in the creative and high-tech industries.

In 2022, it is seen that 5.3 billion people, which corresponds to 66.3 percent of the world's total population, have access to the internet. Active mobile-broadband subscriptions has reached 86.9 percent in 2022 in the world. Exports in ICT goods were 2.77 trillion USD and ICT services were 848.4 billion USD in 2021. The share of ICT goods as percentage of total trade in the world was 13.2 percent whereas it was 7 percent in OECD countries. Share of ICT services as percentage of total trade in the world was 14 percent whereas it was 13.3 percent in OECD.

The study aims to investigate the relationship between the export performance in "Creative", "ICT" and "High-tech" products with their digital infrastructure and economic growth in OECD countries.

The results show that there is a positive correlation between overall index scores and GDP per capita in OECD countries. "The share of ITC employment in total employment" and "the share of information and communication (ISIC rev4) in GDP" have a high positive correlation coefficient as 0.693 so that the correlation is significant even at the 0.01 level (2-tailed). "GDP growth rate" and "GDP growth in information and communication (ISIC rev4)" " have a high positive correlation coefficient as 0.585 so that the correlation is significant even at the 0.01 level (2-tailed). "High-tech export share in total merchandise export" and "share of ICT goods as percentage of total trade, annual" have a high positive correlation coefficient as 0.656 so that the correlation is significant even at the 0.01 level (2-tailed). "The share of ITC employment in total employment" and "share of ICT services as percentage of total trade, annual" have a high positive correlation coefficient as 0.501 so that the correlation is significant even at the 0.01 level (2-tailed).

Keywords: Creative products export, ICT products export, High-tech products export, digital infrastructure, economic growth

1. Introduction

Digitalism refers to the increasing use and integration of digital technologies in many areas of the economy, and ICT has had a profound impact on economic growth and foreign trade in the creative and high-tech industries.

With the emergence and rise of digital technologies, new sectors such as e-commerce, digital media and social networking, which create new job opportunities and drive economic growth, have led to the creation of new business opportunities and sectors. The development of these industries has also led to the creation of new jobs and increased demand for highly skilled workers, further spurring economic growth.

In addition to all this, digitalism has facilitated the internationalization of ICT, creative and high-tech industries, thanks to the increasing use of digitalism, it has become easier for companies to collaborate by communicating with partners and customers from around the world. In this way, businesses have been able to expand their operations globally and foreign trade and economic growth have increased thanks to their entry into new markets.

Digitalism has also had a significant impact on the nature of commerce in the ICT, creative and high-tech industries. The development of digital technologies has made the cross-border trade and exchange of digital goods and services easier and cheaper, resulting in growth in the digital economy. In this way, businesses were able to sell their

products and services globally without needing to be physically present in each different market, thus creating new opportunities for small and medium-sized enterprises (SMEs) to participate in international trade.

As a result, the impact of digitalism on the economic growth and foreign trade of ICT, creative and high-tech industries has been quite significant. Digitalism has created new business opportunities and industries, facilitated the internationalization of businesses and transformed the nature of business in these industries.

There are four skills, which will be needed in the workplace of the future. These fastest-growing, highest-demand emerging skills sets are:

- Artificial intelligence (AI)/machine learning (ML).
- Cloud computing.
- Product management.
- Social media (WEF 2023a).

The life expectancy at birth and economic growth the good health service in a country are positive related. A good health service which lowers the mortality rates, also promotes a long living population with a higher life expectancy and healthy labour force Gürler and Özsoy 2019). The pandemic, which was not only a country' problem but the global problem against humanity and human development. So that a global partnership was needed to recovery the health system capacity and to decrease the negative effect of COVID-19 on decent work and economic growth, to fight with the poverty, to reach the WHO'S zero hunger goal and better human well-being. The global economy had just begun to overcome the negative effects of the global financial crisis, but the pandemic caused sudden and profound changes and slowed the economic growth. While the crisis reduced the working hours of the workforce, it adversely affected the world labour markets, especially those working in informal employment, self-employed, casual wage earners and those working in sectors with the highest risk of disruption. In addition, the economic crisis has increased the occupational health and safety threat of employees and the risk of child labour (Özsoy and Gürler 2022, ILO 2021). Due to the pandemic reduced the internal and external demand, the global supply chain was broken and the countries have faced diminishing GDP, foreign trade, tax revenues and employment so that people had lost their jobs and income (Gürler and Özsoy 2021).

The United Nations' 17 Sustainable Development Goals (SDGs) are at the heart of The 2030 Agenda for Sustainable Development, and is adopted in 2015. Decent Work and Economic Growth is the eight Sustainable Development Goals (SDGs), which is related

with the United Nations' framework for making real progress towards a more sustainable future by the year 2030. It has the pillars as;

- Job Creation and Entrepreneurship,
- Gender Wage Gaps,
- Digital Work Design,
- Ecosystem Restoration,
- Inclusive Growth,
- Inclusive Labour Markets,
- Longevity and Education,
- Productivity and Competitiveness (WEF2023b)

The business world is changing rapidly – and healthy new business models need to be identified to drive this change towards the creation of stronger, more robust livelihoods and adequate safeguards. Even before a global pandemic wreaked havoc on global labour markets, job creation was high on the global agenda, as was policy making that could ideally help both workers and their employers. The most successful approaches will take into account changing demographics and changing job roles, and leverage deduction as a way to design workplaces that truly serve everyone's needs (WEF 2023c). There is an urgent need to invest in human capital to create a more just world, so that 1.1 billion jobs could be radically transformed by technology in the next decade (WEF 2023d).

The COVID-19 crisis has given a great impetus to the digitalization of SMEs, and the firms whose activities were already operating online or could adapt their products and processes to the digital world in a short time have increased their incomes during the pandemic period.

Digital readiness refers to the adoption of some digital technologies by small businesses. Digitization is lower in small firms than in large firms. Digital technologies include:

- High-speed broadband-percentage of small businesses with broadband download speeds of at least 100 Mbit/s;
- social media—percentage of small businesses using social media;
- Percentage of small businesses receiving orders over e-commerce-computer networks;
- Cloud computing (OECD 2021).

Digital transformation affects economies and societies in complex and interrelated ways and requires more strategic approaches. Reliable connectivity is essential for digital transformation as it facilitates interactions between people, organizations and machines. Although internet use continues to increase among both individuals and businesses, differences in capabilities and effective use remain. Incorporating seven interrelated dimensions, the Going Digital Integrated Policy Framework helps countries to develop a coordinated, government-wide approach to digital transformation. These dimensions are; access, use, innovation, jobs, community, trust and market openness. Good policies on all these dimensions are needed for digital transformation for growth and prosperity to work. Cross-cutting issues such as gender, skills, digital government and data governance also need to be considered (OECD 2020a).

The concept of "digital economy" refers to products and services that contain or benefit from digital technologies. The ICT sector supports the digital economy and is a reliable barometer of the country's economic growth. In this digital age, competitive advantage will be driven by innovation, entrepreneurial dynamism, knowledge and ICT production (Mordor Intelligence 2023).

OECD (2020b) defines the Digital Economy as all economic activities that rely on or are significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services and data. It refers to all producers and consumers, including the government, who use these digital inputs in their economic activities.

ICT not only includes all digital technologies that help individuals, businesses and organizations use information, but covers all electronic products that deal with information in digital form. Therefore, ICT is concerned with storing, receiving and transmitting digital data and makes a business more efficient, effective and instantly responsive to customers' needs. ICT can assist business activities including design, manufacture, R&D, distribution and sales and feedback. ICT will reduce the demand for face-to-face communication and cause further dispersion of economic activities and will promote industrial clustering and offers potential productivity gains to the labour market and economy by providing better matching between workers and vacant jobs by reducing the cost of job search and hiring, reducing transaction costs and disseminating job-related information widely via the Internet (Beirut Arab University 2023).

The adoption and use of ICT drives productivity, green and inclusive growth through digital innovation. In a narrow sense, digital innovation is the implementation of a new or significantly improved ICT product (good or service), in other words ICT

product innovation; more broadly, it refers to the use of ICTs to implement a new or significantly improved product, process, marketing method or organizational method (OECD 2016).

Overall, empirical studies show that ICT plays a major role not only in ostensibly daily lives but also very visibly in productivity statistics. Evidence also shows that the productivity impact is not only significant and positive, but also increases over time. While ICT has the most significant impact, underperformers cannot increase productivity by simply increasing ICT investment, so ICT should be included in complementary institutional investments (Kretschmer 2012).

Broadband connectivity is an essential component in ICT development, adoption and use. It has strategic importance for all countries as ICT accelerates its contribution to economic growth in all sectors, increases social and cultural development and facilitates innovation. Widespread and affordable access can contribute to productivity and growth through applications that support efficiency, network effects and positive externalities, with benefits for business, the public sector and consumers. Broadband networks are an important platform for the development of knowledge-based global, national, regional and local economies (OECD 2003).

BEA (2023) includes four main types of goods and services in the definition of digital economy:

- Infrastructure or basic physical materials and organizational arrangements that support the existence and use of computer networks and the digital economy, in particular ICT goods and services.
- Online remote sale of goods and services over e-commerce or computer networks.
- Computing and communications-related services performed for priced digital services or a fee charged to the consumer.
- Federal vulnerable digital services represent the annual budget of federal non-defence government agencies whose services are directly involved in supporting the digital economy.

The firms, which have monopolistic power to apply higher prices in the markets have more advantage than the price-taker ones in perfectly competitive markets so that their maximized profits can be used for new research and development (R&D), patent grants and hence innovation. Monopolistic firms have effect to influence market prices so that they can get higher profits and have more advantage to make new R&D,

innovation and to get patent grants. They can produce more sophisticated goods and services, so that they can produce and export higher value-added products which have higher unit export values. Researchers and R&D expenditures are inputs of innovative activities whereas patent grants are output, so that they cause an increase in high-tech exports (Gürler 2021).

The labour force pool, which were formerly farmers at the villages, has been the driving force of economic development at industrialization era. At this stage, labour and capital are two main factors of production, where labour is retrieved from migration from rural to urban regions and capital is used from local savings (deposits) and foreign direct investments (FDI) and credits from international financial markets. Due to the lack of technology in the developing country, it is imported. The cooperation between universities and local entrepreneurs should cause inverse engineering and increase know-how so that domestic technology will replace the importing one (Gürler 2021).

Patents are a good indicator for an innovative country. Innovation will cause increasing returns to scale so that countries who are leaders and followers in innovation should have higher income per capita whereas the countries which have technology gap with the innovation leaders will have low income (Gürler 2022).

In 2022, it is seen that 5.3 billion people, which corresponds to 66.3 percent of the world's total population, have access to the internet. Active mobile-broadband subscriptions has reached 86.9 percent in 2022 in the world. Exports in ICT goods were 2.77 trillion USD and ICT services were 848.4 billion USD in 2021. The share of ICT goods as percentage of total trade in the world was 13.2 percent whereas it was 7 percent in OECD countries. Share of ICT services as percentage of total trade in the world was 14 percent whereas it was 13.3 percent in OECD.

The study aims to investigate the relationship between the export performance in "Creative", "ICT" and "High-tech" products with their digital infrastructure and economic growth in OECD countries.

2. Materials and Methods

In this study, the relationship between the export performance in "Creative", "ICT" and "High-tech" products with their digital infrastructure and economic growth in OECD countries was analysed. In other words, the effect of digitalism on the economic growth and foreign trade of creative products and high-tech products in OECD countries was examined in the study. The relationship was investigated by correlation coefficients whereas the digital performance of the countries were ranked by min-max methodology.

2.1.Country selection

In the study 38 OECD countries were analysed. These countries are listed in **Table 1** as below.

Table 1. OECD members as March, 2023.

Australia	Finland	Korea, Republic	Slovakia (Slovak Republic)
Austria	France	Latvia	Slovenia
Belgium	Germany	Lithuania	Spain
Canada	Greece	Luxembourg	Sweden
Chile	Hungary	Mexico	Switzerland
Colombia	Iceland	Netherlands	Türkiye
Costa Rica	Ireland	New Zealand (NZ)	United Kingdom (UK)
Czechia (Czech Republic)	Israel	Norway	United States (US)
Denmark	Italy	Poland	
Estonia	Japan	Portugal	

Source: OECD (2023a)

The country set is analysed considering the indicators as below.

- Individuals using the Internet (% of population) (data from OECD (2023b)/World Bank (2023)) [A]
- Active mobile-broadband subscriptions per 100 inhabitants (data from OECD (2023b)/ITU (2023)) [B]
- Individuals (16-74 aged) who have purchased online - last 12 m (%) (data from OECD (2023b)) [C]
- The share of ITC employment in total employment (%) (data from OECD (2023b), TURKSTAT (2023), U.S. BLS (2023), ISED (2023), ABS (2023), STATCAN (2023a)) [D]
- The share of information and communication (ISIC rev4) in GDP (%) (data from OECD (2023b)[E]
- GDP growth rate (%) (data from OECD (2023b)) [F]
- GDP growth in information and communication (ISIC rev4) (%) (data from OECD (2023b)) [G]
- High-tech export share in total merchandise export (high-tech exports are calculated by OECD (2011) classification from TradeMap (2023) data), [H]
- Number of high-tech export products (high-tech exports are calculated by OECD (2011) classification from TradeMap (2023) data), [I]
- Share of creative goods exports, annual(data from UNCTAD (2023)) [J]
- Growth rates of creative goods exports, annual (data from UNCTAD (2023) [K]
- Share of ICT services as percentage of total trade, annual (data from UNCTAD (2023)) [L]
- Share of ICT goods as percentage of total trade, annual (UNCTAD) [M]

- The share of the patent applications (or grants) in ICT sector (%) (data from WIPO (2023) [N]
- The share of the FDI in ICT sector (%) (data from OECD (2023b), STATCAN (2023b)) [O]

2.2. Data selection

Data in the study are collected considering the "digital infrastructure", "employment", "national accounts", "foreign trade", "intellectual properties (IP)" and "foreign direct investment (FDI)" pillars. Data for fifteen indicators are collected for 2021 and most recent year in OECD countries.

Due to the missing data for some countries for some years, instead of panel data analysis cross-section data analysis was chosen. International organizations and local statistic offices with local government institutions were used as data sources. The normalized values of the data were used in the analysis to generate an overall index due to the different units of the indicators.

Normality of the data

The normality of the data is very important in statistical analysis. To test the normality of the data, and to show the relationship between the indicators by the scatter diagrams, the 22nd version of the Statistical Package for Social Sciences Data (SPSS) (IBM 2023) was used.

To analyse the normality of the data, Jarque-Bera (JB)[1] test, Shapiro-Wilks (SW) test and Kolmogorov-Smirnov (KS) test can be used. In the study, AW and KS tests were applied to test the normality of the data set. The parametric Pearson correlation test can be used for normally distributed data and non-parametric Spearman's rho correlation test can be used for the data not normally distributed.

The null and alternative hypotheses can be as below to test the normality of the data:

- H_0: The data set has normal distribution, so that parametric tests should be applied,
- H_1: The data set has no normal distribution, so that non-parametric tests should be applied.

If the test statistic (*t)* is greater than the critical value, in other words the probability value (p) is smaller than the critical value (p=0.05), then the null hypothesis should be

[1] $JB = (\frac{n}{6}) * (S^2 + \frac{(K-3)^2}{4})$

rejected and the alternative one should be accepted with 95% confidence. In this case, the data is not normally distributed. If the test statistic (t) is smaller than the critical value, in other words the probability value (p) is greater than the critical value (p=0.05), then the null hypothesis cannot be rejected with 95% confidence, so that the data is normally distributed.

Standardization of the data

Indicators for each country were normalized into the [0, 100] range, whereas the higher scores representing better, lower scores representing worse outcomes. Normalization was made according to the minimum- maximum (min-max) methodology, which is being used for many international institutions to generate indices. The minimum and maximum values for a given indicator are the lowest and highest country scores of the country set. The following formula was applied to transform the raw data into normalized values (Cornell University et al., 2015&WEF, 2014).

For positive indicators the min-max formula is;

$$\frac{\text{(country value – minimum value of the country set)}}{\text{(Maximum of the country set – minimum of the country)}} \times 100$$

For negative indicators the min-max formula is;

$$1 - \frac{\text{(country value – minimum value of the country set)}}{\text{(Maximum of the country set – minimum of the country)}} \times 100 = \frac{\text{max-country value}}{\text{max-min}}$$

After normalizing the data into the [0, 100] range an overall index was generated by taking the equal weighted average of fifteen indicators[2].

3. Result

Correlations between indicators

Non-parametric correlation test should be applied for the data are not distributed normally. Both Kolmogorov-Smirnov and Shapiro-Wilk test probability values (p) are smaller than the critical value (p=0.05) and statistically significant, so that we reject the null hypothesis and accept the alternative one with 95% confidence which states that Spearman's rho non-parametric correlation test should be used to test the relationship between indicators. In the study 38 countries were analyzed. Only "the share of ITC employment in total employment (%) [D]" indicator data have normally distributed

[2] There are different methods for finding weights. The weight of the index can be evaluated by "Principal Component Analysis" alternatively.

whereas the other fourteen indicators are distributed not normally (Hata! Başvuru kaynağı bulunamadı.).

Table 2. Normality test results of the indicators

	Kolmogorov-Smirnova			Shapiro-Wilk			
Indicator	Statistic	df	Sig.	Statistic	df	Sig.	Decision
Individuals using the Internet (% of population) [A]	0.197	39	0.001	0.799	39	0.000	Not normally distributed
Active mobile-broadband subscriptions per 100 inhabitants [B]	0.162	39	0.011	0.816	39	0.000	Not normally distributed
Individuals (16-74 aged) who have purchased online - last 12 m (%) [C]	0.150	39	0.027	0.904	39	0.003	Not normally distributed
The share of ITC employment in total employment (%) [D]	0.110	39	,200*	0.963	39	0.217	Normally distributed
The share of information and communication (ISIC rev4) in GDP (%) [E]	0.238	39	0.000	0.725	39	0.000	Not normally distributed
GDP growth rate (%) [F]	0.129	39	0.099	0.923	39	0.011	Not normally distributed
GDP growth in information and communication (ISIC rev4) (%) [G]	0.150	39	0.026	0.928	39	0.015	Not normally distributed
High-tech export share in total merchandise export [H]	0.141	39	0.049	0.869	39	0.000	Not normally distributed
Number of high-tech export products [I]	0.341	39	0.000	0.530	39	0.000	Not normally distributed
Share of creative goods exports, annual [J]	0.126	39	0.118	0.909	39	0.004	Not normally distributed
Growth rates of creative goods exports, annual [K]	0.199	39	0.000	0.869	39	0.000	Not normally distributed
Share of ICT servcies as percentage of total trade, annual [L]	0.245	39	0.000	0.702	39	0.000	Not normally distributed
Share of ICT goods as percentage of total trade, annual [M]	0.199	39	0.000	0.792	39	0.000	Not normally distributed
The share of the patent applications (or grants) in ICT sector (%) [N]	0.208	39	0.000	0.841	39	0.000	Not normally distributed
The share of the FDI in ICT sector (%) [O]	0.387	39	0.000	0.617	39	0.000	Not normally distributed

Source: IBM (2023)

According to the Spearman's rho non-parametric correlation test, it is found that a high positive correlation coefficient as 0.717 between “individuals using the internet” and “individuals (16-74 aged) who have purchased online - last 12 m”. Correlation is significant even at the 0.01 level (2-tailed).

“The share of ITC employment in total employment” and “the share of information and communication (ISIC rev4) in GDP” have a high positive correlation coefficient as 0.693 so that the correlation is significant even at the 0.01 level (2-tailed).

“GDP growth rate” and “GDP growth in information and communication (ISIC rev4)” ” have a high positive correlation coefficient as 0.585 so that the correlation is significant even at the 0.01 level (2-tailed).

"High-tech export share in total merchandise export" and "share of ICT goods as percentage of total trade, annual" have a high positive correlation coefficient as 0.656 so that the correlation is significant even at the 0.01 level (2-tailed).

"High-tech export share in total merchandise export" and "number of high-tech export products" have a positive correlation coefficient as 0.427 so that the correlation is significant even at the 0.01 level (2-tailed).

"Share of creative goods exports, annual" and "growth rates of creative goods exports, annual" have a positive correlation coefficient as 0.494 so that the correlation is significant even at the 0.01 level (2-tailed).

"The share of ITC employment in total employment" and "share of ICT services as percentage of total trade, annual" have a high positive correlation coefficient as 0.501 so that the correlation is significant even at the 0.01 level (2-tailed).

"The share of information and communication (ISIC rev4) in GDP" and "the share of the patent applications (or grants) in ICT sector" have a positive correlation coefficient as 0.469 so that the correlation is significant even at the 0.01 level (2-tailed).

"The share of the patent applications (or grants) in ICT sector" and "the share of the FDI in ICT sector" have a positive correlation coefficient as 0.303.

Table 3. Correlation coefficients of the indicators

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]	[N]	[O]
[A]	1.000	0.300	0.717	0.405	0.099	-0.246	-0.110	0.070	0.197	-0.082	-0.134	0.008	-0.191	0.213	0.061
[B]	0.300	1.000	0.269	0.304	0.397	-0.284	0.091	0.131	0.199	0.017	-0.099	0.054	0.291	0.452	-0.209
[C]	0.717	0.269	1.000	0.688	0.503	-0.319	-0.087	0.304	0.313	-0.015	-0.268	0.168	0.129	0.344	0.218
[D]	0.405	0.304	0.688	1.000	0.693	-0.086	0.108	0.307	-0.048	-0.069	-0.246	0.501	0.244	0.334	0.174
[E]	0.099	0.397	0.503	0.693	1.000	-0.002	0.320	0.543	0.113	0.211	-0.088	0.493	0.561	0.469	0.145
[F]	-0.246	-0.284	-0.319	-0.086	-0.002	1.000	0.585	0.052	-0.186	0.172	0.202	0.018	-0.144	-0.064	-0.070
[G]	-0.110	0.091	-0.087	0.108	0.320	0.585	1.000	0.193	-0.099	0.202	0.114	0.247	0.162	0.155	-0.168
[H]	0.070	0.131	0.304	0.307	0.543	0.052	0.193	1.000	0.427	0.393	0.203	0.124	0.656	0.193	0.256
[I]	0.197	0.199	0.313	-0.048	0.113	-0.186	-0.099	0.427	1.000	0.362	0.098	-0.103	0.097	0.387	0.123
[J]	-0.082	0.017	-0.015	-0.069	0.211	0.172	0.202	0.393	0.362	1.000	0.494	0.038	0.407	0.078	0.004
[K]	-0.134	-0.099	-0.268	-0.246	-0.088	0.202	0.114	0.203	0.098	0.494	1.000	-0.040	0.332	0.157	0.132
[L]	0.008	0.054	0.168	0.501	0.493	0.018	0.247	0.124	-0.103	0.038	-0.040	1.000	0.219	0.087	-0.038
[M]	-0.191	0.291	0.129	0.244	0.561	-0.144	0.162	0.656	0.097	0.407	0.332	0.219	1.000	0.218	0.155
[N]	0.213	0.452	0.344	0.334	0.469	-0.064	0.155	0.193	0.387	0.078	0.157	0.087	0.218	1.000	0.303
[O]	0.061	-0.209	0.218	0.174	0.145	-0.070	-0.168	0.256	0.123	0.004	0.132	-0.038	0.155	0.303	1.000

Source: IBM (2023)

High-tech exports

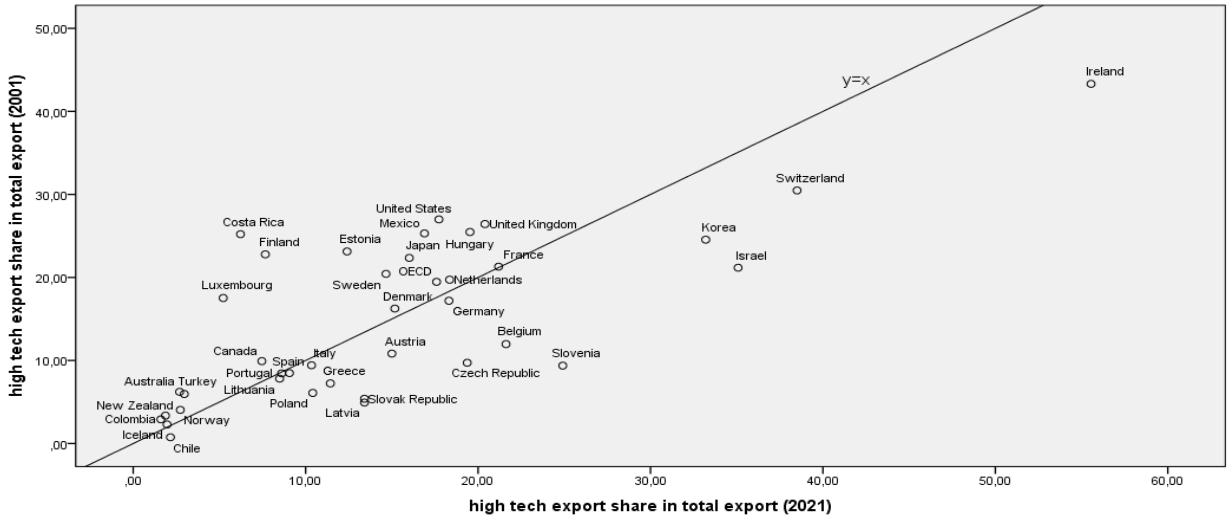
High-the exports data are one of the performance indicators of innovative countries. In a competitive country, enterprises conduct R&D and lead innovative products and processes. They are involved in global value chains and supply chains by exporting high-tech product, sophisticated goods and services.

The graph which was estimated by SPSS software below shows the change in high-tech export share in total export in OECD countries in 2001 and 2021. The line at the graph indicates the equality of the values for 2001 and 2021 years. According to the graph, OECD average in high-tech export share in total export was 19.47 percent in 2001 and decreased to 17.59 percent in 2021. France, Iceland, Italy, Lithuania, Portugal and Spain have small changes in high-tech export share in total export. Slovenia has the highest performance in this indicator so that the share was 9.38 percent in 2001 and raised to 24.91 percent in 2021. Israel, Ireland, Czechia and Belgium are the other countries, which have good performance. Costa Rica has the worst performance in this indicator so that the share was 25.21 percent in 2001 and raised to 6.22 percent in 2021. Finland, Luxembourg, Estonia and United States are the other countries, which have bad performance (**Graph 1**).

In 2001, the global merchandise export value was 6.13 trillion dollar and OECD had 35.2 percent of this value which means 2.16 trillion dollar. Global high-tech export value was 1.15 trillion dollar and OECD had 75.1 percent of this value which means 860.9 billion dollar. In 2021, the global merchandise export value was 22.1 trillion dollar and OECD had 55.5 percent of this value which means 12.3 trillion dollar. Global high-tech export value was 4.53 trillion dollar and OECD had 97.6 percent of this value which means 4.42 billion dollar. It seems that OECD countries had the most of the global high-tech export in 2021.

Ireland has the highest high-tech export share in total merchandised export with 43.3 percent in 2001 and 55.5 percent in 2021.

The USA was the country with the highest value in 2001 with a total of 729.1 billion dollars of product exports, 196.8 billion of which was high technology exports. The share of the high-tech export was nearly 27 percent. The USA was the country with the highest value in 2021 with a total of 1,754 billion dollars of product exports, 311 billion of which was high technology exports. The share of the high-tech export was nearly 17.7 percent.



Graph 1. The change in high-tech export share in total export in OECD countries in 2001 and 2021.

Source: Author's own calculation

Overall index

After normalizing the data into the [0, 100] range an overall index was generated by taking the equal weighted average of fifteen indicators.

In overall digitalization ranking Ireland is at the top with an index score as 76.1. Israel with an index score as 58.1, Korea Republic with an index score as 57.4, Sweden with an index score as 52.9 and United Kingdom with an index score as 51.1 are following Ireland.

In overall digitalization ranking Colombia had the lowest index score as 17.5. Mexico with an index score as 20.9, Costa Rica with an index score as 24.3, Iceland with an index score as 26.6 and Chile with an index score as 29.9 are following Colombia.

Ireland had best performance in five indicators, Kore Republic and Türkiye have nest performance in two indicators and Norway, U.S., New Zealand, Israel, Japan and Sweden have best performance in one indicator.

The leader country Ireland has been first at "the share of information and communication (ISIC rev4) in GDP", "GDP growth rate"," high-tech export share in total merchandise export", "share of ICT services as percentage of total trade, annual" and "the share of the FDI in ICT sector". Ireland was ranked 7th at "individuals using the Internet (% of population)", 19th at "active mobile-broadband subscriptions per 100 inhabitants", 5th at "individuals (16-74 aged) who have purchased online - last 12 m", second at "the share of ITC employment in total employment", 5th at "GDP growth in information and communication (ISIC rev4)", 19th at "number of high-tech export products", 24th at "share of creative goods exports, annual", fourth at "Growth rates of

creative goods exports, annual", 8th at "share of ICT goods as percentage of total trade, annual" and 5th at "the share of the patent applications (or grants) in ICT sector".

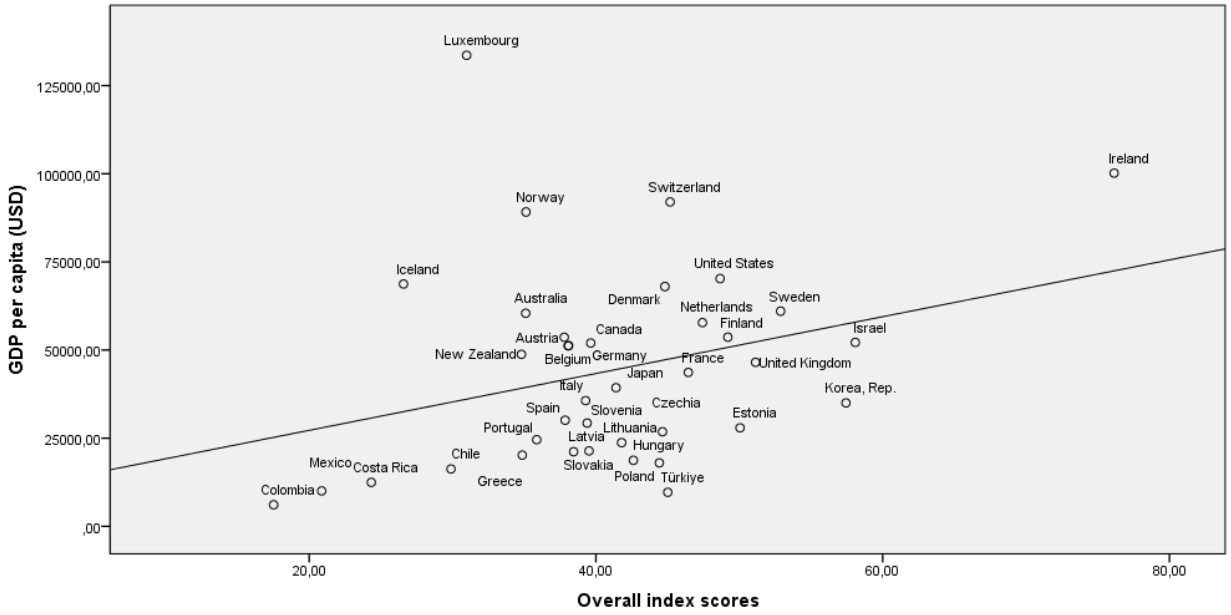
Table 4. The normalized data for the indicators for OECD countries and overall digitalization index (2021 and most recent year)

Country	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]	[N]	[O]	Overall index	Rank
Australia	90,62	42,15	68,50	40,32	3,29	12,89	44,76	2,01	93,24	4,70	25,64	14,55	2,03	23,52	58,33	35,10	30
Austria	87,48	38,17	67,18	44,64	11,77	21,09	27,41	24,83	86,96	32,42	18,08	22,05	16,08	9,58	59,15	37,79	27
Belgium	80,62	16,89	78,63	66,23	16,44	34,87	41,22	37,11	94,69	10,32	4,37	20,69	2,91	8,12	58,29	38,09	24
Canada	81,98	6,04	92,56	53,46	15,80	25,07	33,59	10,86	94,69	15,38	26,53	18,57	4,10	56,46	59,58	39,64	19
Chile	75,27	29,46	29,90	30,11	5,80	83,23	48,90	1,03	59,42	1,30	4,81	14,20	0,00	7,80	57,07	29,89	34
Colombia	0,00	0,00	0,00	13,28	5,83	74,56	3,04	0,00	45,41	12,36	29,30	13,90	0,08	6,14	58,91	17,52	38
Costa Rica	52,72	11,73	6,90	23,88	19,43	49,26	48,47	8,56	42,03	5,05	1,19	25,89	1,72	10,29	57,77	24,33	36
Czechia	73,04	20,46	81,33	59,58	30,43	12,32	35,89	32,94	94,69	56,69	18,03	33,88	52,88	8,83	58,60	44,64	14
Denmark	90,36	58,25	95,42	62,85	16,91	23,71	38,61	25,16	88,41	45,62	23,92	12,38	12,60	19,97	58,00	44,81	13
Estonia	79,40	90,91	73,64	74,93	37,76	51,29	90,53	20,02	54,59	38,62	33,33	33,24	34,16	38,37	0,00	50,05	6
Finland	91,43	71,34	83,37	75,82	26,06	7,90	58,20	11,22	65,70	7,91	6,51	77,39	7,86	89,20	58,05	49,20	7
France	83,23	22,19	80,29	50,50	21,82	40,84	48,48	36,31	97,10	71,89	31,89	11,51	11,64	29,11	59,80	46,44	10
Germany	79,54	17,98	80,31	55,34	19,15	4,23	27,53	30,97	94,69	28,50	22,23	16,44	16,46	16,83	60,62	38,06	25
Greece	62,27	16,14	58,50	33,18	9,28	54,97	52,42	18,22	74,88	32,32	32,86	4,77	9,57	5,10	58,46	34,86	31
Hungary	76,76	7,35	73,00	52,14	19,83	43,46	99,42	33,23	60,39	17,94	32,26	18,06	41,33	6,87	57,13	42,61	16
Iceland	96,02	38,64	90,87	70,50	21,04	19,75	37,89	0,66	0,00	0,00	0,00	16,74	0,17	0,57	5,88	26,58	35
Ireland	93,82	29,38	94,31	99,80	100,00	100,00	77,43	100,00	81,16	19,13	48,57	100,00	31,62	66,86	100,00	76,14	1
Israel	57,01	56,67	57,89	100,00	65,69	56,52	53,70	62,05	75,85	23,83	33,93	58,75	47,54	61,52	60,46	58,09	2
Italy	76,02	20,00	46,79	38,79	11,36	40,14	24,41	16,20	95,17	94,55	43,67	14,82	5,90	4,50	56,94	39,28	22
Japan	56,79	100,00	64,75	55,94	22,77	0,00	25,47	26,71	86,96	17,28	25,17	10,00	28,89	40,95	59,38	41,40	18
Korea, Rep.	100,00	72,00	78,19	46,06	20,20	17,50	35,38	58,57	87,44	42,22	66,71	11,48	100,00	67,47	58,40	57,44	3
Latvia	77,70	37,37	62,60	61,31	23,27	16,82	41,94	21,89	54,59	40,20	21,07	31,31	27,77	1,01	57,77	38,44	23
Lithuania	66,03	40,98	60,21	53,22	14,09	33,54	48,17	12,76	77,78	64,96	33,08	15,57	10,91	38,18	57,32	41,79	17
Luxembourg	98,08	32,26	86,09	66,69	16,87	25,86	0,00	6,71	43,00	7,77	2,26	5,48	4,74	10,82	58,02	30,98	33
Mexico	14,96	10,40	20,04	0,00	0,00	22,52	36,12	28,33	24,15	18,33	31,35	0,00	48,70	0,00	58,16	20,87	37
Netherlands	96,51	51,43	95,31	66,59	21,42	23,77	41,70	31,04	96,62	23,82	27,78	18,85	27,69	30,75	58,23	47,43	9
New Zealand	89,79	22,92	57,64	46,50	1,56	13,73	20,69	0,50	57,00	12,53	100,00	19,77	4,73	10,31	64,37	34,80	32
Norway	97,46	26,48	100,00	62,68	14,19	15,19	35,05	2,09	71,98	2,72	7,20	11,06	1,63	14,72	64,42	35,12	29
Poland	80,93	49,33	65,85	39,00	17,25	41,11	97,46	16,34	65,22	64,89	27,18	22,85	21,12	0,06	57,69	44,42	15

Portugal	68,03	12,81	52,07	52,53	15,10	29,18	40,38	12,99	80,19	37,39	28,33	19,98	11,21	20,23	57,62	35,87	28
Slovakia	74,68	13,03	80,99	61,01	20,20	7,62	20,01	21,89	70,05	24,04	26,54	27,72	41,08	9,87	94,07	39,52	20
Slovenia	82,50	15,11	63,35	56,55	14,71	53,02	71,41	43,21	72,46	21,88	17,00	12,83	4,86	3,23	58,77	39,39	21
Spain	89,81	29,12	69,99	47,71	12,85	29,51	41,50	13,83	95,65	31,32	20,67	19,35	4,69	5,98	55,80	37,85	26
Sweden	82,98	45,88	92,51	90,35	39,00	28,34	52,18	24,21	90,34	25,29	8,50	36,12	19,58	100,00	57,89	52,88	4
Switzerland	96,80	22,97	88,43	48,08	18,74	18,17	29,53	68,40	95,17	60,27	42,75	17,34	2,49	10,67	57,71	45,17	11
Türkiye	79,80	8,22	37,90	1,22	7,50	80,48	100,00	2,52	84,06	100,00	63,07	6,90	2,10	42,62	58,78	45,01	12
UK	91,74	33,85	97,82	75,03	27,49	47,66	38,52	34,84	94,20	52,38	6,91	13,50	11,85	44,72	96,50	51,13	5
US	54,09	80,90	64,59	19,76	36,58	33,23	67,32	29,90	100,00	33,82	24,98	10,93	30,40	84,91	58,58	48,66	8

Source: Author's own calculation

Graph 2 shows the relationship between overall index scores and GDP per capita in OECD countries. Overall index data is distributed normally whereas GDP per capita is not. The Spearman's rho correlation coefficient is 0.296 which states a positive correlation between overall index scores and GDP per capita in OECD countries.



Graph 2. The relationship between overall index scores and GDP per capita in OECD countries (2021 and most recent year)

Source: Author's own calculation

Table 5 shows the comparison of overall index with different weight formulas. "Principal Component Analysis" is an alternative way to evaluate the weight of the index. Ireland is at the top and Israel is second at each index calculated by equal weighted index, communalities extraction (principal Component Analysis) and squared multiple correlation analysis. Korea republic is ranked third by equal weighted index and communalities extraction (principal Component Analysis) and fourth by squared multiple correlation analysis. Sweden is ranked third by equal weighted index and

communalities extraction (principal Component Analysis) and third by squared multiple correlation analysis. Türkiye is ranked twelfth by equal weighted index and twenty-eighth by communalities extraction (principal Component Analysis) and thirty first by squared multiple correlation analysis.

Table 5. Comparison of overall index with different weight formulas

Country	Overall index (equal weight)	Rank	Overall index (communalities extraction)	Rank	Overall index (squared multiple correlation)	Rank
Australia	35,10	30	35,58	30	36,45	29
Austria	37,79	27	39,85	18	40,90	18
Belgium	38,09	24	39,42	20	41,59	16
Canada	39,64	19	40,21	16	42,25	15
Chile	29,89	34	30,31	35	31,22	35
Colombia	17,52	38	17,48	38	17,61	38
Costa Rica	24,33	36	24,08	36	24,76	36
Czechia	44,64	14	44,66	11	45,47	11
Denmark	44,81	13	45,28	9	46,01	10
Estonia	50,05	6	47,55	7	48,71	8
Finland	49,20	7	49,08	6	51,71	6
France	46,44	10	44,59	12	44,78	13
Germany	38,06	25	38,37	22	39,70	20
Greece	34,86	31	32,63	32	33,04	32
Hungary	42,61	16	37,71	25	39,01	23
Iceland	26,58	35	30,77	33	31,78	33
Ireland	76,14	1	72,43	1	77,42	1
Israel	58,09	2	56,29	2	59,37	2
Italy	39,28	22	37,91	23	36,65	28
Japan	41,40	18	41,95	14	43,21	14
Korea, Rep.	57,44	3	53,53	3	54,47	4
Latvia	38,44	23	38,66	21	39,07	22
Lithuania	41,79	17	39,75	19	39,47	21
Luxembourg	30,98	33	36,00	29	37,04	27
Mexico	20,87	37	18,47	37	17,89	37
Netherlands	47,43	9	47,16	8	48,95	7
New Zealand	34,80	32	30,65	34	31,26	34
Norway	35,12	29	37,09	27	38,71	25
Poland	44,42	15	40,43	15	39,88	19
Portugal	35,87	28	34,55	31	35,15	30

Slovakia	39,52	20	39,88	17	40,98	17
Slovenia	39,39	21	37,57	26	38,90	24
Spain	37,85	26	37,73	24	38,68	26
Sweden	52,88	4	52,47	4	55,02	3
Switzerland	45,17	11	44,34	13	45,12	12
Türkiye	45,01	12	36,30	28	34,41	31
UK	51,13	5	51,87	5	52,96	5
US	48,66	8	45,18	10	46,37	9

Source: Author's own calculation

4. Discussion and Conclusion

The results show that there is a positive correlation between overall index scores and GDP per capita in OECD countries. "The share of ITC employment in total employment" and "the share of information and communication (ISIC rev4) in GDP" have a high positive correlation coefficient as 0.693 so that the correlation is significant even at the 0.01 level (2-tailed). "GDP growth rate" and "GDP growth in information and communication (ISIC rev4)" " have a high positive correlation coefficient as 0.585 so that the correlation is significant even at the 0.01 level (2-tailed). "High-tech export share in total merchandise export" and "share of ICT goods as percentage of total trade, annual" have a high positive correlation coefficient as 0.656 so that the correlation is significant even at the 0.01 level (2-tailed). "The share of ITC employment in total employment" and "share of ICT services as percentage of total trade, annual" have a high positive correlation coefficient as 0.501 so that the correlation is significant even at the 0.01 level (2-tailed).

In their study, Gomez et al. (2022) have found that the impact of the digital economy on the economic growth of OECD countries, as measured by a technology proxy such as the internet, mobile phone and fixed broadband, depends on the level of development of these countries and the measures of technologies that capture the digital economy. According to the authors, ICTs positively affect the development of the economies of OECD countries and can be used as a tool by policy makers.

Costa et al. (2021) have found that an increase in platform traffic has a stronger positive effect on labour productivity growth for SMEs. The authors found that the use of online platforms among companies operating in the same sector causes an increase in labour productivity, and this is due to increases in value added rather than a decrease in employment. Productivity gains are greater for small firms and firms in the middle of the productivity distribution, where online platforms can play an important role in narrowing the productivity gaps between SMEs and large companies. The authors suggest that productivity gains are stronger in more dynamic platform markets and give

their opinion on factors and policies that can be used to encourage platform development in ways that are beneficial to the economy.

Gürler (2016) has stated in his study that work can be completed and done faster with the internet (such as making an appointment from the hospital, paying the bills online, and communicating via e-mail instead of a document and fax). The author emphasized that accessing information via the internet is much more conveniently in a short time, therefore, it is important for citizens to access the internet easily everywhere in the cities, and suggested that the use of wireless in public transportation should be widespread and free service should be provided. In addition, access to the Internet should be expanded in enterprises, and even the condition of having a website should be introduced at the establishment stage of the firm.

There are five famous global indices which were issued by international organizations. These indices can be named as WIPO (2022)'s Global Innovation Index (GII), UNCTAD (2020) B2C E-commerce Index, International Telecommunication Union's (ITU) (2017) ICT Development Index, and Portulans Institute and WIPO (2022)'s Network Readiness Index (NRI), UNCTAD (2019) Frontier technology readiness index.

The overall index scores should be compared by the global indices mentioned above. Ireland which is ranked at top in overall index is ranked nineteenth in GII, fifth in UNCTAD's B2C E-commerce Index, seventeenth in ICT Development Index, seventeenth in NRI and seventh in Frontier Technology Readiness Index. Israel which has the second best performance in overall index is ranked thirteenth in GII, twenty third in UNCTAD's B2C E-commerce Index, nineteenth in ICT Development Index, nineteenth in NRI and eighteenth in Frontier Technology Readiness Index. Korea Republic which has the third best performance in overall index is ranked sixth in GII, twenty sixteenth in UNCTAD's B2C E-commerce Index, second in ICT Development Index, second in NRI and sixth in Frontier Technology Readiness Index. Colombia which has the worst performance in overall index is ranked thirty seventh in GII, in UNCTAD's B2C E-commerce Index, in ICT Development Index and in NRI and sixth thirty seventh in Frontier Technology Readiness Index. Mexico which has the second worst performance in overall index is ranked thirty sixth in GII, thirty eighth in UNCTAD's B2C E-commerce Index, in ICT Development Index and in NRI and thirty sixth in Frontier Technology Readiness Index. (**Table 6**).

https://doi.org/10.56038/ejrnd.v3i2.267

Table 6. Benchmarking overall index score and ranking with famous global digital indices

Country	Overall index (equal weight)	GII Score	GII rank in OECD countries	UNCTAD B2C e-commerce index score	UNCTAD B2C e-commerce index rank in OECD countries	ITU ICT Dev. Index score	ITU ICT Dev. Index rank in OECD countries	NRI Score	NRI rank in OECD countries	Frontier technology readiness index score	Frontier technology readiness index rank in OECD countries
Australia	35.10	47.14	21	90.60	14	8.24	13	8.24	13	0.90	11
Austria	37.79	50.19	14	88.80	17	8.02	17	8.02	17	0.79	20
Belgium	38.09	46.88	22	86.80	19	7.81	21	7.81	21	0.90	10
Canada	39.64	50.76	12	90.80	11	7.77	23	7.77	23	0.89	13
Chile	29.89	34.00	35	68.40	36	6.57	34	6.57	34	0.57	34
Colombia	17.52	29.22	37	59.10	37	5.36	37	5.36	37	0.44	38
Costa Rica	24.33	28.67	38	68.80	34	6.44	35	6.44	35	0.51	37
Czechia	44.64	42.84	25	85.80	20	7.16	28	7.16	28	0.75	23
Denmark	44.81	55.93	9	94.50	3	8.71	4	8.71	4	0.92	9
Estonia	50.05	50.19	15	90.80	11	8.14	16	8.14	16	0.72	25
Finland	49.20	56.88	8	93.40	5	7.88	19	7.88	19	0.87	15
France	46.44	54.96	10	90.00	15	8.24	13	8.24	13	0.89	12
Germany	38.06	57.23	7	93.40	5	8.39	11	8.39	11	0.92	8
Greece	34.86	34.54	33	79.20	29	7.23	26	7.23	26	0.66	31
Hungary	42.61	39.83	28	80.50	27	6.93	32	6.93	32	0.67	30
Iceland	26.58	49.45	17	80.30	28	8.98	1	8.98	1	0.71	26
Ireland	76.14	48.54	19	93.40	5	8.02	17	8.02	17	0.92	7
Israel	58.09	50.23	13	83.90	23	7.88	19	7.88	19	0.84	18
Italy	39.28	46.06	23	81.80	26	7.04	31	7.04	31	0.76	22
Japan	41.40	53.57	11	88.70	18	8.43	9	8.43	9	0.87	16
Korea, Rep.	57.44	57.78	6	89.80	16	8.85	2	8.85	2	0.93	6
Latvia	38.44	36.53	32	77.80	32	7.26	25	7.26	25	0.65	33
Lithuania	41.79	37.35	31	82.60	24	7.19	27	7.19	27	0.65	32
Luxembourg	30.98	49.81	16	78.40	31	8.47	7	8.47	7	0.87	14
Mexico	20.87	31.00	36	46.80	38	5.16	38	5.16	38	0.54	36
Netherlands	47.43	58.04	5	95.80	2	8.49	6	8.49	6	0.95	5
New Zealand	34.80	47.17	20	91.80	9	8.33	12	8.33	12	0.79	21
Norway	35.12	48.84	18	92.60	8	8.47	7	8.47	7	0.86	17
Poland	44.42	37.55	30	82.20	25	6.89	33	6.89	33	0.73	24
Portugal	35.87	42.11	26	77.50	33	7.13	29	7.13	29	0.71	27
Slovakia	39.52	34.30	34	85.70	21	7.06	30	7.06	30	0.69	29
Slovenia	39.39	40.56	27	78.80	30	7.38	24	7.38	24	0.69	28

Spain	37.85	44.62	24	84.90	22	7.79	22	7.79	22	0.83	19
Sweden	52.88	61.56	3	90.80	11	8.41	10	8.41	10	0.96	4
Switzerland	45.17	64.62	1	95.90	1	8.74	3	8.74	3	0.97	2
Türkiye	45.01	38.14	29	68.80	34	6.08	36	6.08	36	0.55	35
United Kingdom	51.13	59.73	4	93.60	4	8.65	5	8.65	5	0.96	3
United States	48.66	61.78	2	91.00	10	8.18	15	8.18	15	1.00	1

Source: WIPO (2022), UNCTAD (2020), UNCTAD (2021), ITU (2017), Portulans Institute and WIPO (2022),

5. Acknowledge

Study limitations

There was a missing data for some indicators for some countries in the srudy.

Disclosure

This study has neither been published previously in any journal and book nor is currently under consideration for publication anywhere. The study was not supported or funded by any company.

Availability of data and material

In the study, all data sources are indicated and they can be provided by the corresponding author on reasonable request, if they were needed.

Ethical statement

The study does not depend on outcomes from studies involving related data with humans or animals, so that there is no need for ethical approval.

Short bibliographies

Metin Gürler has completed his undergraduate study at İhsan Doğramacı Bilkent University, Department of Economics in 1994. He has completed his master education at Marmara University, Department of Economics. He completed his PhD studies in the same department and worked in various manufacturing and service sectors as a professional and entrepreneur at different levels while he has been working as a consultant in many competitiveness, strategy, innovation and cluster projects. He gave undergraduate and graduate level courses at İstinye University in 2016–2017. He is teaching "Microeconomics", "Macroeconomics", "International Competitiveness Policy", "Current Issues in Foreign Trade", "International Retail Management", "International Trade Policy" and "Target Products & Target Markets" courses at Medipol University since 2018. Dr. Gürler has also given the "International Economics", "Globalization", "Introduction to Macroeconomics" courses at Haliç University and "Introduction to Economics" at Galata University at different times. Competitiveness of

sectors, cities, provinces and nations, clusters, middle-income trap, growth economy, economic policy, education, health tourism, health economy, innovation, foreign trade and human capital are his main study areas.

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APPENDIX

Table 7. The raw data for the indicators for OECD countries

Country	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]	[N]	[O]
Australia	96,24	122,88	66,71	2,99	2,10	3,62	7,91	2,69	353	0,36	19,06	8,75	0,86	11,70	6,35
Austria	95,00	118,23	65,65	3,23	3,41	4,56	3,53	15,00	340	2,10	12,27	13,12	4,92	6,90	13,67
Belgium	92,30	93,36	74,83	4,40	4,13	6,13	7,02	21,62	356	0,71	-0,03	12,33	1,12	6,40	6,01
Canada	92,83	80,68	86,00	3,70	4,03	5,01	5,09	7,46	356	1,03	19,86	11,10	1,46	23,03	17,50
Chile	90,19	108,05	35,75	2,43	2,49	11,67	8,95	2,16	283	0,15	0,37	8,55	0,27	6,29	-4,84
Colombia	60,55	73,62	11,78	1,52	2,50	10,68	-2,60	1,60	254	0,84	22,34	8,37	0,30	5,71	11,50
Costa Rica	81,31	87,33	17,31	2,10	4,59	7,78	8,84	6,22	247	0,38	-2,88	15,36	0,77	7,14	1,37
Czechia	89,31	97,54	77,00	4,04	6,29	3,55	5,67	19,37	356	3,62	12,23	20,01	15,56	6,64	8,75
Denmark	96,14	141,70	88,30	4,22	4,20	4,86	6,36	15,17	343	2,93	17,52	7,49	3,92	10,48	3,40
Estonia	91,82	179,87	70,83	4,87	7,41	8,01	19,44	12,40	273	2,49	25,96	19,64	10,15	16,81	-512,58
Finland	96,56	157,00	78,64	4,92	5,61	3,05	11,29	7,66	296	0,56	1,89	45,36	2,54	34,30	3,92
France	93,33	99,55	76,17	3,54	4,96	6,82	8,84	21,19	361	4,57	24,67	6,98	3,64	13,62	19,44
Germany	91,88	94,63	76,18	3,81	4,55	2,63	3,57	18,31	356	1,85	16,00	9,86	5,03	9,40	26,74
Greece	85,07	92,48	58,69	2,60	3,03	8,43	9,84	11,43	315	2,09	25,53	3,06	3,04	5,36	7,56
Hungary	90,78	82,21	70,32	3,63	4,65	7,12	21,68	19,53	285	1,19	25,00	10,80	12,22	5,96	-4,29
Iceland	98,36	118,78	84,65	4,63	4,84	4,40	6,18	1,96	160	0,07	-3,95	10,03	0,32	3,80	-460,22
Ireland	97,50	107,96	87,41	6,22	17,00	13,59	16,14	55,55	328	1,27	39,63	58,53	9,41	26,61	377,09
Israel	83,00	139,85	58,20	6,24	11,72	8,61	10,16	35,08	317	1,56	26,50	34,50	14,01	24,78	25,30
Italy	90,49	97,00	49,30	2,91	3,35	6,74	2,78	10,34	357	5,99	35,24	8,91	1,98	5,15	-6,02
Japan	82,91	190,49	63,70	3,84	5,10	2,14	3,05	16,01	340	1,15	18,64	6,10	8,62	17,70	15,69
Korea, Rep.	99,93	157,77	74,48	3,30	4,71	4,15	5,54	33,20	341	2,71	55,91	6,96	29,18	26,83	7,00
Latvia	91,15	117,29	61,98	4,13	5,18	4,07	7,20	13,41	273	2,59	14,96	18,51	8,30	3,95	1,39
Lithuania	86,55	121,51	60,06	3,69	3,77	5,98	8,77	8,49	321	4,14	25,73	9,35	3,43	16,74	-2,64
Luxembourg	99,18	111,32	80,81	4,42	4,20	5,10	-3,37	5,22	249	0,55	-1,92	3,47	1,64	7,33	3,59
Mexico	66,44	85,77	27,84	0,80	1,60	4,72	5,73	16,89	210	1,22	24,18	0,28	14,35	3,60	4,85
Netherlands	98,56	133,72	88,21	4,42	4,90	4,86	7,13	18,35	360	1,56	20,98	11,25	8,28	14,19	5,44
New Zealand	95,91	100,40	58,00	3,33	1,84	3,71	1,84	1,87	278	0,85	85,79	11,79	1,64	7,15	60,11
Norway	98,93	104,56	91,97	4,21	3,78	3,88	5,46	2,73	309	0,24	2,51	6,72	0,74	8,67	60,56
Poland	92,42	131,27	64,58	2,92	4,25	6,85	21,18	10,41	295	4,13	20,44	13,58	6,38	3,62	0,69
Portugal	87,34	88,59	53,53	3,65	3,92	5,48	6,80	8,61	326	2,41	21,48	11,91	3,51	10,57	0,04
Slovakia	89,96	88,85	76,72	4,12	4,71	3,01	1,67	13,41	305	1,57	19,86	16,43	12,15	7,00	324,36
Slovenia	93,04	91,28	62,58	3,87	3,86	8,21	14,62	24,91	310	1,44	11,30	7,75	1,68	4,71	10,26
Spain	95,92	107,66	67,91	3,39	3,58	5,52	7,08	9,06	358	2,03	14,60	11,55	1,63	5,66	-16,19
Sweden	93,23	127,25	85,96	5,71	7,60	5,39	9,77	14,66	347	1,65	3,68	21,32	5,93	38,02	2,45
Switzerland	98,67	100,46	82,69	3,41	4,48	4,22	4,07	38,50	357	3,84	34,42	10,38	0,99	7,28	0,86
Türkiye	91,98	83,22	42,17	0,86	2,75	11,35	21,82	2,96	334	6,33	52,65	4,29	0,88	18,27	10,34
United Kingdom	96,68	113,18	90,22	4,88	5,83	7,60	6,33	20,40	355	3,35	2,25	8,14	3,70	18,99	345,97
United States	81,85	168,18	63,57	1,87	7,23	5,95	13,59	17,73	367	2,19	18,46	6,64	9,06	32,83	8,60
OECD	86,22	126,14	61,11	2,82	5,67	5,63	10,25	17,59	315	2,31	22,94	13,32	6,96	22,26	31,73

Source: Data sources are mentioned at part **2.1**