

## Digital Transformation in the World

For a general overview for comparison of the developments in Information and Communication Technology (ICT) between countries, the ICT Development Index can be considered. This Index looks at indicators connected to ICT infrastructure and access (ICT readiness: availability of technology, such as telephone, mobile-cellular telephone, computer, and Internet access in households), ICT intensity (ICT use of Internet) and ICT skills (ICT capability: schooling) (ITU, 2017a).

The latest published statistics of the Index (2017) show the following ranking for the countries included:

**Table 1**

*IDI 2017 Rank of the countries of this international comparison (out of 176 countries). Source: own elaboration based on data of the ICT Development Index 2017 (ITU, 2017b).*

IDI 2017 Rank	Country	IDI 2017 Value	IDI 2016 Rank	IDI 2016 Value	Rank Change
2	South Korea	8.85	1	8.80	<
10	Japan	8.43	11	8.32	>
12	Germany	8.39	13	8.20	>
14	Australia	8.24	16	8.08	>
16	United States	8.18	15	8.13	<
27	Spain	7.79	27	7.61	-
29	Canada	7.77	26	7.64	<
67	Turkey	6.08	72	5.66	>
80	China	5.60	83	5.17	>

Within the 10 first positions, South Korea (2nd) and Japan (10th) stand out as the two most developed countries included in our study in terms of ICT, being closely followed within the 10 next positions by Germany (12th), Australia (14th) and the United States (16th). Turkey (67th), China (80th) and South Africa (92th) are in last positions of the Index.

The development of ICT in a country is one important aspect to be considered when taking into account digital transformation; nevertheless, other elements are also relevant to the extent that they show commitment with digital transformation; for instance, the existence of digitalization strategies or digital agendas to boost the use of ICT in all the spheres of the society (South Korea is highlighted as the first country with a digital strategy, already in 1996; Lim, Lee & Choi, 2019). Some examples and issues regarding digital transformation in some of the countries follow, being the national digitalization strategies for higher education systems left to the section Policy.

According to the last annual report "Digital Society in Spain" (Martín Carretero, Suero García, Suso Araico, & Torres Mason, 2019), Spain maintains a strong commitment with the digital transformation and is one of the best-connected

countries in the world, being leader in the deployment of the fiber optic broadband in Europe and the third country among the OCDE countries.

Similarly, digital transformation is one of the ultimate goals of Turkey; therefore, some developments have been notable: the eGovernment services, Vision 2023 Project and the foundation of Presidential Digital Transformation Office. The ones related to HE will be described in the section Policy.

In the case of Australia, digital connectivity and literacy issues are ongoing concerns, as well as with the substantial digital divide between richers and poorer Australians.

In the case of Canada, there are no digital strategies at the national level, which can be explained by the political structure of the country based on provinces. On the other hand, according to Bates (2019a); Ontario leads Canada in digital transformation.

In Germany, national strategies that address more general elements do exist: a Digital Agenda for 2025 was put into place in 2016, and concrete measurements in 2018. This digital agenda addresses general elements discussion on digital infrastructure, exchange of data and information within higher education institutions (HEI).

For other countries, digital transformation is not the priority of the government, since other issues are still to be solved. That is the case of South Africa; where in its National Development Plan 2030 it focuses on increasing employment opportunities through improving the quality of education, skills development and innovation, vocational training and work experience. Another case is Japan: although its high IDI value and the e-Japan Strategy (since 2001), digital transformation including e-learning has never been an integral part of important strategic planning of the Japanese government and most universities.

On the other hand, the Index of Readiness for Digital Lifelong Learning (IRDLL) (Beblavy, Baiocco, Kilhoffer, Akgüç & Jacquot, 2019) should be also mentioned, since it gives a supplementary perspective to the ICT Development Index described above and provides another approach to digital transformation, more connected to learning, although only focused on the European countries. This Index includes items related to learning participation and outcomes, institutions and policies for digital learning, availability and use of digital learning. Of the two EU countries in the study (Spain and Germany), Germany is ranked 27th and Spain 8th, essentially having flipped their positions from the ICT Development Index. The report highlights for Germany that, "while Germany has a strong economy and fairly good education system, investment in digital infrastructure and programs is sorely lacking," and "German attitudes towards digital innovation are highly skeptical" and "German policymakers are aware of the importance of digitalization, but efforts to date lack ambition" (Beblavy et al., 2019, p. 53). On the other hand, the report states for Spain that "people's attitudes towards digitalization are still quite negative", "in higher education, blended learning and virtual campuses are more and more widespread. There are no significant regulatory barriers, even though the law has not been changed since 2001" but "the autonomy of universities prevents the development of a comprehensive national digitalization strategy in higher education" (Beblavy et al., 2019, p. 68).

Last but not least, as a final consideration before comparison among the aspects, the importance of context and culture when looking at digital transformation and infrastructures for (O)ER in different countries is to be highlighted, though not the main focus in this report.



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