

MEASUREMENT OF DIGITAL ECONOMY: CHECK FOR DATA CONSISTENCY ON THE EXAMPLE OF LATVIA AND LITHUANIA

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Development of digital economy, digital transformation of business and society are prioritized in a wide range of national and regional strategic documents: European Digital Strategy (European Commission, 2020a), Digital Government Strategies in OECD countries, Digital strategies in education (OECD, 2020), Cybersecurity strategies (ENISA, 2020).

From the report of the international Monetary Fund (2018), “all activities that use digitized data are part of the digital economy”, thus, the term “digital economy” could be referred to the entire economy. Considering the broad spectrum of activities and that all the sectors of economy are being “digitalized”, the issue of measurement of digital economy becomes truly challenging. In turn, OECD states that “The demand for new data, indicators and measurement tools is particularly acute in the case of the digital economy due to the growing role it plays in G20 economies” (OECD, 2018).

The issues of measuring digitalization at the country level have been investigated in the academic environment (Kotarba, 2017; Morganti et al., 2014; Brynjolfsson & Collis, 2019). The authors agree with Kotarba’s (2017) statement that „the level of standardization in metrics definition and calculation is moderate, calling for further harmonization and detailing to allow precise absolute measurement and benchmarking.“

There are hundreds of indicators to evaluate the digital economy or countries’ progress towards digitalization. Digital Adoption Index (DAI) measures countries’ digital adoption across three dimensions of the economy: people, government, and business (World Bank, 2016). Cisco Global Digital Readiness Index takes into account „multiple factors that indicate the progress that a nation has made towards digital maturity, and demonstrating areas of strength while providing guidance as to how they can invest to improve their overall readiness.“ (Cisco public, 2020).

In the European Union, the key instrument for measuring digital economy is DESI (Digital Economy and Society Index) - a composite index that summarises relevant indicators on Europe’s digital performance and tracks the evolution of EU Member States in digital competitiveness (European Commission, 2020b). DESI comprises 37 different indices

To compare the countries based on DESI, it is necessary to define the ranks within each sub-index and to make a benchmarking within five categories: connectivity, human capital, use of Internet services, integration of digital technology, and digital public services. As of 2020, the results for Latvia and Lithuania are displayed in Figure 1.

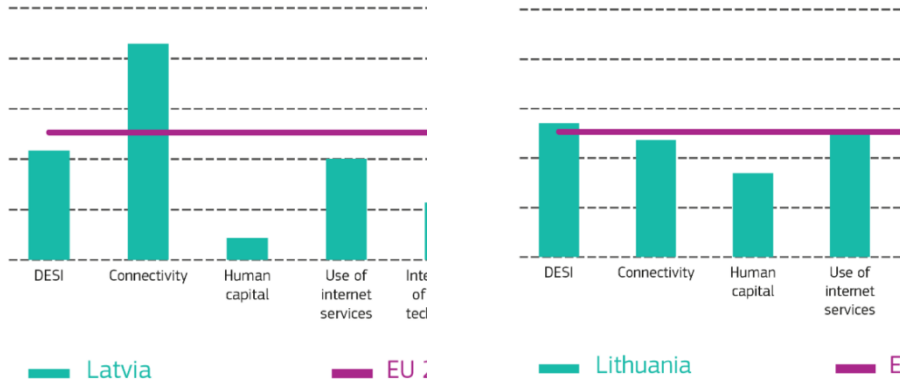


Figure 1 – DESI index in Latvia and Estonia in 2020

Source: European Commission (2020c; 2020d)

DESI overall score for Latvia and Lithuania was 50.7 and 53.9, respectively. This placed the countries on 18th and 14th place among EU countries. The authors applied a multi-criteria decision-making method – SAW (Simple Additive Weighting) to get the ranks of the EU-28 countries, based on the value of 5 DESI sub-indices, but applying equal weights of 0.2. In turn, DESI weights are 25%, 25%, 15%, 20% and 15%.

SAW technique is widely used by scientists from different fields for prioritisation procedures (Dubey et al., 2020; Hosseini et al., 2020). In the present study, the SAW method was used in order to rank European countries in terms of digitalisation. For that DESI index's dimensions were used. In order to obtain the results by the SAW method, S_j ought to be calculated by using the following formula (Ginevičius & Podvezko, 2008):

$$S_j = \sum_{i=1}^m \omega_i \tilde{r}_{ij},$$

where:

ω_i – weight of the DESI dimension

$\tilde{r}_{ij}$ – normalised value.

For the normalisation procedure, the following formula was applied (Podvezko, 2011):

$$\tilde{r}_{ij} = \frac{r_{ij}}{\max_j r_{ij}}.$$

After the calculations of normalised values of the investigated European countries, the S_j criterion was calculated according to which the most digitally progressive country is Finland. Sweden is in second place, and Denmark – is in the third place. Actually, the results for those countries are almost the same, i.e. S_j criterion for Finland and Sweden is 0.93, for Denmark – 0.92. Hence, it could be stated, that all the DESI dimensions are on a high level in these countries, and good practice of them should be adopted in the countries that would like to become more digital, and, hence, innovative. Calculating DESI, using the weights proposed in DESI methodology, the places for Finland, Sweden and Denmark remain the same. In turn, the places of Latvia and Lithuania change to the 16th and 13th place, respectively. The reason is quite a big difference in ranking for Latvia and Lithuania in different DESI sub-indices. The question is whether the weights assigned to each group of indices within DESI composite index is objective that could be a question for a large-scale research.

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