



Structure and Drivers of Digital Competitiveness

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Using the IMD World Competitiveness Yearbook's data for 2016, we develop a measure of Digital Competitiveness; that is, the adequacy of the different components of an economy's structure for facilitating its digitalization. We propose that in constructing such measure, there are three levels (i.e. factors) to be considered. These factors are **1) knowledge dynamics, 2) digital environment and 3) integration mechanisms**. Knowledge dynamics refer to the infrastructure necessary for the production of knowledge. For example, it takes into account the available talent, and the scientific and educational contexts. The digital environment deals with the different frameworks that can facilitate the digitalization of an economy. These include the presence of a supportive regulatory framework,

access to capital and the existence of an enabler technological framework. Knowledge production and the strength of the current digital environment would have a minimal impact without the presence of a set of mechanisms that allows for the absorption of new technologies. We label the latter as integration mechanism which incorporate the IT capacity, business practices and the existence of adaptive attitudes. (We include the full structure of digital competitiveness in the link below).

The objective of this exercise is to identify the indicators that drive the digital competitiveness of a country. We do so by employing a statistical analysis which takes the digital competitiveness measure as the outcome and the different indicators as inputs. Due to space limitations we briefly discuss the results related to some key inputs but highlight all key drivers in the attached table. We found that in terms of talent the level of brain drain and access to foreign high-skilled people and to the information technology skills are statistically significant. In terms of the scientific context R&D expenditure, the availability of researchers and scientists and strong innovative capacity are fundamental. Among the important integration mechanisms it is worth highlighting, under business practices, the adaptability of companies, their ethical practices and the interactions (e.g., knowledge transfer) between the private sector and academia. In relation to adaptive attitudes, the motivation of the workforce and an “absorptive” value system are essential for digital competitiveness.

Table 1. Structure of Digital Competitiveness

Please note that the drivers of digital competitiveness are in bold.

Knowledge dynamics		
<i>Talent</i>	<i>Scientific context</i>	<i>Training/education context</i>
Skilled labor	Total expenditure on R&D [%]	Employee training
Brain drain	Total R&D personnel nationwide per capita	Total public expenditure on education
Foreign high-skilled people	Science degrees	Higher education achievement
Competent senior managers	Scientific research	Educational system
Information technology skills	Researchers and scientists	Science in schools
Qualified engineers	Innovative capacity	University education
Digital environment		
<i>Supportive Regulatory framework</i>	<i>Capital</i>	<i>Technological framework</i>
Ease of doing business	Capital markets	Communications technology
Creation of firms	Investment incentives	Connectivity
Openness to foreign labor	Banking and financial services	Computers per capita
Technological regulation	Financial risk factor	Internet users
Scientific research legislation	Credit	Internet bandwidth speed
Intellectual property rights	Venture capital	
Integration mechanisms		
<i>IT capacity</i>	<i>Business practices</i>	<i>Adaptive attitudes</i>
Technological cooperation	Adaptability of companies	Worker motivation
Public-private partnerships	Ethical practices	Attractiveness for business development
Development and application of technology	Corporate boards	Openness to foreign ideas
Funding for technological development	Entrepreneurship	Flexibility and adaptability
Cyber security	Knowledge transfer	Value system

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The highlighted results are indicative of the fundamental role of talent development and innovative capacity for attaining a fair digitalization level. In addition, the drivers of integration mechanisms underline the importance of developing a digitalization strategy that aligns multiple objectives such as the strategic adaptability to market changes, knowledge spillovers and a corporate culture driven by the production of knowledge and high levels of motivation among all levels of the corporate hierarchy.

It is important to point out that these results are preliminary and thus require further research. Our aim in introducing them has been to initiate a dialogue about the digital aspects of competitiveness.