



IMD WORLD DIGITAL COMPETITIVENESS RANKING **2017**



Knowledge	Technology	Future Readiness		Overall	
1	1	6	Singapore	1	
2	5	5	Sweden	2	
5	6	2	USA	3	
9	4	4	Finland	4	
8	10	1	Denmark	5	
11	9	3	Netherlands	6	
6	3	17	Hong Kong SAR	7	
4	8	13	Switzerland	8	
3	13	8	Canada	9	
15	2	12	Norway	10	

Preface

This year, the IMD World Competitiveness Center is launching the 29th edition of its rankings, the IMD World Competitiveness Yearbook 2017. It is with great pleasure and a sense of responsibility that we follow this tradition. Our mission remains that of advancing the understanding and knowledge on competitiveness, that is, the extent to which a country is able to foster an environment in which enterprises can generate sustainable value.

Competitiveness allows us to recognize the factors that facilitate prosperity. The IMD World Competitiveness Center team is dedicated to assess how economies fared in generating long term value for their citizens. This year two countries are introduced in our rankings for the first time, Cyprus and Saudi Arabia, increasing the number of countries studied to 63.

As in previous years, the countries that are characterized by high competitiveness performance include economies large and small, exporting and importing, manufacturing and services-based. The common pattern among them is their focus on business-friendly regulation, physical and intangible infrastructure, the promotion of inclusive institutions and openness in general.

The rapidly changing technology has lately become a permanent feature of all economies. From 3D-printing, robotics, and neuro-technology to digital-currencies and e-participation, the landscape of current capabilities and future prospects for businesses but also for countries is shifting. Governments around the world are investing on their digital economy. However, digital technology also needs to be implemented and further explored in order to improve efficiency and, therefore, the range and quality of services provided to citizens and businesses.

In response to the need of decision makers to assess the capacity and readiness of a country to make the most of the digital transformation, the IMD World Competitiveness Center is pleased to introduce the IMD World Digital Competitiveness Ranking. The new Ranking provides a measure of a country's ability to adopt and explore digital technologies leading to transformation in government practices, business models, and society in general. In the "Competitiveness in Context" section of this edition, the essay entitled "The IMD World Digital Competitiveness Ranking" provides the analytical framework and presents the details of the index.

An undertaking like the IMD World Competitiveness Yearbook could not have been accomplished without the support and assistance of many stakeholders. We are grateful to our Partner Institutes for the care and effort they put in coordinating the gathering of the necessary data. We would like to thank the members of the IMD Alumni community and our Panel of Experts from all the countries in the yearbook and further afield, for their continuous cooperation. Last but not least, we are indebted to the IMD faculty and staff for their support, feedback and involvement in many parts of the process.



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The IMD World Competitiveness Center

For almost thirty years, the IMD World Competitiveness Center has pioneered research on how countries and companies compete to lay the foundations for sustainable value creation. The competitiveness of nations is probably one of the most significant developments in modern management and IMD is committed to leading the field. The World Competitiveness Center conducts its mission in cooperation with a network of 57 Partner Institutes worldwide to provide the government, business and academic communities with the following services:

- Competitiveness assessment and education
- Workshops/Mega Dives on competitiveness
- Special country/regional competitiveness reports
- World Competitiveness Yearbook and Online
- IMD World Talent Report

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We also have the privilege of collaborating with a unique network of Partner Institutes, and other organizations, which guarantees the relevance of the data gathered.

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We would like to express our deep appreciation for the contribution of our Partner Institutes, enabling an extensive coverage of competitiveness in their home countries. The following Institutes and people supplied data from national sources and helped distribute the survey questionnaires:

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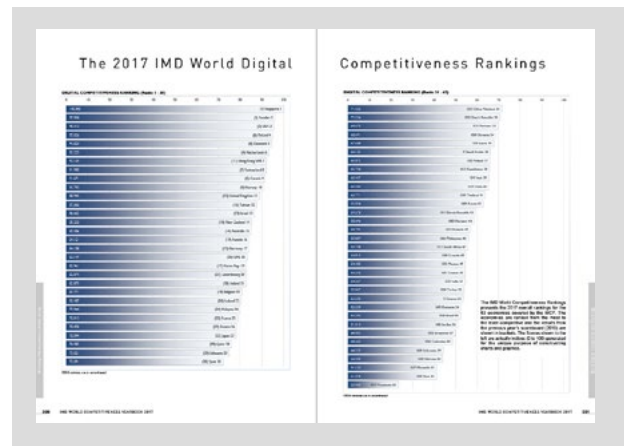
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User's Guide to the IMD World Digital Competitiveness Ranking

Overall and Breakdown Digital Rankings

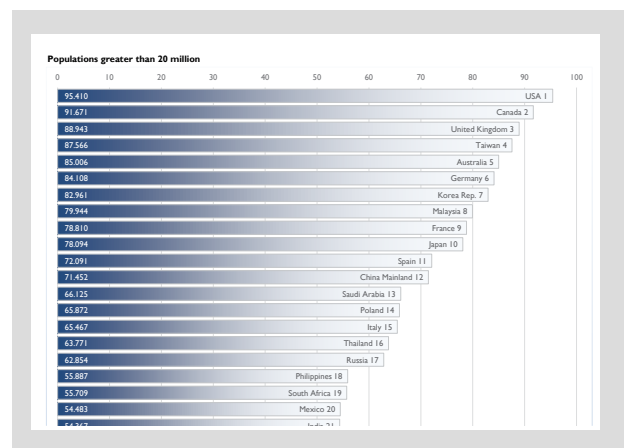
The IMD World Digital Competitiveness Ranking

The IMD World Digital Competitiveness Ranking presents the 2017 overall rankings for the 63 economies covered by the WCY. The rankings are calculated on the basis of the 50 ranked criteria: 30 Hard and 20 Survey data. The countries are ranked from the most to the least digital competitive and the results from the previous year's scoreboard (2016) are shown in brackets. The index value or "score" is also indicated for each country.



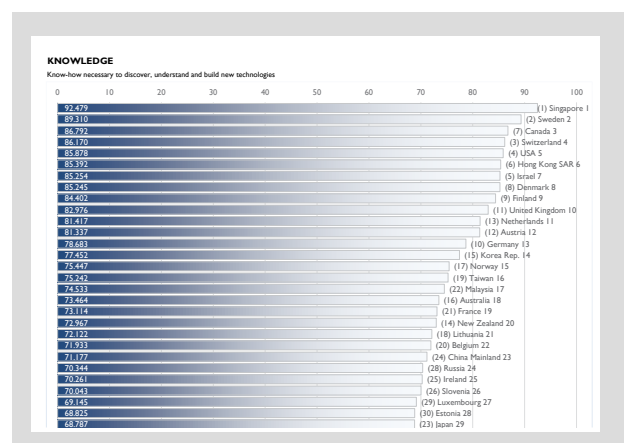
Selected breakdowns of the IMD World Digital Competitiveness Ranking

In addition to global digital rankings, other rankings are provided to show comparisons based on different perspectives. These digital rankings include countries split by population size (populations above and below 20 million), by GDP per capita to reflect different peer groups (above and below \$20,000) and three regional rankings drawn from different geographical areas (Europe-Middle East-Africa, Asia-Pacific and the Americas).



Digital Competitiveness Factor Rankings

The global rankings for each of the Digital Competitiveness Factors are then shown as individual ranking tables. Again, the economies are ranked from the most to the least digital competitive and the previous year's rankings (2016) are shown in brackets. Similar to the Overall Digital Ranking, the values or "scores" are indicated for each Factor. However, there is only one economy that has a score of 100 and one economy with a score of 0 across all four Factors.



Overall Ranking and Digital Competitiveness Factors

This section presents the overall rankings and the 5-year trends for each of the three Digital Competitiveness Factors: Knowledge, Technology and Future Readiness. Thus, the reader is able to analyze the digital evolution of an economy over the past few years relative to the others on a global basis.

The image contains two large data tables. The left table is titled 'OVERALL' and shows rankings for 63 economies across five years (2012-2017) for three factors: Knowledge, Technology, and Future Readiness. The right table is titled 'Trends' and shows the change in rankings (delta) for each factor and economy over the five-year period.

Digital Sub-factor Rankings

A summary of the rankings for all nine sub-factors is presented for the 63 economies for 2017. It is possible, at a glance, to determine in what areas of digital competitiveness an economy excels or has particular weaknesses and to make comparisons between countries. These rankings provide a more detailed examination of specific aspects of the digital transformation and can be used to, for example, evaluate the technological framework of a country or support international investment decisions.

We view the rankings as a tool for managers or policy makers to use when they analyze the above questions. Of course, each company must take into consideration the logic of its own economic sector, economic forecasts and its own traditions as well as governments should consider the national identity and value system of their economy.

The image shows a detailed table of sub-factor rankings for 2017. It is organized into three main columns: Knowledge, Technology, and Future Readiness. Each column contains nine sub-factors and their corresponding rankings for 63 economies. The economies are listed in alphabetical order on the left and right sides of the table.

	Knowledge			Technology			Future readiness		
	Talent	Training & education	Scientific concentration	Regulatory framework	Capital	Technological framework	Adaptive attitudes	Business agility	IT integration
Argentina	54	61	42	46	59	56	49	36	54
Australia	8	51	14	11	16	21	4	42	10
Austria	12	4	21	25	38	22	25	8	9
Belgium	17	29	27	16	23	31	21	21	19
Brazil	60	48	44	60	56	48	45	46	49
Bulgaria	51	39	30	50	46	34	47	61	55
Canada	9	10	4	21	1	27	13	5	15
Chile	34	50	59	33	20	46	30	31	40
China Mainland	23	53	3	32	22	47	32	24	44
Colombia	58	45	58	58	55	55	53	54	45
Croatia	59	41	35	52	52	40	43	62	46
Cyprus	56	22	51	45	54	54	56	51	47
Czech Republic	26	49	34	43	15	15	42	33	33
Denmark	6	5	19	8	25	5	1	11	11
Estonia	40	2	38	23	18	18	31	19	25
Finland	10	8	12	2	10	8	3	17	2
France	24	35	10	15	26	25	26	44	20
Germany	16	15	15	20	19	26	22	18	16
Greece	47	55	33	49	58	49	41	53	48
Hong Kong SAR	4	27	7	6	6	9	9	25	21
Hungary	46	43	46	29	44	45	57	58	38

Digital Competitiveness Country Profiles

Each two page profile analyses the performance of one of the 63 economies that are included in the IMD World Digital Competitiveness Ranking. The economies are presented in alphabetical order. The term economy signifies an economic entity and does not imply any political independence.

It is possible, in one glimpse, to evaluate the digital evolution of each economy over time and its relative strengths and weaknesses. However, each economy's particular situation is influenced by its development level, political restraints and social value system.

This page shows the overall, factors and sub-factors ranking performances of the country in 2017, their 5-years trends and a comparison of between competitiveness and digital competitiveness rankings. The following indicators are presented:

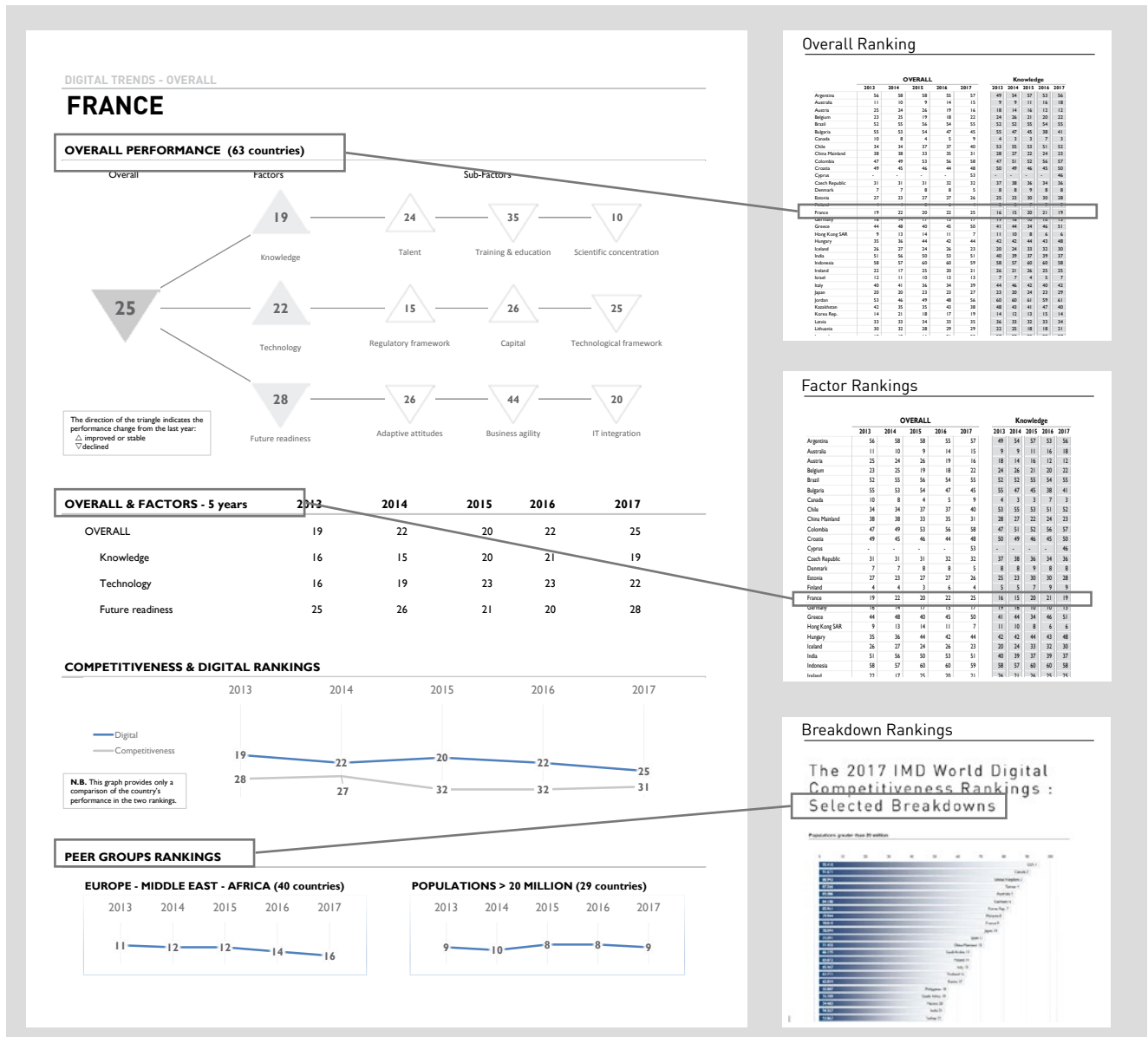
Overall Performance: Overall, factors and sub-factors digital ranking performances of the country in 2017. The direction of the triangles indicates whether there has been an improvement or a decline with respect to the previous year.

Overall & Factors – 5 years: The evolution of the overall and factors digital rankings in the past 5 years.

Competitiveness and Digital Rankings: Comparison of the country's performances in the World Competitiveness

Ranking and World Digital Competitiveness Ranking in the last 5 years.

Peer Group Rankings: Based on geographical region and population size.



Page 2: Factors breakdown & Strengths and Weaknesses

This page shows the country's performance over time for each of the nine sub-factors composing the three Digital Competitiveness Factors (Knowledge, Technology and Future Readiness) and their 50 criteria rankings for 2017.

Factors Breakdown: shows the 5-years evolution of the sub-factors rankings composing the three factors of Knowledge, Technology and Future Readiness.

Strengths and Weaknesses: this section highlights the economy's strongest and weakest criteria included in the World Digital Competitiveness Ranking. The triangles (►) identify the five top criteria in which the economy ranks best (strengths – filled triangle) and the five criteria in which its performance is the worst (weaknesses – empty triangle) compared to the other countries included in the WCY sample. The selection of indicators is determined by the standard deviation values (STD) of the country for that specific criteria. In other words, the criteria selected represent the highest STD values and the lowest STD values among the 50 indicators

composing the World Digital Competitiveness Ranking and can thus be considered the digital competitive advantages and disadvantages of the economy.

The full description of the criteria can be found in the statistical tables (see PDF documents on the USB key drive).

It is important to note that what constitutes a strength or weakness is relative to each economy's circumstances or development. Also, the ranking position of a country may not necessarily improve or decline as a consequence of its own evolution since it is always relative to the performance of the other economies. Therefore, an improvement may not be reflected by a higher ranking position if other economies have performed better for the criterion in question. The same can be said for any declines in performance – the economy's ranking position relative to the others may or may not fall, depending on how the other economies have performed. For more details, please refer to the section Methodology – Excluded criteria.

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

FRANCE

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	21	20	24	24	24
Training & education	24	19	37	34	35
Scientific concentration	7	8	8	9	10

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	24	Employee training	38	Total expenditure on R&D (%)	14
International experience	54	Total public expenditure on education	16	Total R&D personnel per capita	22
Foreign highly-skilled personnel	33	Higher education achievement	21	Female researchers	43
Management of cities	15	Pupil-teacher ratio (tertiary education)	45	R&D productivity by publication	14
Digital/Technological skills	31	Graduates in Sciences	21	Scientific and technical employment	3
Net flow of international students	17	Women with degrees	37	High-tech patent grants	20

TECHNOLOGY	Rank	Capital	Rank	IT integration	Rank
Regulatory framework	16	IT & media stock market capitalization	20	Communications technology	18
Capital	30	Funding for technological development	18	Mobile Broadband subscribers	34
Technological framework	14	Banking and financial services	42	Wireless broadband	32
Regulatory framework	19	Investment risk	24	Internet users	25
Starting a business	17	Venture capital	21	Internet bandwidth speed	41
Enforcing contracts	21	Investment in Telecommunications	39	High-tech exports (%)	6
Immigration laws	21				
Technological regulation	21				
Scientific research legislation	23				
Intellectual property rights	12				

Factor Rankings

	OVERALL					Knowledge				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Argentina	49	58	58	51	57	49	54	57	53	54
Australia	11	11	11	11	11	11	11	11	11	11
Austria	25	24	24	19	14	18	14	14	12	12
Belgium	32	42	41	44	44	24	26	32	30	32
Brazil	53	55	54	54	55	53	53	55	54	55
Bulgaria	65	65	65	67	65	50	47	49	49	45
Canada	16	8	4	5	9	4	3	3	3	3
China	47	49	47	37	41	47	47	47	47	45
China Mainland	38	38	33	35	31	28	27	24	24	23
Colombia	47	49	51	54	58	47	51	54	52	52
Croatia	49	45	46	44	48	50	49	46	45	50
Cyprus	51	51	51	51	51	51	51	51	51	51
Czech Republic	31	31	31	31	31	31	31	31	31	31
Denmark	7	7	8	8	8	8	8	8	8	8
Estonia	27	27	27	27	26	25	25	25	25	26
Finland	4	4	4	4	4	5	5	5	5	5
France	19	20	20	21	20	16	15	20	19	19
Germany	18	18	17	17	17	18	18	18	18	18
Hong Kong SAR	9	9	14	11	7	11	10	14	10	11
Hungary	35	35	34	34	33	30	34	33	33	30
India	36	36	36	36	36	36	36	36	36	36
Indonesia	51	51	51	51	51	51	51	51	51	51
Israel	21	11	2	26	27	28	23	28	18	9
Italy	44	46	32	42	53	42	42	42	42	45
Japan	41	31	16	37	33	6	6	14	5	18
Jordan	55	58	62	53	30	53	53	55	34	50
Kazakhstan	36	21	56	18	51	35	48	37	38	33
Korea Rep.	25	13	9	28	41	2	10	48	23	
Latvia	29	20	47	34	31	24	46	41	36	
Lithuania	33	61	28	27	62	17	35	28	26	17
Luxembourg	31	30	23	10	3	32	33	16	5	
Malaysia	27	3	26	30	9	19	28	12	34	
Mexico	53	44	57	39	45	52	40	55	52	
Mongolia	62	38	60	57	61	59	39	63	62	
Netherlands	3	35	18	9	5	14	5	7	3	
New Zealand	14	36	20	7	4	20	29	26	17	
Norway	20	12	22	3	7	3	8	20	14	
Peru	61	60	63	61	48	61	61	61	61	
Philippines	39	54	53	62	29	50	50	23	57	

Subfactor Rankings

	Talent	Training & education	Scientific concentration	Regulatory framework	Capital	Technological framework	Adaptive attitudes	Business agility	IT integration
Argentina	54	61	42	46	59	56	49	36	54
Australia	38	33	14	11	16	21	4	42	10
Austria	12	4	21	25	38	22	25	8	9
Belgium	17	29	27	16	23	31	21	21	19
Brazil	60	48	44	60	56	48	45	46	49
Bulgaria	51	39	30	50	46	34	47	61	55
Canada	9	18	4	21	7	27	13	5	15
China	34	50	59	31	20	46	30	31	40
China Mainland	23	53	3	32	22	47	32	24	44
Colombia	58	45	58	58	55	55	53	54	45
Croatia	59	41	35	52	52	40	43	42	46
Cyprus	56	22	51	45	54	54	56	51	47
Czech Republic	26	49	34	43	15	15	45	46	49
Denmark	6	5	19	8	25	5	1	11	11
Estonia	40	2	38	23	18	18	31	19	25
Finland	10	81	12	3	10	8	17	5	15
France	24	35	10	15	26	25	26	44	20
Germany	16	15	15	20	19	26	22	18	16
Greece	47	35	33	49	58	49	41	53	48
Hong Kong SAR	4	27	7	6	6	9	9	25	21
Hungary	46	43	46	29	46	45	57	38	38
Iceland	38	7	37	22	43	11	16	10	28
India	43	57	6	59	28	63	59	29	56
Indonesia	48	59	54	61	37	58	63	61	61
Israel	15	34	31	14	49	13	12	2	24
Italy	21	11	2	26	27	28	18	9	7
Japan	44	46	32	42	53	42	42	42	45
Jordan	41	31	16	37	33	6	14	5	18
Latvia	55	58	62	53	30	53	55	34	50
Lithuania	33	61	28	27	62	17	35	28	17
Luxembourg	31	30	23	10	3	32	33	16	5
Malaysia	27	3	26	30	9	19	28	12	34
Mexico	53	44	57	39	45	52	40	55	52
Mongolia	62	38	60	57	61	59	39	63	62
Netherlands	3	35	18	9	5	14	5	7	3
New Zealand	14	36	20	7	4	20	29	26	17
Norway	20	12	22	3	7	3	8	20	14
Peru	61	60	63	61	48	61	61	61	61
Philippines	39	54	53	62	29	50	50	23	57

The IMD World Digital Competitiveness Ranking: Analytical Framework

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I. Introduction

The *IMD World Competitiveness Ranking* is published annually since 1989. It uses a broad definition for competitiveness: the extent to which a country is able to foster an environment in which enterprises can generate sustainable value. And in order to calculate the index it employs more than 260 variables classified in twenty distinct sub-factors such as international trade, societal framework, productivity and education. Despite the plethora of the criteria, the nature of country competitiveness constantly evolves. In an effort to keep up with this evolution, every edition of the *IMD World Competitiveness Ranking* incorporates a number of new indicators that enable us to better capture the competitiveness of countries. There are instances, however, when a more drastic approach is required and the introduction of a new ranking is necessary. This happens when structural changes in the economic environment demand attention in order to better

understand their involvement and implications. In the last decade economies have experienced technological changes in rapid succession in comparison to past developments (Loucks et al. 2016). These transformations affect not only how businesses function but also how countries perform today and how they will evolve in the future. From 3D-printing, robotics, and neuro-technology to digital-currencies and e-participation, the landscape of current capabilities and future prospects changes swiftly. This rapid transformation needs to be quantified and assessed so that decision makers in both public and private sectors can address it. The newly instituted *IMD World Digital Competitiveness Ranking* measures a country's ability to adopt and explore digital technologies leading to transformation in government practices, business models and society in general. In comparison with the Competitiveness Ranking then, the Digital Competitiveness Ranking is much more focused.

II. Motivation and objective

In the existing competitiveness ranking, technology is acknowledged and quantified mainly in the *Scientific* and *Technological Infrastructure* sub-factors. For instance, the innovative capacity of a country is heavily rooted in areas such as the concentration of scientists and engineers in the workforce, the degree of protection of intellectual property, and the depth of cooperation among the public, private and academic sectors. The above mentioned sub-factors provide a proxy for scientific and technological innovation. **Graph 1** shows the positive relationship between the Competitiveness Ranking and the *Scientific Infrastructure* (with correlation coefficient equal to 0.73.) Similarly, **Graph 2** presents the same type of relation between competitiveness and the *Technological Infrastructure* sub-factor (where the correlation coefficient is 0.87.) In both cases, higher measures in the sub-factor are associated with higher measures in the Competitiveness Ranking.

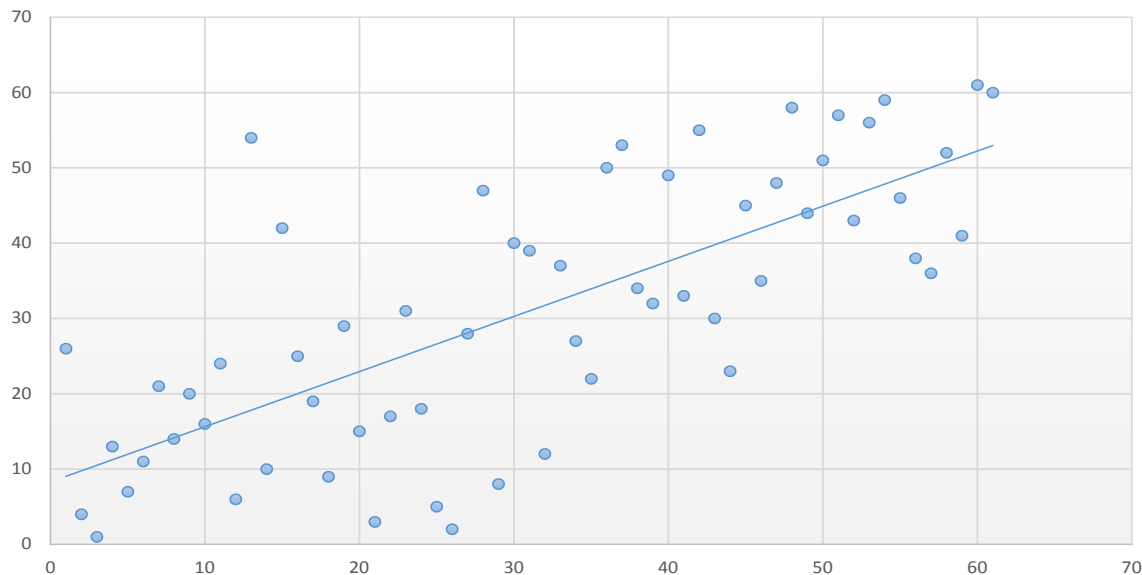
Governments around the world are investing in scientific and technological infrastructure in order to augment value creation and prosperity in their countries via the digital economy. While the existence of technology is an essential and necessary condition for the future well-being of an economy, it is not sufficient to maximize competitiveness. Digital technology needs not only to be implemented, but

also to be explored in order to achieve two important goals: first, to improve efficiency, and second, to enhance both the range as well as the quality of services provided to citizens and businesses alike.

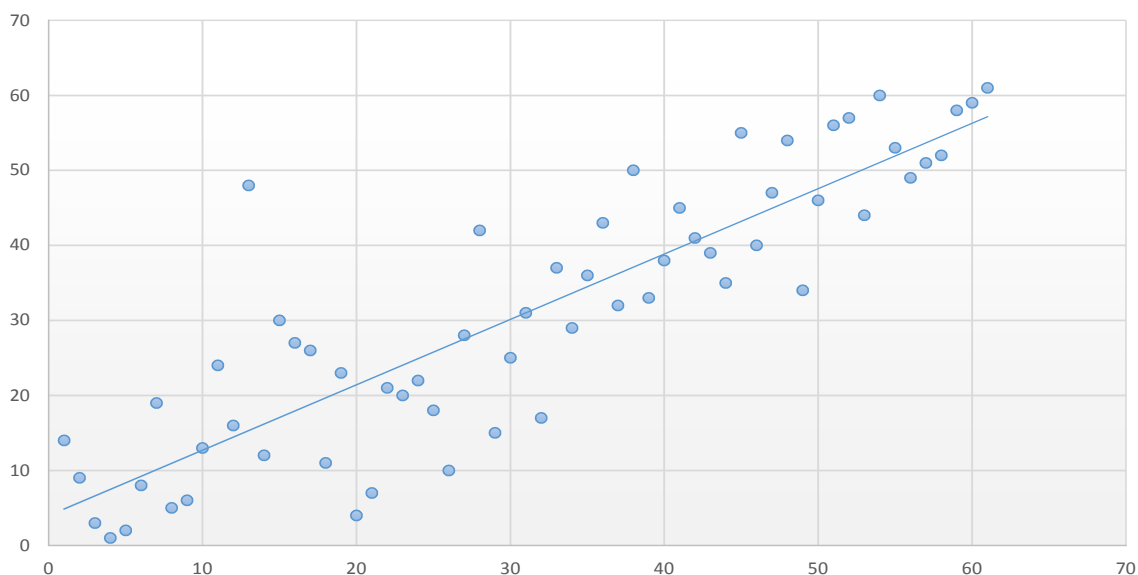
In turn, readiness toward digital transformation is emphasized by an organizational tendency to adopt new technologies and related processes. Such inclination requires shifts in behaviors and responsibilities (Haeckel, 2013). The transformations experienced as a result of the swift technological changes and the subsequent digitalization of the economies call for a more concentrated analysis of the strengths and weaknesses of a country.

Thus, the IMD World Competitiveness Center deemed it fundamental to develop a new analytical framework to assess the state of digital affairs and further our understanding of competitiveness. The *IMD World Digital Competitiveness Ranking* assesses the capabilities and readiness of the economy to undertake the process of digital transformation. Given its focus, the Digital Competitiveness Ranking therefore complements the broader Competitiveness Ranking by fostering a better understanding of the forces related to the digital economy as well as its contribution to the country performance.

Graph 1. Relation between Competitiveness and the Scientific Infrastructure sub-factor



Graph 2. Relation between Competitiveness and Technological Infrastructure sub-factor



III. Digital competitiveness: Analytical framework

Digital Competitiveness is defined as the capacity of an economy to adopt and explore digital technologies leading to the transformation in government practices, business models and society in general. In this way, firms increase the opportunities to strengthen future value creation.

The innovative “surge” underlining digital transformation requires a set of specific factors in order to ensure the achievement of maximum benefits from such a phenomenon. The assimilation of innovative knowledge requires “mediating” variables that lead to the development of the institutional/organizational capacity to absorb (Van Den Bosch et al., 1999) and transform (Dolata, 2009) in order to adapt to technological changes. To put it differently, the capacity to absorb and transform entails that the exploitation of technological changes involves the recognition of new and external knowledge, its assimilation and application for economic ends (Cohen and Levinthal, 1990).

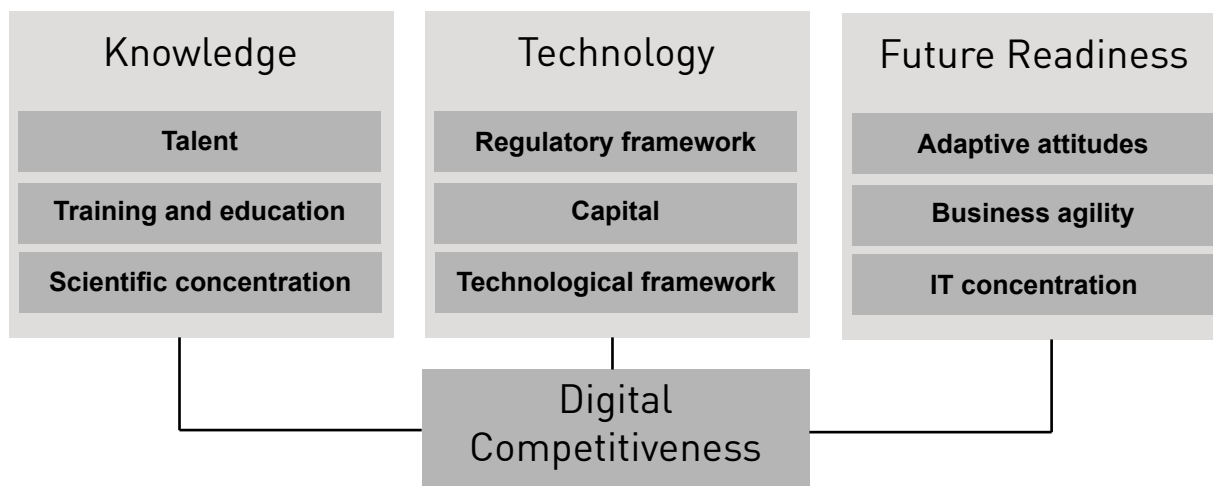
Technological transformation occurs within a spectrum of modes ranging from “anticipative” to “smooth adjustment” to “reactive and disruptive” shifts (Dolata, 2009). This implies that transformation is gradual requiring shifts at the organizational, institutional and structural levels. Organizations need to be able to recognize, communicate and assume the challenges brought about by the emergence of new technologies. Institutions must further their “openness and flexibility” to adapt to transformations and in the process readjust relevant rules, regulations, norms and beliefs. Finally, the structural level is the degree of “permeability of research, production, market and demand conditions” in encouraging innovation, the development of new products, the emergence of new markets and the entry of new actors into relevant sectors (Dolata, 2009).

It follows that a digital competitiveness framework must be built on factors, which encompass organizational, institutional

and structural elements. Furthermore, these elements need to incorporate, for example, the assimilation and application of knowledge, the role of research in transformation, the effectiveness of relevant regulation, the adoption of new technologies, and the openness and flexibility to confront

the resulting changes. We thus capture such elements through three factors: *Knowledge*, *Technology* and *Future Readiness*. **Figure 1** illustrates the model that underlines the *IMD World Digital Competitiveness Ranking*.

Figure 1. The Digital Competitiveness model



Knowledge factor

Knowledge creation and use is fundamental for “absorbing” technological transformation (Zahra and George, 2002). Earlier knowledge facilitates the assimilation and use of new technologies as well as the availability of “diversity of expertise” (Cohen and Levinthal, 1990). Available relevant talent and strategies to develop the talent pool is thus a decisive component of digital transformation. The past experience in innovation influences the successful adaptation of groundbreaking ideas (Hage, 1999). In this sense, investment on R&D makes that capacity “path-dependent” (Cohen and Levinthal, 1990). Limited initial investment, for example, may lead to imperfect digital adaptation. The scope of knowledge is also fundamental (Van Den Bosch et al., 1999): it provides the environment of ideas from which innovative trends emerge. This is the context that encompasses investment in research and scientific output, for example.

In this context, the *Knowledge Factor* refers to the necessary infrastructure, which underlines the process of digital transformation through the discovery, understanding and learning of new technologies. The factor encompasses three sub-factors: *Talent*, investment in *Training and Education* and *Scientific Concentration*. *Talent* is the pool of skills and capabilities available in a particular economy. The strength and level of development of the talent pool is interconnected to the priority assigned to the *Training and Education* of the workforce. *Scientific Concentration* highlights the investment and production of knowledge necessary for the digital transformation of an economy.

Technology factor

Structural variables can influence the successful adaptation of innovative ideas (Hage, 1999). Among such variables it is important to point out the role of the regulatory framework in encouraging and facilitating the development of innovation. Transformation also needs institutions and organizations that support and are permeable to innovation (Cepeda-Carrion et al., 2012). In addition, new technologies require the existence of a “sponsor,” that is an entity willing to invest and promote new technologies (Katz and Shapiro, 1986). Innovative strategies and processes, product development, and identification and incursion into new markets necessary for successful transformation are thus driven by institutions and organizations (Cepeda-Carrion et al., 2012).

The *Technology Factor* thus assesses the overall context through which the development of digital technologies is enabled. This context includes first, a supportive *Regulatory Framework* which allows for the efficient performance of business activities and the enforcement of relevant regulation while encouraging business development and innovation. The second element of the technology factor is *Capital* which evaluates the availability and current investment on technology related development. It also considers the level of investment risk in a particular economy. The final element is the existing *Technological Framework*. The latter assesses the current physical technological infrastructure in a country and also its quality. In addition the framework accounts for high-tech production.

Future readiness factor

Attitudes towards change influence the successful adaptation of innovative ideas (Hage, 1999). Readiness toward digital transformation is underlined by an organizational inclination to adopt new technologies and related processes. Such inclination requires shifts in behaviours and responsibilities (Haeckel, 2013). The uncertainty in the business context generated by the emergence of new technologies drives enterprises to become “agile” in order to maintain and sustain the competitive advantage (Mathiassen and Pries-Heje, 2006).

Simply put, readiness is interconnected with the agility of an organization. In this context, agility not only refers to the speed at which organizations approach changes, but also in their effective use of available resources in order to assume a suitable response to transformations and maximize the benefits from new opportunities (Haeckel, 2013). Knowledge management leads to an increased awareness that changes are necessary to confront transformation (Dove, 2005 and 2003). Knowledge sharing, in addition, plays an essential role in the capacity of organizations to identify the appropriate

response to technological shifts (Lane and Lubatkin, 1998). These responses lead to improved practices (e.g., better flow of information) which in turn facilitate the adoption and diffusion of new technologies (Mathiassen and Pries-Heje, 2006).

The *Future Readiness Factor* thus examines the level of preparedness of an economy to assume its digital transformation. In this sense, it incorporates three components: *Adaptive Attitudes*, *Business Agility*, and *IT Integration*. Competitiveness requires that available digital technologies to be “absorbed” by society. The absorption of digital technologies needs particular *Adaptive Attitudes* including the willingness of a society to participate in digital-related processes, for example, to engage in internet purchases. Readiness also requires business flexibility in terms of adopting new technologies. In this sense, *Business Agility* implies that firms in a particular economy are able to transform their business models in order to take advantage of new opportunities. It also refers to the level of innovation that originates from the private sector. Readiness, finally, needs *IT Integration* which evaluates how well IT relevant practices and processes are applied by all actors.

IV. Methodology

The *IMD World Digital Competitiveness Ranking* covers the same country sample (63 economies) as the *IMD World Competitiveness Ranking*. **Table 1** presents all the components of *Digital Competitiveness*. There are 50 criteria divided into nine sub-factors which are in turn grouped into three factors. The ranking includes both types of indicators,

hard data (30) and survey data (20). It is important to point out that while the Digital Ranking and the Competitiveness Ranking share 31 indicators (both hard and survey data), the Digital Ranking incorporates 19 new criteria.

Table 1. Overall structure of Digital Competitiveness

Knowledge		
<i>Talent</i>	<i>Training and education</i>	<i>Scientific concentration</i>
Educational assessment PISA - Math	Employee training	Total expenditure on R&D (%)
International experience	Total public expenditure on education	Total R&D personnel per capita
Foreign highly-skilled personnel	Higher education achievement	Female researchers
Management of cities	Pupil-teacher ratio (tertiary education)	R&D productivity by publication
Digital/Technological skills	Graduates in Sciences	Scientific and technical employment
Net flow of international students	Women with degrees	High-tech patent grants
Technology		
<i>Regulatory framework</i>	<i>Capital</i>	<i>Technological</i>
Starting a business	IT & media stock market capitalization	Communications technology
Enforcing contracts	Funding for technological development	Mobile broadband subscribers
Immigration laws	Banking and financial services	Wireless broadband
Technological regulation	Investment risk	Internet users
Scientific research legislation	Venture capital	Internet bandwidth speed
Intellectual property rights	Investment in telecommunications	High-tech exports (%)
Future readiness		
<i>Adaptive attitudes</i>	<i>Business agility</i>	<i>IT integration</i>
E-Participation	Opportunities and threats	E-Government
Internet retailing	Innovative firms	Public-private partnerships
Tablet possession	Agility of companies	Cyber security
Smartphone possession	Use of big data and analytics	Software piracy
Attitudes toward globalization	Knowledge transfer	

To develop the ranking, we use the same methodology employed in the *IMD World Competitiveness Ranking*. Accordingly, we assign two-thirds of the overall weight of the digital ranking to hard data and one-third to survey data. When developing the ranking, we undertake the following steps.

1. We aggregate the standardized values of indicators into sub-factors
2. We then aggregate sub-factor into factors
3. We aggregate factors into the *IMD World Digital Competitiveness Ranking*

A short description about our methodology is presented in the *Methodology in a Nutshell for the Digital Ranking*, page 318 . A complete discussion of the methodology used to calculate all the rankings produced by the IMD World Competitiveness Center is available in our website www.imd.org/wcc section "Methodology, factors and criteria".

V. Concluding remarks

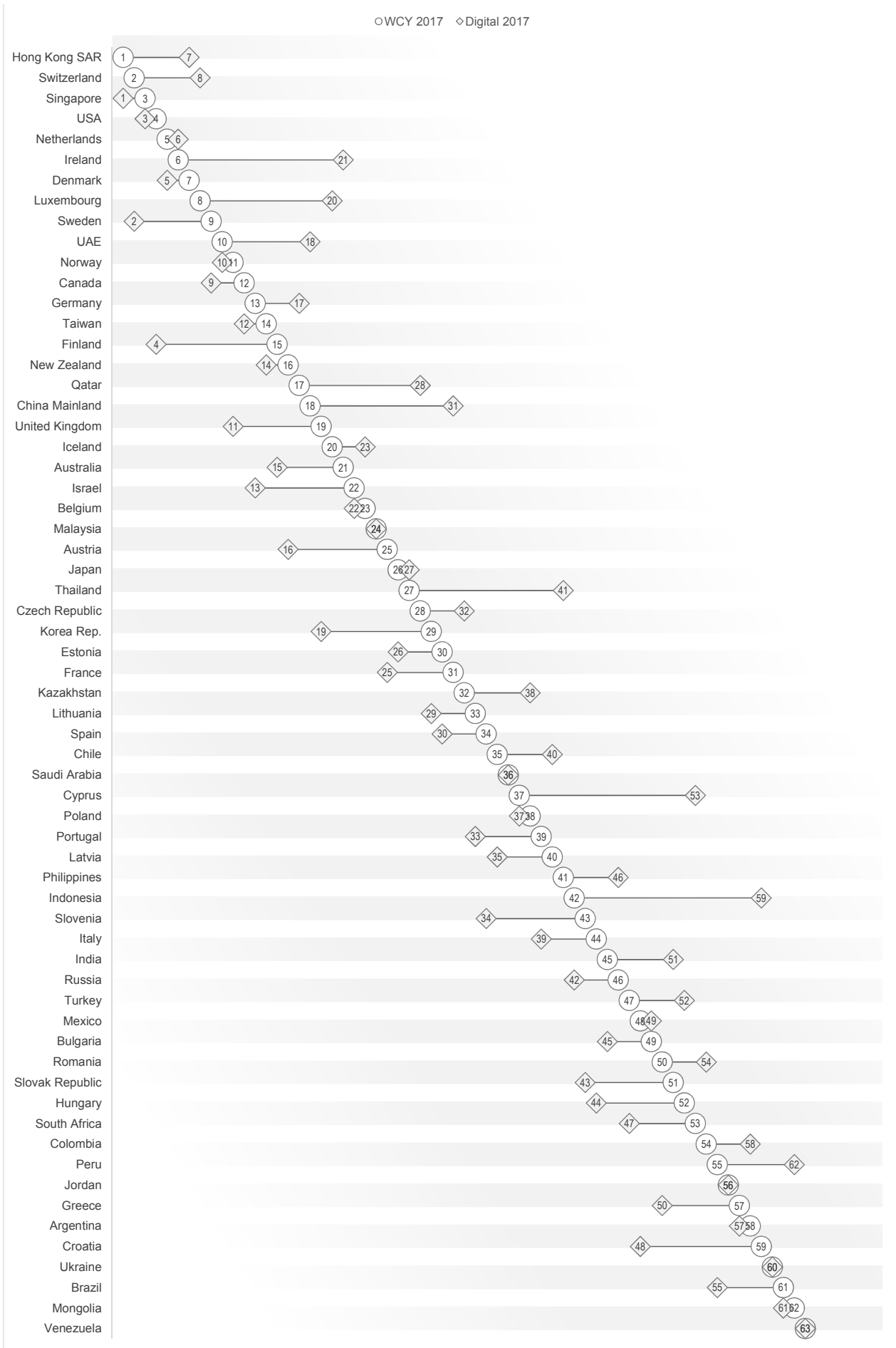
Many technological changes lead to disruptions in the workings of government, businesses and society at large. A disruption is, by definition, something that cannot be accounted for. The issue for decision makers, therefore, is to be in a position to be able to address such drastic changes. We suggest that the economies which exhibit high levels of adaptability and agility are better placed to face abrupt adjustments. A prerequisite, so to speak, for the exhibition of these characteristics are the stock of knowledge and technological competencies available in a country. The new ranking provides decision makers with the ability to identify the strengths of their economy and improve their weaknesses.

Undoubtedly, the two rankings exhibit a strong positive correlation. Highly ranked economies with respect to Competitiveness also, on average, exhibit a high Digital Ranking. **Graph 3** presents the positions in the two rankings for the 63 economies that we study. Countries like Singapore, USA, New Zealand, Belgium, Saudi Arabia and Jordan, among others, enjoy similar positions in both.

Nevertheless, many countries exhibit differences, large and small, between the two rankings. Thus, countries like Ireland, Luxemburg, China, Thailand, Cyprus and Indonesia, among others, are ranked in higher positions in the Competitiveness Ranking. Alternatively, countries like Sweden, Finland, Israel, Estonia, Slovenia and Croatia among others are placed better in the Digital Ranking. Comparative research among different countries as well as case studies are needed to identify any common properties for such differences.

The production of the *IMD World Digital Competitiveness Ranking* is the culmination of a long research undertaking by the IMD World Competitiveness Center. We are particularly happy that the outcome of this research is included in the *2017 IMD World Competitiveness Yearbook!*

Graph 3. Relation between Competitiveness and Digital Competitiveness



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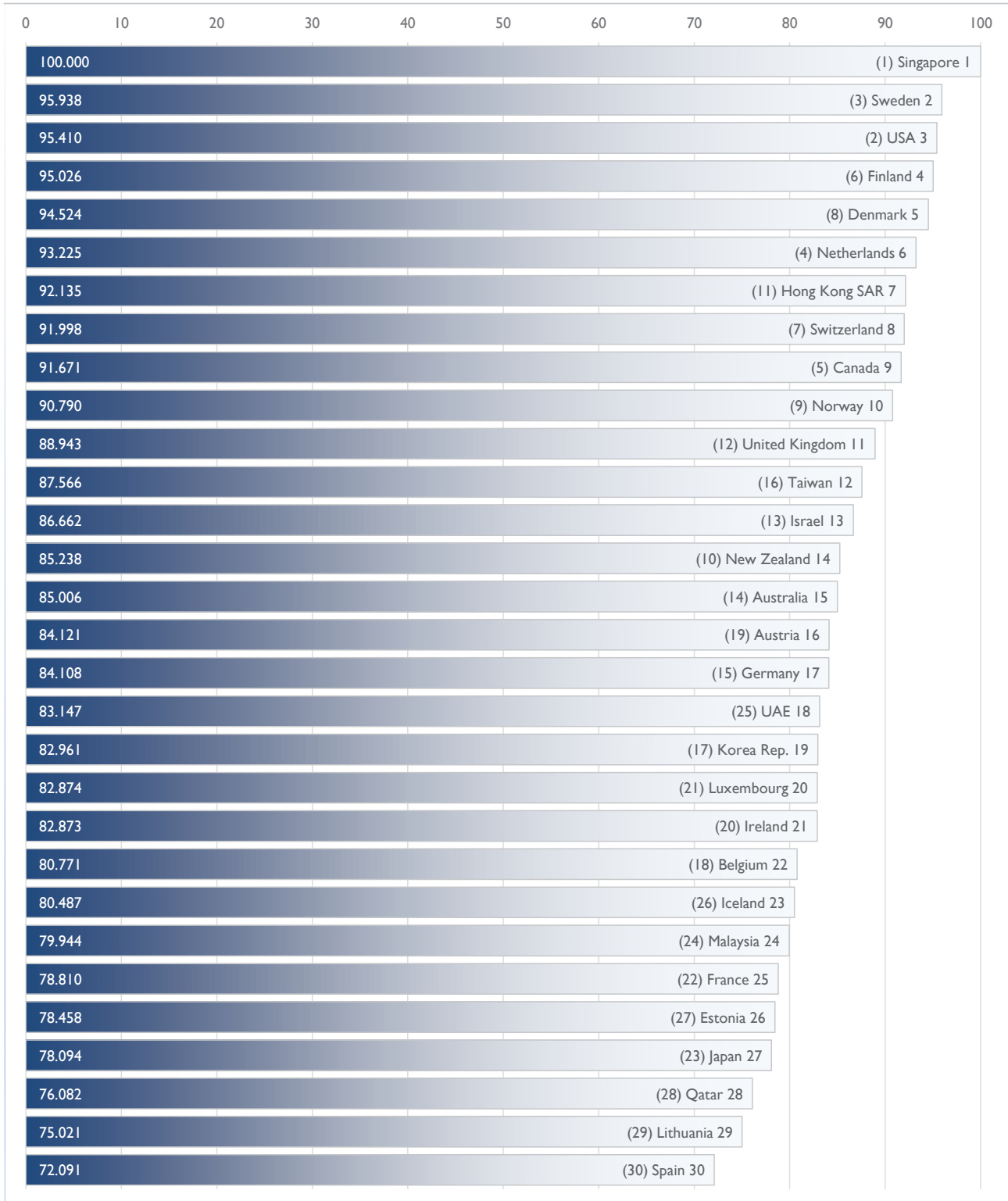
WORLD DIGITAL COMPETITIVENESS RANKINGS 2017

The statistical tables are provided only in PDF format
on the USB key drive available on the cover of the
IMD World Competitiveness Yearbook 2017.

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The 2017 IMD World Digital

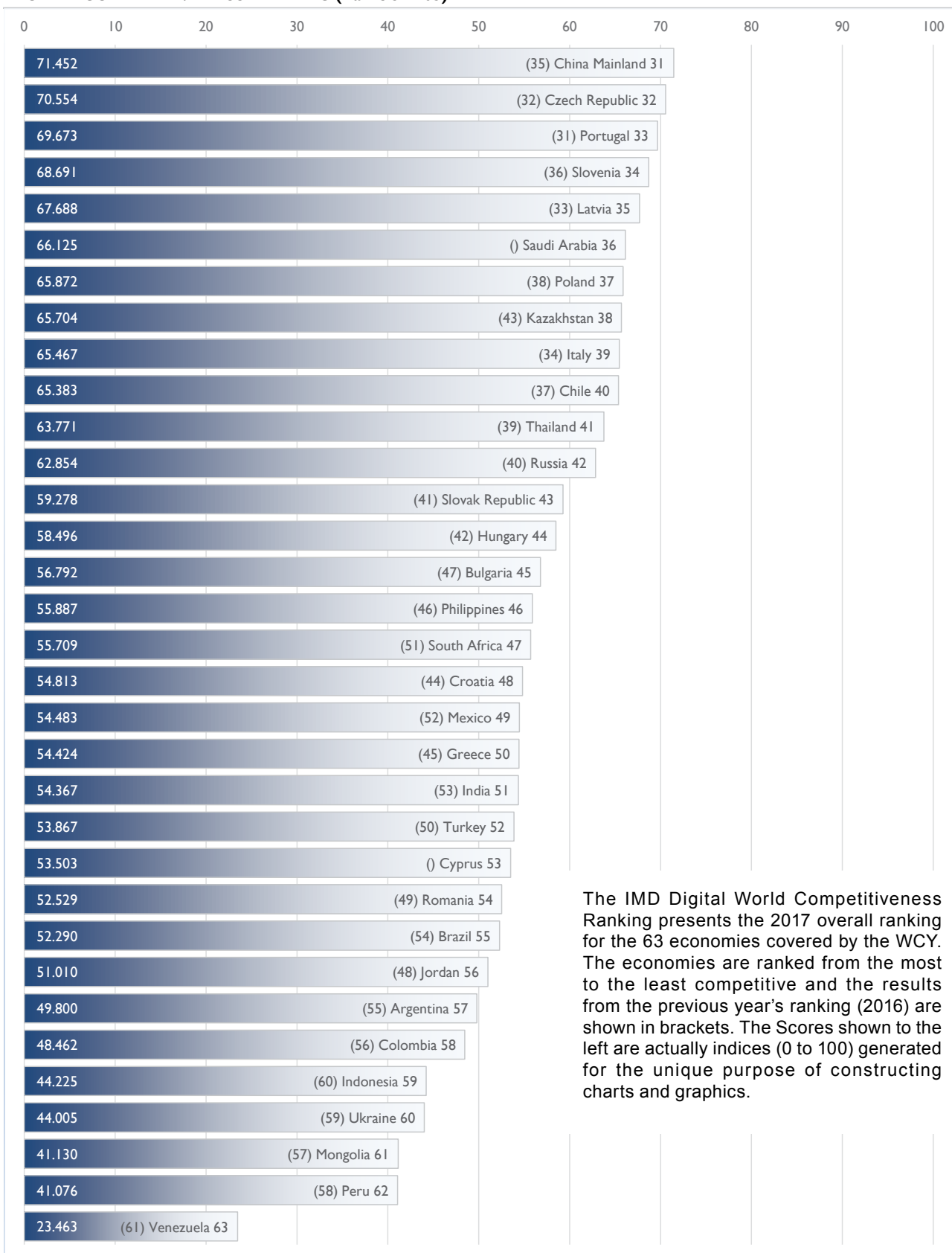
DIGITAL COMPETITIVENESS RANKING (Ranks 1 - 30)



(2016 rankings are in parentheses)

Competitiveness Rankings

DIGITAL COMPETITIVENESS RANKING (Ranks 31 - 63)



The IMD Digital World Competitiveness Ranking presents the 2017 overall ranking for the 63 economies covered by the WCY. The economies are ranked from the most to the least competitive and the results from the previous year's ranking (2016) are shown in brackets. The Scores shown to the left are actually indices (0 to 100) generated for the unique purpose of constructing charts and graphics.

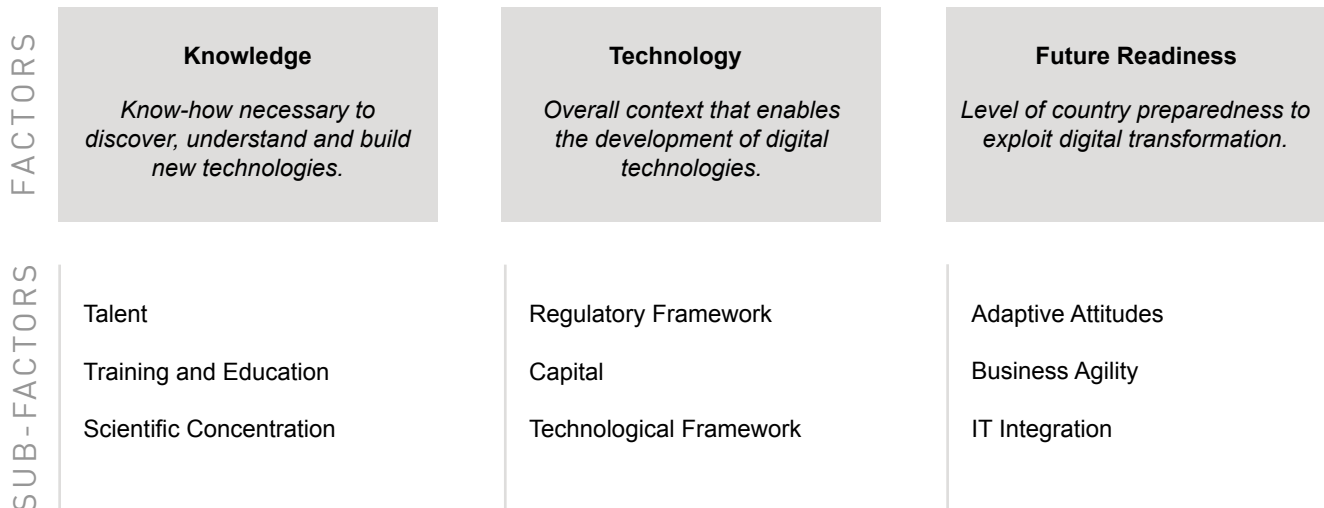
(2016 rankings are in parentheses)

Methodology in a Nutshell

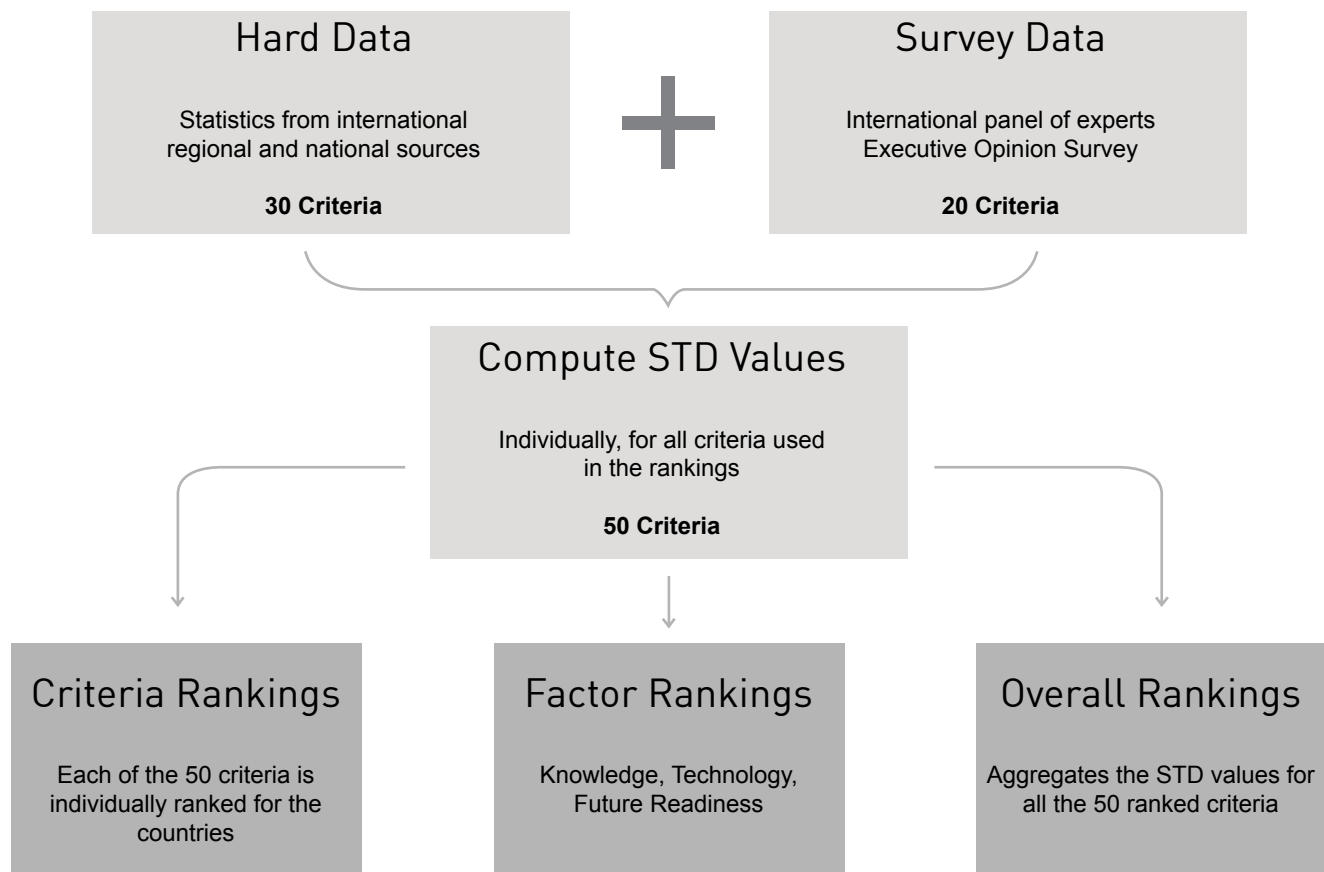
1. The IMD World Digital Competitiveness (WDC) ranking analyzes and ranks countries' ability to adopt and explore digital technologies leading to transformation in government practices, business models and society in general.
2. As in the case of the IMD World Competitiveness ranking, we assume that digital transformation takes place primarily at enterprise level (whether private or state-owned) but it also occurs at the government and society levels.
3. Based on our research, the methodology of the WDC ranking defines digital competitiveness into three main factors:
 - Knowledge
 - Technology
 - Future readiness
4. In turn, each of these factors is divided into 3 sub-factors which highlight every facet of the areas analyzed. Altogether, the WDC features 9 such sub-factors.
5. These 9 sub-factors comprise 50 criteria, although each sub-factor does not necessarily have the same number of criteria (for example, it takes more criteria to assess Training and Education than to evaluate IT integration).
6. Each sub-factor, independently of the number of criteria it contains, has the same weight in the overall consolidation of results, that is approximately 11.1% ($9 \times 11.1 \sim 100$).
7. Criteria can be hard data, which analyze digital competitiveness as it can be measured (e.g. Internet bandwidth speed) or soft data, which analyze competitiveness as it can be perceived (e.g. Agility of companies). Hard criteria represent a weight of 2/3 in the overall ranking whereas the survey data represent a weight of 1/3.
8. The 50 criteria include 19 new indicators which are only used in the assessment of the WDC ranking. The rest of the indicators are shared with the IMD World Competitiveness Ranking.
9. In addition, some criteria are for background information only, which means that they are not used in calculating the overall competitiveness ranking (i.e., Population and GDP).
10. Finally, aggregating the results of the 9 sub-factors makes the total consolidation, which leads to the overall ranking of the WDC.

What is the IMD World Digital Competitiveness ranking?

Digital Competitiveness Factors and Sub-factors

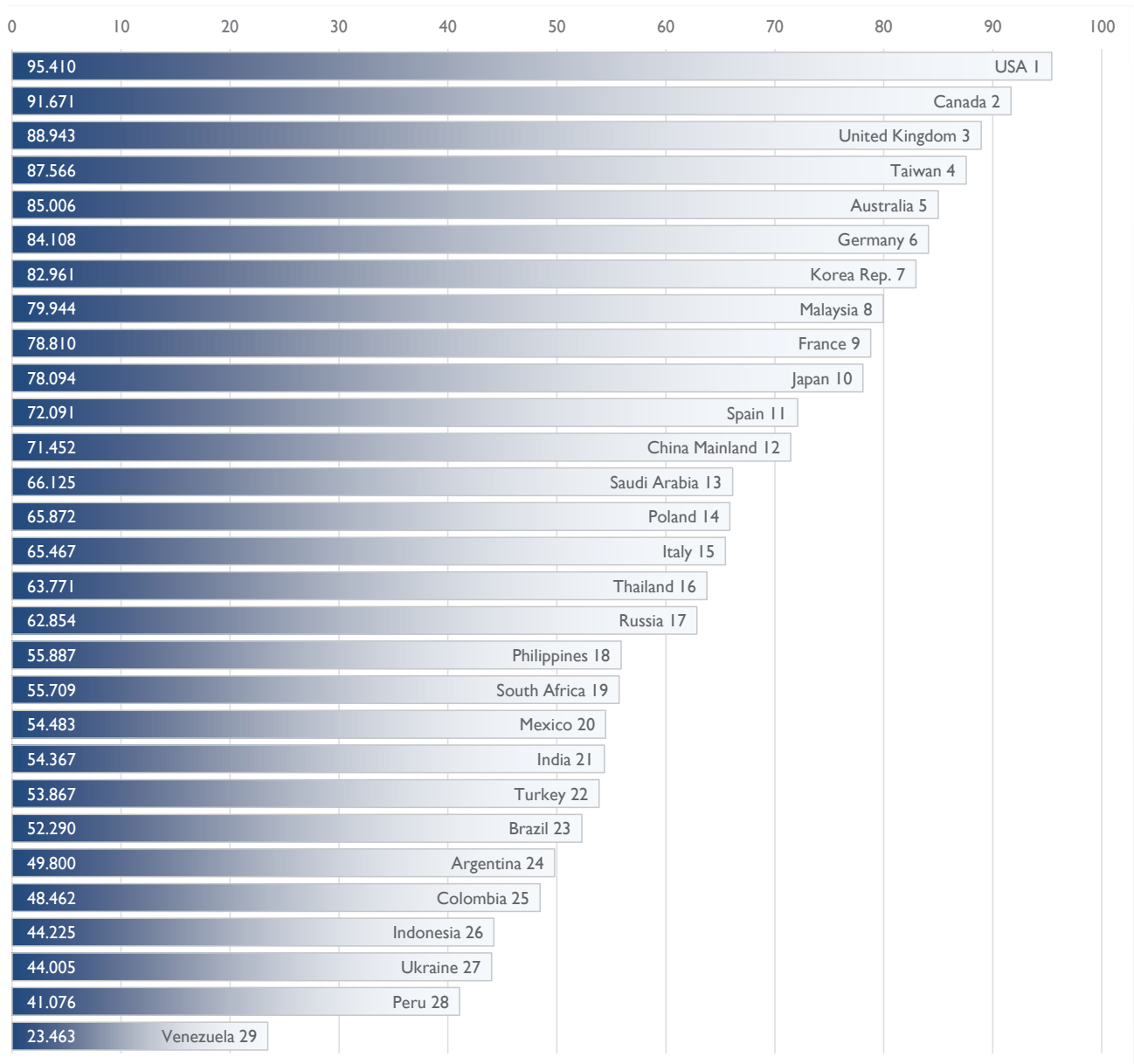


Computing the Rankings

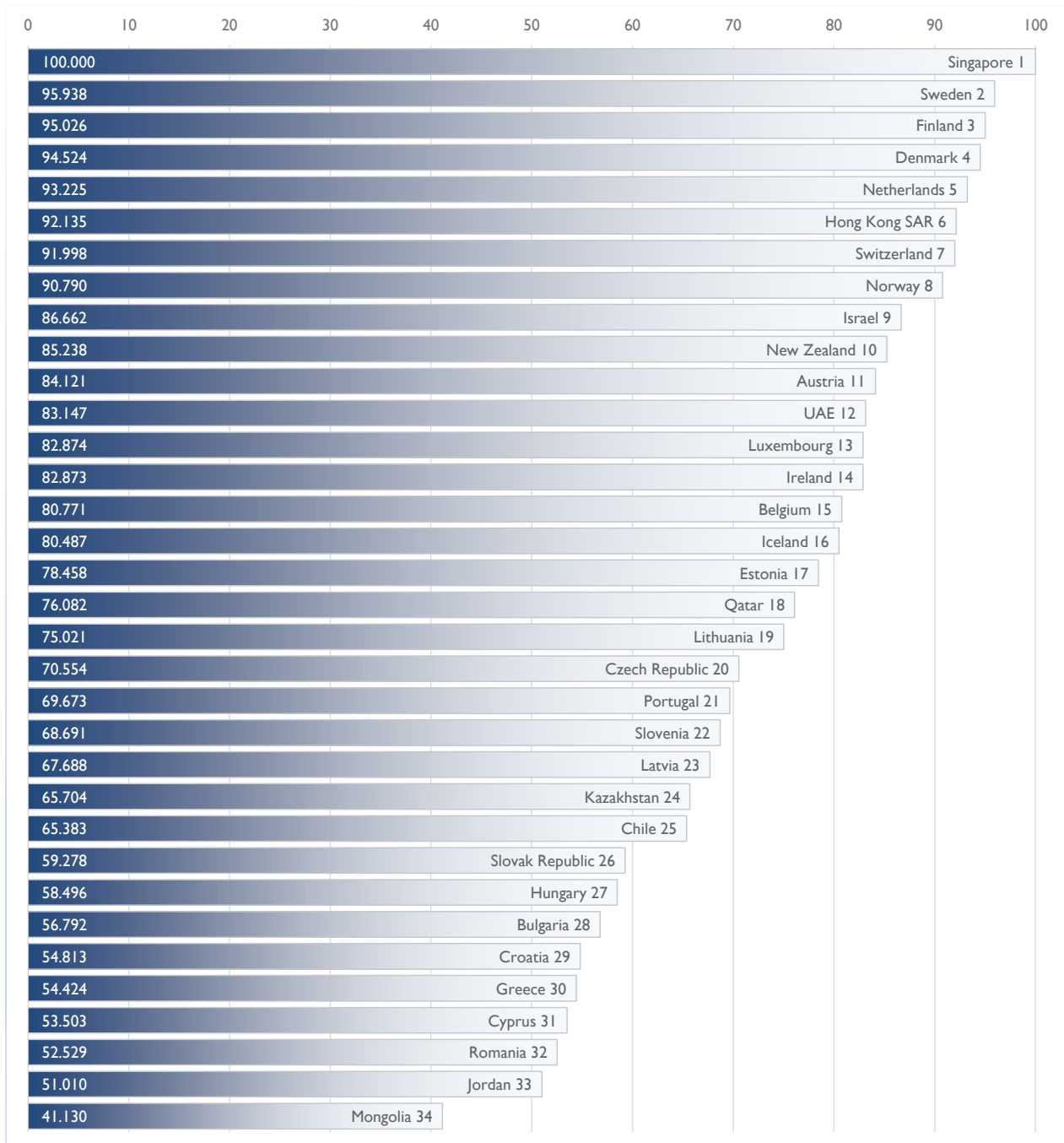


The 2017 IMD World Digital Competitiveness Rankings : Selected Breakdowns

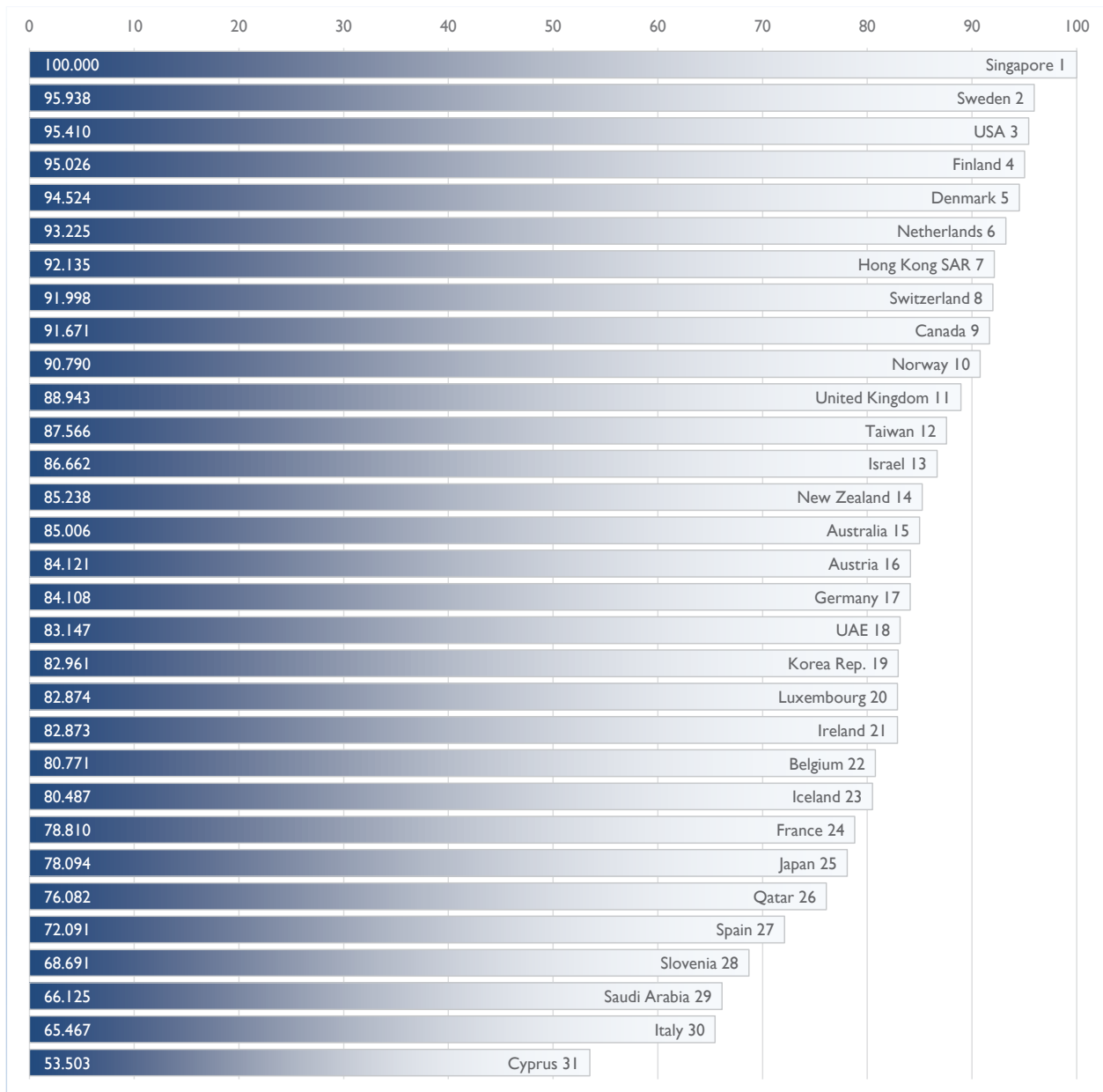
Populations greater than 20 million



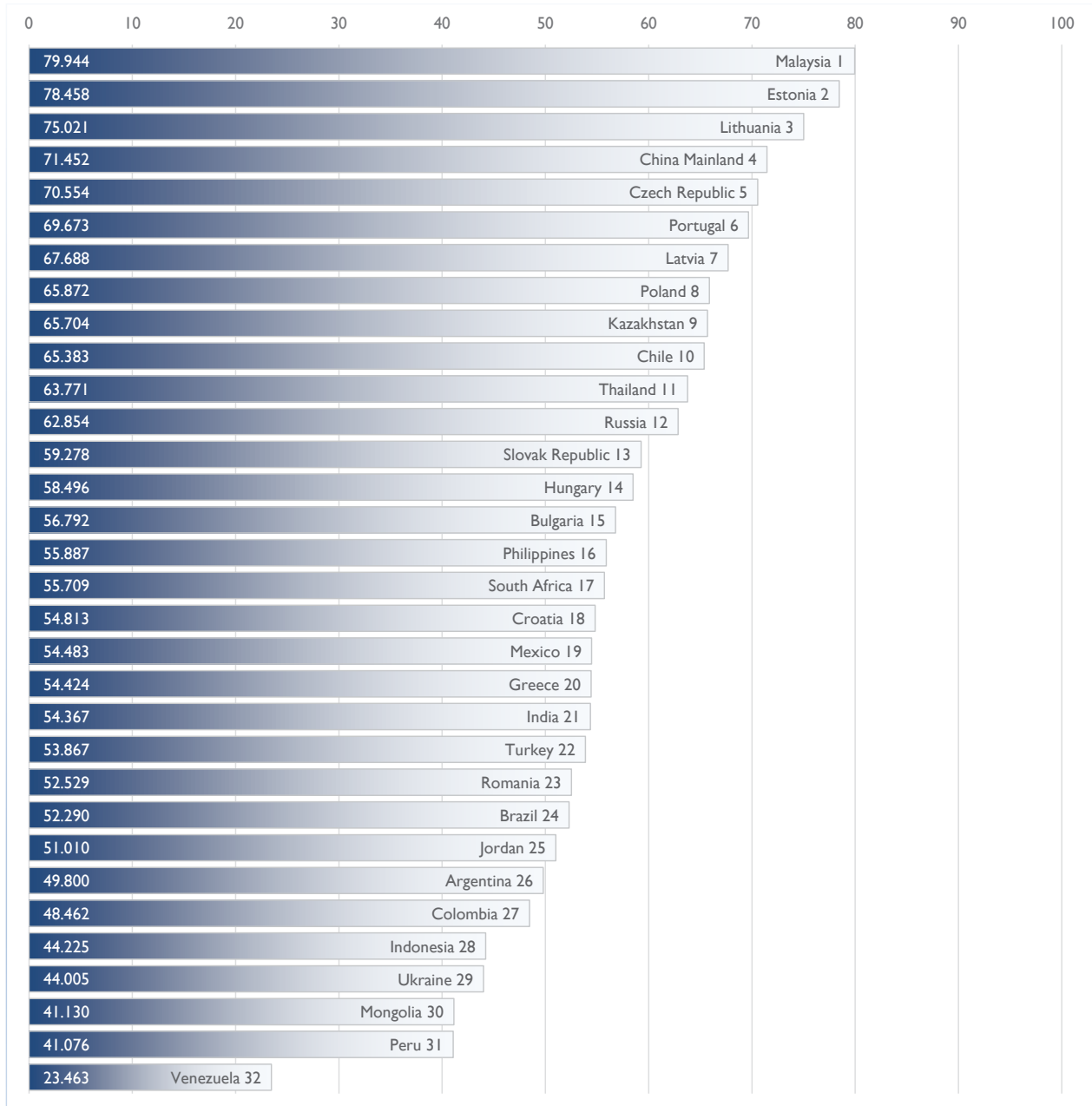
Populations less than 20 million



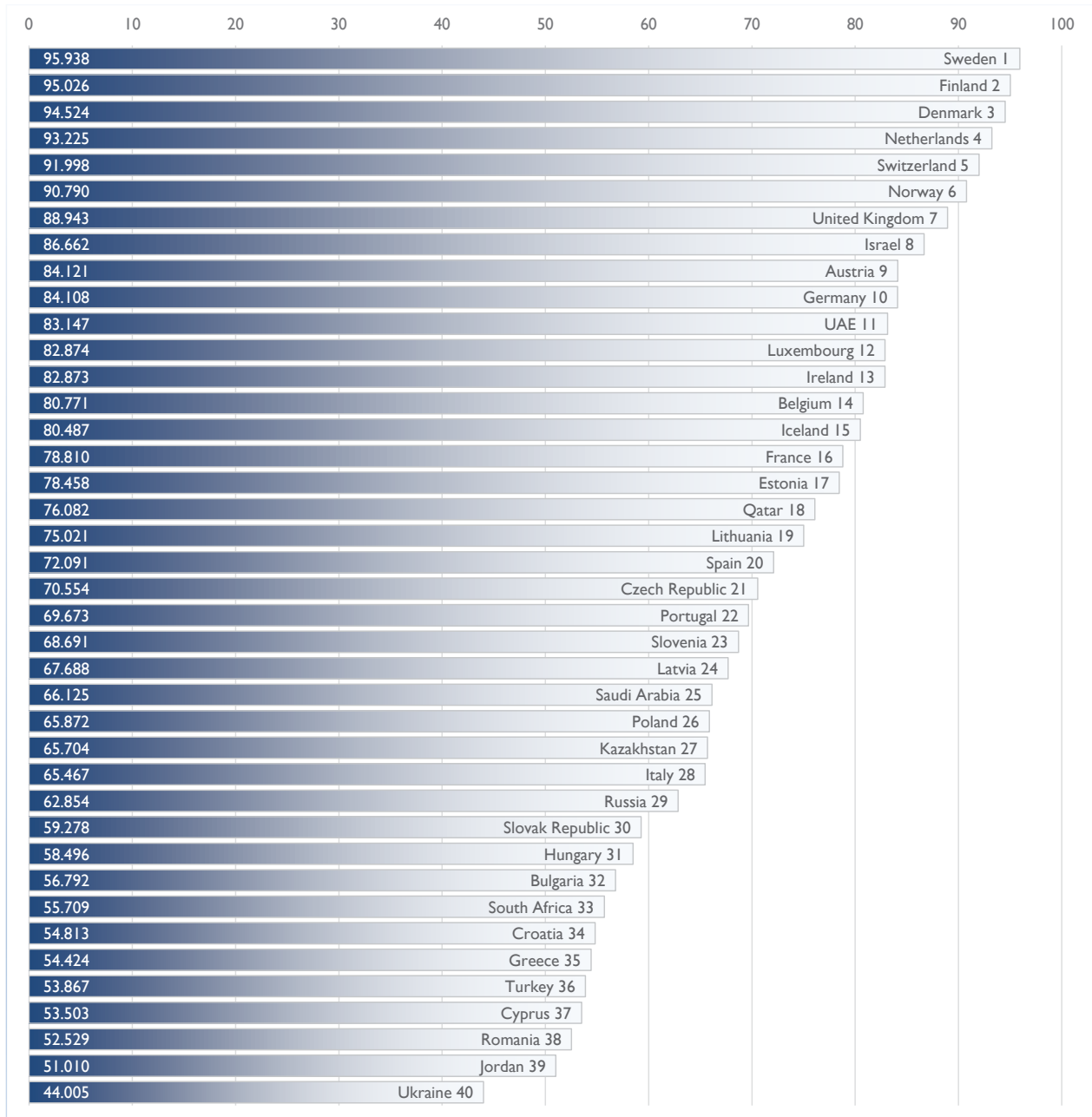
GDP per capita greater than \$20,000



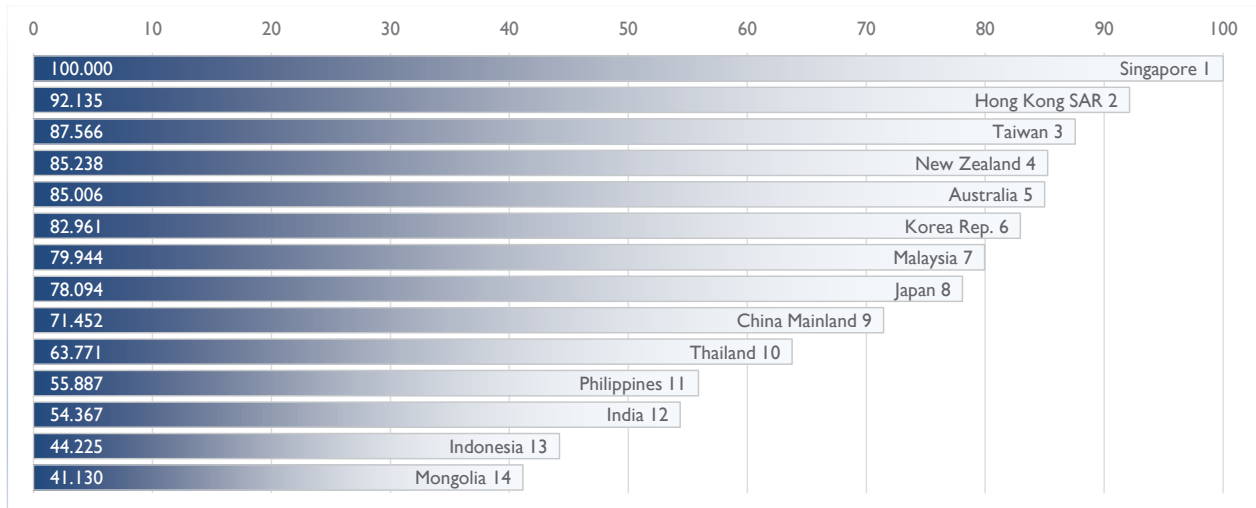
GDP per capita less than \$20,000



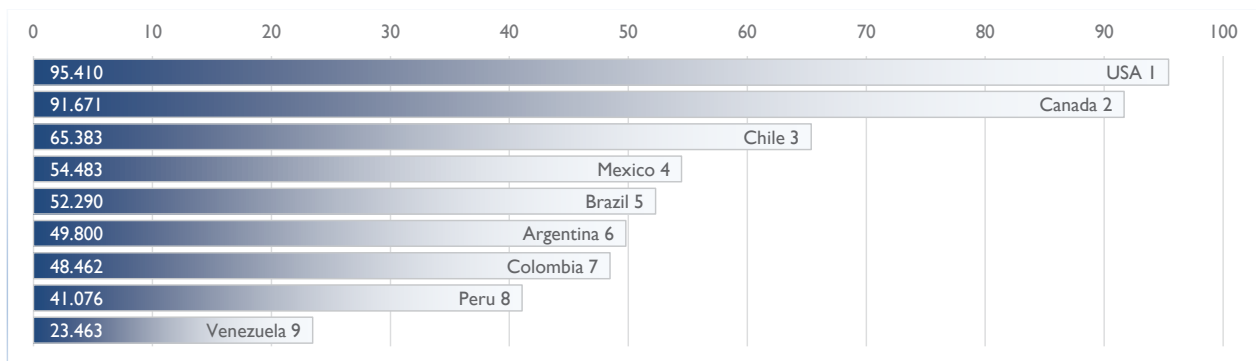
Europe - Middle East - Africa



Asia - Pacific

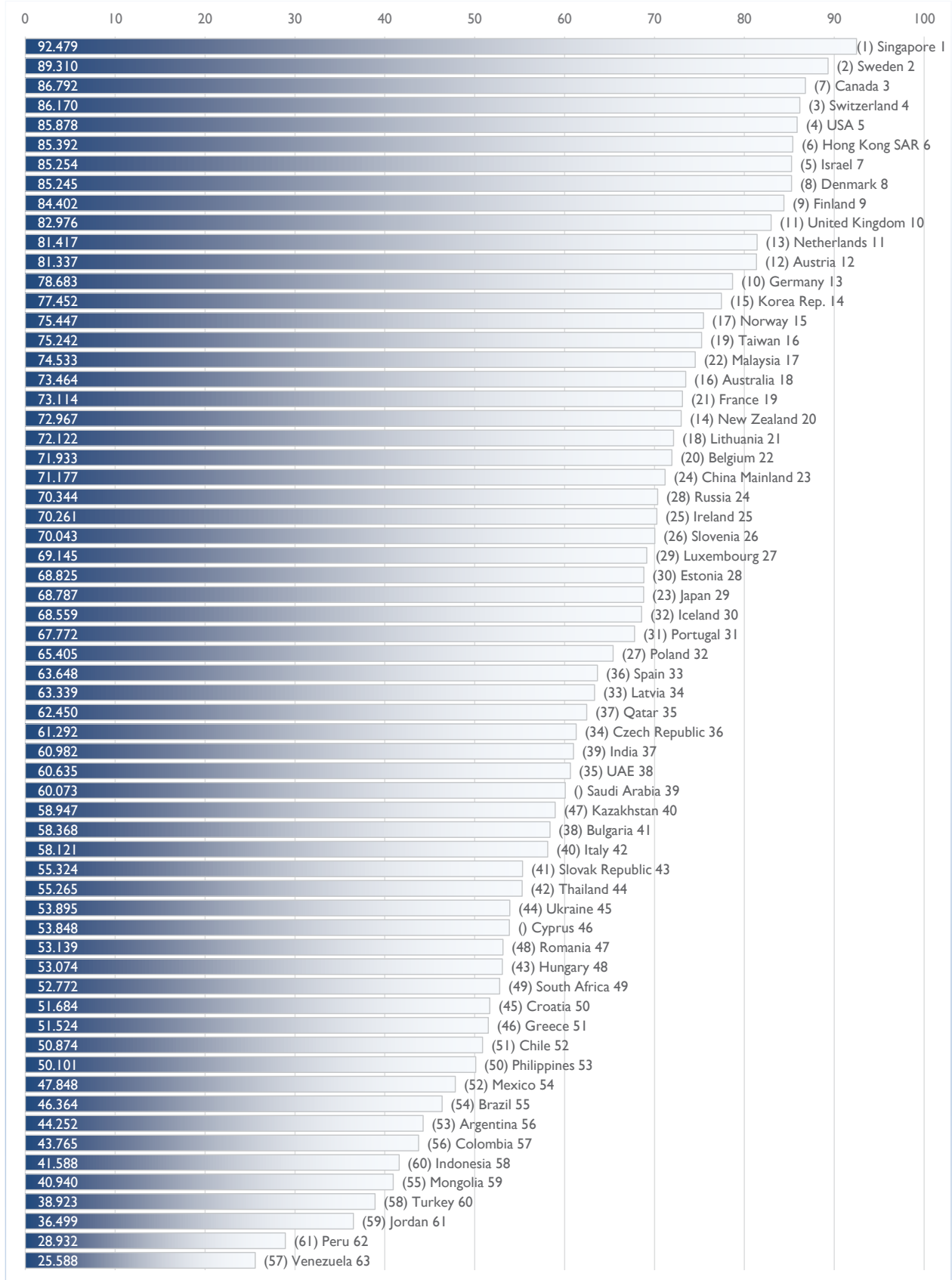


The Americas



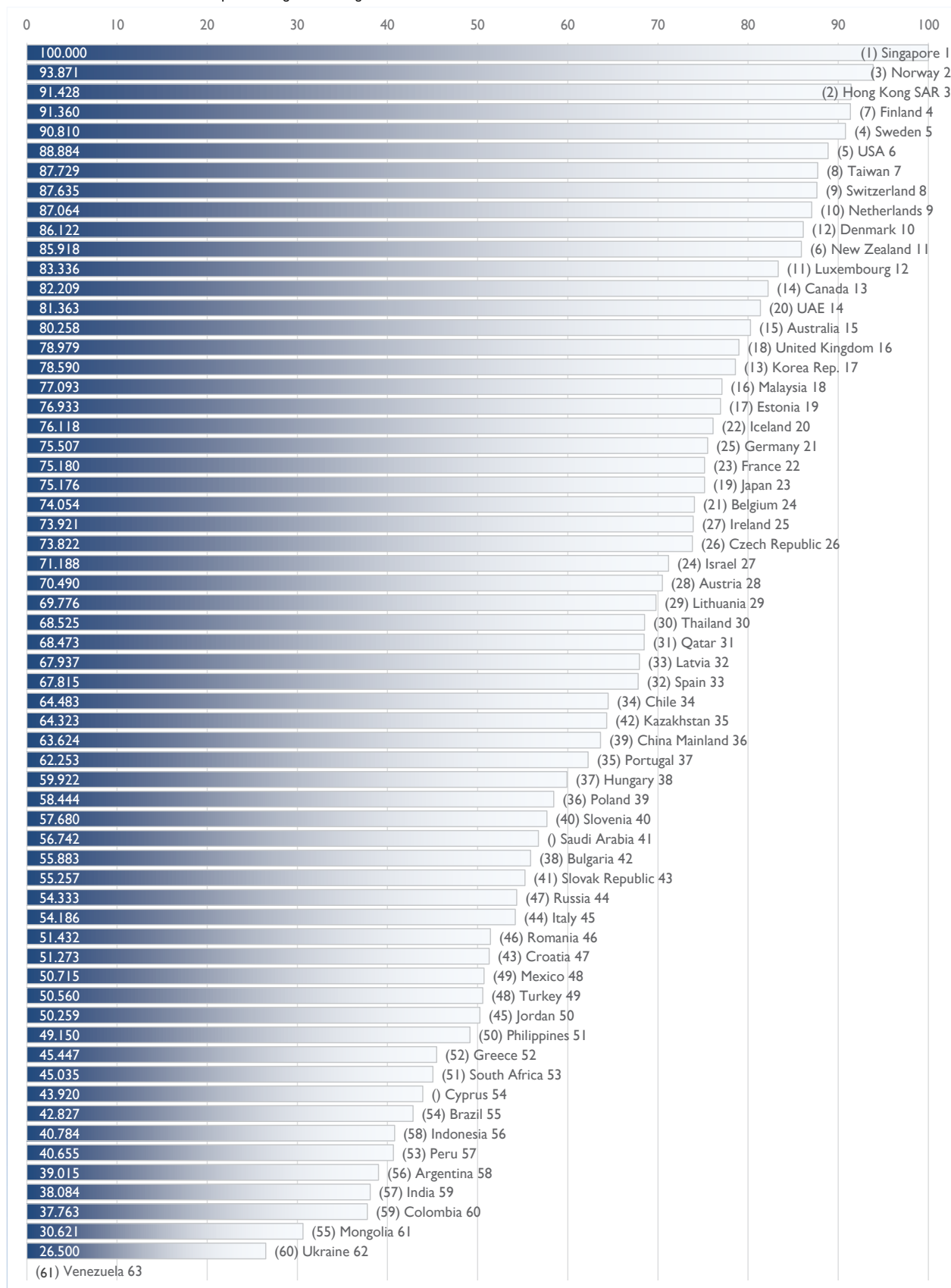
Knowledge

Know-how necessary to discover, understand and build new technologies



(2016 rankings are in parentheses)

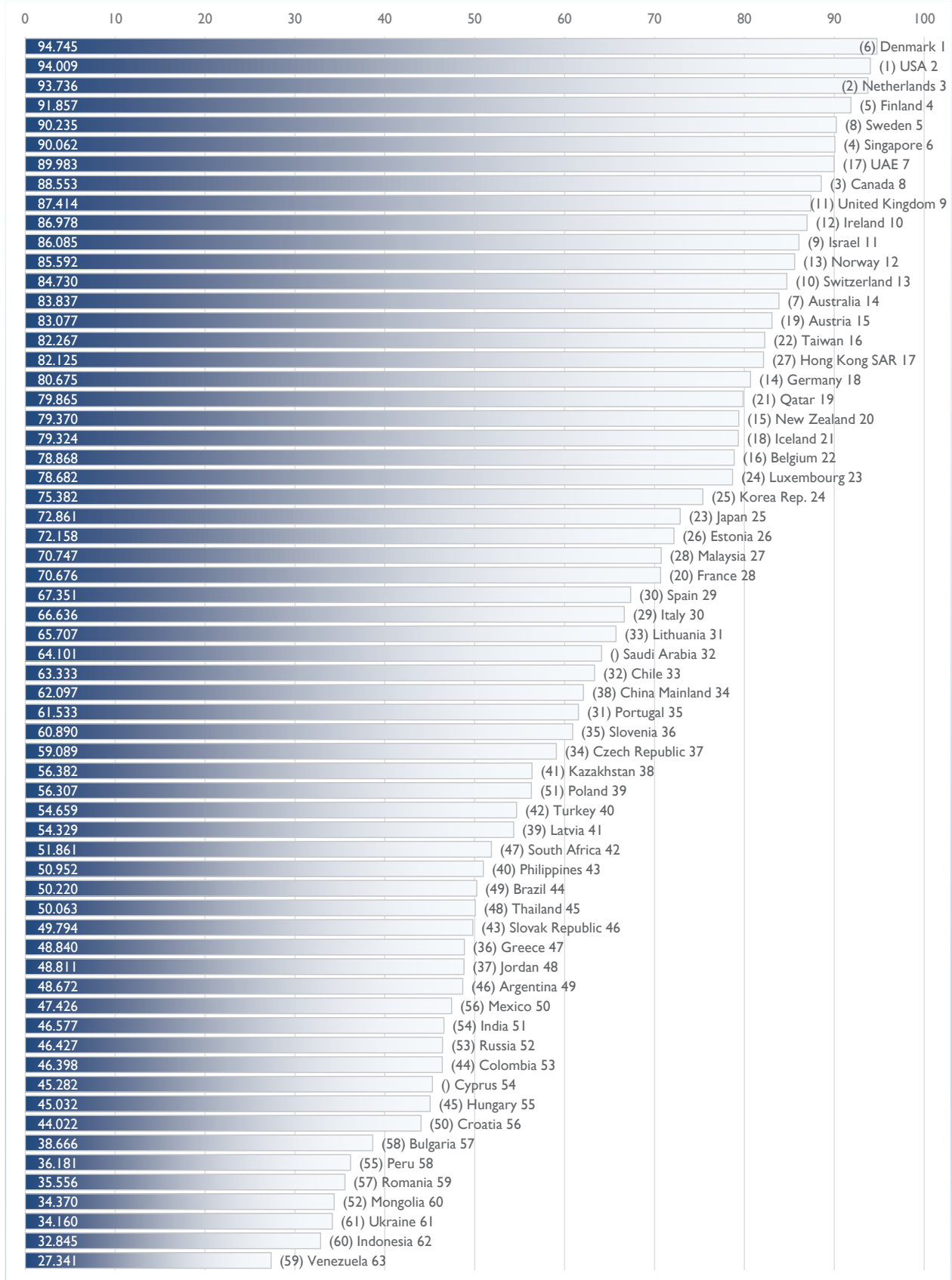
Overall context that enables the development of digital technologies



(2016 rankings are in parentheses)

Future Readiness

Level of country preparedness to exploit digital transformation



(2016 rankings are in parentheses)

Factor Rankings - 5 years overview

	OVERALL					Knowledge				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Argentina	56	58	58	55	57	49	54	57	53	56
Australia	11	10	9	14	15	9	9	11	16	18
Austria	25	24	26	19	16	18	14	16	12	12
Belgium	23	25	19	18	22	24	26	21	20	22
Brazil	52	55	56	54	55	52	52	55	54	55
Bulgaria	55	53	54	47	45	55	47	45	38	41
Canada	10	8	4	5	9	4	3	3	7	3
Chile	34	34	37	37	40	53	55	53	51	52
China Mainland	38	38	33	35	31	28	27	22	24	23
Colombia	47	49	53	56	58	47	51	52	56	57
Croatia	49	45	46	44	48	50	49	46	45	50
Cyprus	-	-	-	-	53	-	-	-	-	46
Czech Republic	31	31	31	32	32	37	38	36	34	36
Denmark	7	7	8	8	5	8	8	9	8	8
Estonia	27	23	27	27	26	25	23	30	30	28
Finland	4	4	3	6	4	5	5	7	9	9
France	19	22	20	22	25	16	15	20	21	19
Germany	16	14	17	15	17	19	16	10	10	13
Greece	44	48	40	45	50	41	44	34	46	51
Hong Kong SAR	9	13	14	11	7	11	10	8	6	6
Hungary	35	36	44	42	44	42	42	44	43	48
Iceland	26	27	24	26	23	20	24	33	32	30
India	51	56	50	53	51	40	39	37	39	37
Indonesia	58	57	60	60	59	58	57	60	60	58
Ireland	22	17	25	20	21	26	21	26	25	25
Israel	12	11	10	13	13	7	7	4	5	7
Italy	40	41	36	34	39	44	46	42	40	42
Japan	20	20	23	23	27	23	20	24	23	29
Jordan	53	46	49	48	56	60	60	61	59	61
Kazakhstan	42	35	35	43	38	48	43	41	47	40
Korea Rep.	14	21	18	17	19	14	12	13	15	14
Latvia	33	33	34	33	35	36	33	32	33	34
Lithuania	30	32	28	29	29	22	25	18	18	21
Luxembourg	18	19	16	21	20	27	28	23	29	27
Malaysia	17	15	21	24	24	15	19	25	22	17
Mexico	43	51	48	52	49	45	53	51	52	54
Mongolia	-	-	55	57	61	-	-	56	55	59
Netherlands	5	6	6	4	6	13	11	14	13	11
New Zealand	21	18	13	10	14	17	18	15	14	20
Norway	8	9	11	9	10	12	17	17	17	15
Peru	57	59	57	58	62	57	58	58	61	62
Philippines	39	43	45	46	46	39	41	49	50	53
Poland	36	39	38	38	37	30	36	31	27	32
Portugal	29	30	29	31	33	29	31	29	31	31
Qatar	28	28	32	28	28	31	34	39	37	35
Romania	59	54	51	49	54	56	56	50	48	47
Russia	46	42	41	40	42	32	30	27	28	24
Saudi Arabia	-	-	-	-	36	-	-	-	-	39
Singapore	1	1	1	1	1	2	1	1	1	1
Slovak Republic	41	40	43	41	43	43	40	43	41	43
Slovenia	37	37	39	36	34	34	32	28	26	26
South Africa	50	47	47	51	47	46	45	47	49	49
Spain	32	29	30	30	30	33	35	35	36	33
Sweden	2	3	5	3	2	1	2	2	2	2
Switzerland	6	5	7	7	8	6	6	5	3	4
Taiwan	13	16	15	16	12	21	22	19	19	16
Thailand	45	44	42	39	41	54	50	48	42	44
Turkey	48	52	52	50	52	59	59	59	58	60
UAE	24	26	22	25	18	38	37	38	35	38
Ukraine	54	50	59	59	60	35	29	40	44	45
United Kingdom	15	12	12	12	11	10	13	12	11	10
USA	3	2	2	2	3	3	4	6	4	5
Venezuela	60	60	61	61	63	51	48	54	57	63

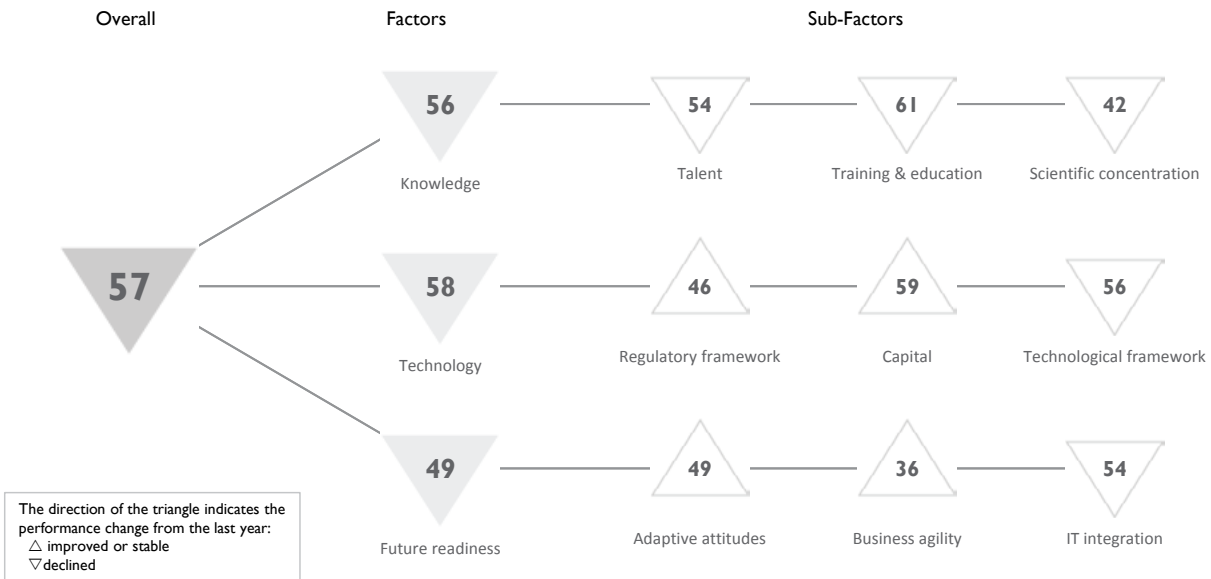
Technology					Future readiness					
2013	2014	2015	2016	2017	2013	2014	2015	2016	2017	
59	59	59	56	58	47	46	45	46	49	Argentina
15	12	12	15	15	10	13	8	7	14	Australia
30	27	29	28	28	22	16	19	19	15	Austria
24	29	24	21	24	21	17	15	16	22	Belgium
57	56	55	54	55	43	49	51	49	44	Brazil
43	45	42	38	42	60	59	59	58	57	Bulgaria
14	15	17	14	13	12	12	2	3	8	Canada
31	31	31	34	34	32	32	32	32	33	Chile
39	42	37	39	36	50	48	39	38	34	China Mainland
56	55	56	59	60	35	38	43	44	53	Colombia
48	44	41	43	47	49	47	52	50	56	Croatia
-	-	-	-	54	-	-	-	-	54	Cyprus
28	26	26	26	26	33	33	33	34	37	Czech Republic
12	14	13	12	10	4	4	6	6	1	Denmark
25	20	19	17	19	24	22	26	26	26	Estonia
5	2	7	7	4	11	6	4	5	4	Finland
16	19	23	23	22	25	26	21	20	28	France
22	24	25	25	21	8	8	13	14	18	Germany
50	52	51	52	52	40	42	36	36	47	Greece
3	6	5	2	3	13	27	25	27	17	Hong Kong SAR
33	34	39	37	38	42	36	47	45	55	Hungary
21	21	20	22	20	28	29	17	18	21	Iceland
54	57	58	57	59	55	57	53	54	51	India
55	53	57	58	56	54	53	58	60	62	Indonesia
27	22	27	27	25	15	11	12	12	10	Ireland
23	23	22	24	27	5	9	7	9	11	Israel
47	50	46	44	45	31	31	30	29	30	Italy
19	16	21	19	23	20	19	22	23	25	Japan
46	40	49	45	50	46	35	38	37	48	Jordan
40	39	34	42	35	34	34	35	41	38	Kazakhstan
13	18	16	13	17	19	25	24	25	24	Korea Rep.
26	28	32	33	32	44	40	37	39	41	Latvia
32	32	28	29	29	36	37	34	33	31	Lithuania
7	3	2	11	12	23	21	23	24	23	Luxembourg
9	8	14	16	18	27	23	27	28	27	Malaysia
45	46	47	49	48	38	54	54	56	50	Mexico
-	-	54	55	61	-	-	46	52	60	Mongolia
10	13	15	10	9	3	2	1	2	3	Netherlands
17	11	8	6	11	26	24	16	15	20	New Zealand
6	7	3	3	2	7	10	14	13	12	Norway
52	54	52	53	57	53	55	56	55	58	Peru
38	48	50	50	51	39	41	40	40	43	Philippines
34	37	36	36	39	52	50	49	51	39	Poland
35	33	30	35	37	30	30	31	31	35	Portugal
29	30	38	31	31	17	18	28	21	19	Qatar
53	51	45	46	46	58	56	57	57	59	Romania
49	41	44	47	44	56	52	55	53	52	Russia
-	-	-	-	41	-	-	-	-	32	Saudi Arabia
1	1	1	1	1	6	5	5	4	6	Singapore
36	35	40	41	43	45	43	44	43	46	Slovak Republic
44	43	43	40	40	37	39	41	35	36	Slovenia
51	49	53	51	53	51	51	48	47	42	South Africa
41	36	35	32	33	29	28	29	30	29	Spain
2	4	9	4	5	2	3	9	8	5	Sweden
11	9	11	9	8	9	7	10	10	13	Switzerland
8	10	4	8	7	18	20	20	22	16	Taiwan
37	38	33	30	30	48	45	50	48	45	Thailand
42	47	48	48	49	41	44	42	42	40	Turkey
20	25	10	20	14	14	15	18	17	7	UAE
58	58	60	60	62	57	58	61	61	61	Ukraine
18	17	18	18	16	16	14	11	11	9	United Kingdom
4	5	6	5	6	1	1	3	1	2	USA
60	60	61	61	63	59	60	60	59	63	Venezuela

	Talent	Training & education	Scientific concentration	Regulatory framework	Capital	Technological framework	Adaptive attitudes	Business agility	IT integration	
Argentina	54	61	42	46	59	56	49	36	54	Argentina
Australia	8	51	14	11	16	21	4	42	10	Australia
Austria	12	4	21	25	38	22	25	8	9	Austria
Belgium	17	29	27	16	23	31	21	21	19	Belgium
Brazil	60	48	44	60	56	48	45	46	49	Brazil
Bulgaria	51	39	30	50	46	34	47	61	55	Bulgaria
Canada	9	10	4	21	1	27	13	5	15	Canada
Chile	34	50	59	33	20	46	30	31	40	Chile
China Mainland	23	53	3	32	22	47	32	24	44	China Mainland
Colombia	58	45	58	58	55	55	53	54	45	Colombia
Croatia	59	41	35	52	52	40	43	62	46	Croatia
Cyprus	56	22	51	45	54	54	56	51	47	Cyprus
Czech Republic	26	49	34	43	15	15	42	33	33	Czech Republic
Denmark	6	5	19	8	25	5	1	11	11	Denmark
Estonia	40	2	38	23	18	18	31	19	25	Estonia
Finland	10	8	12	2	10	8	3	17	2	Finland
France	24	35	10	15	26	25	26	44	20	France
Germany	16	15	15	20	19	26	22	18	16	Germany
Greece	47	55	33	49	58	49	41	53	48	Greece
Hong Kong SAR	4	27	7	6	6	9	9	25	21	Hong Kong SAR
Hungary	46	43	46	29	44	45	57	58	38	Hungary
Iceland	38	7	37	22	43	11	16	10	28	Iceland
India	43	57	6	59	28	63	59	29	56	India
Indonesia	48	59	54	61	37	58	63	35	61	Indonesia
Ireland	15	34	31	14	49	13	12	2	24	Ireland
Israel	21	11	2	26	27	28	18	9	7	Israel
Italy	44	46	32	42	53	42	27	30	35	Italy
Japan	41	31	16	37	33	6	14	57	18	Japan
Jordan	55	58	62	53	30	53	55	34	50	Jordan
Kazakhstan	36	21	56	18	51	35	48	27	39	Kazakhstan
Korea Rep.	25	13	9	28	41	2	10	48	23	Korea Rep.
Latvia	29	20	47	34	31	24	46	41	36	Latvia
Lithuania	33	6	28	27	42	17	35	28	29	Lithuania
Luxembourg	31	30	23	10	3	32	33	16	5	Luxembourg
Malaysia	27	3	26	30	9	19	28	12	34	Malaysia
Mexico	53	44	57	39	45	52	40	55	52	Mexico
Mongolia	62	38	60	57	61	59	39	63	62	Mongolia
Netherlands	3	32	18	9	5	14	5	7	3	Netherlands
New Zealand	14	36	20	7	4	20	20	26	17	New Zealand
Norway	20	12	22	3	7	3	8	20	14	Norway
Peru	61	60	63	51	48	61	61	50	59	Peru
Philippines	39	54	53	62	29	50	50	23	57	Philippines
Poland	28	23	40	47	32	39	38	45	41	Poland
Portugal	30	18	36	19	50	43	34	40	32	Portugal
Qatar	19	24	55	31	17	36	15	15	27	Qatar
Romania	45	52	41	41	60	33	60	60	58	Romania
Russia	35	14	25	36	57	37	44	59	43	Russia
Saudi Arabia	22	16	61	48	36	41	29	38	31	Saudi Arabia
Singapore	1	9	8	1	14	1	11	14	1	Singapore
Slovak Republic	50	40	39	55	39	38	52	52	37	Slovak Republic
Slovenia	37	17	24	44	40	44	37	43	30	Slovenia
South Africa	52	37	49	54	35	57	54	37	42	South Africa
Spain	32	42	29	35	34	23	24	47	26	Spain
Sweden	11	1	5	4	13	7	7	13	4	Sweden
Switzerland	2	25	13	13	11	10	23	4	13	Switzerland
Taiwan	18	28	17	24	8	4	19	6	22	Taiwan
Thailand	42	47	43	38	21	30	51	32	53	Thailand
Turkey	49	63	48	40	47	51	36	39	51	Turkey
UAE	5	56	52	5	12	29	17	1	8	UAE
Ukraine	57	26	45	56	62	60	58	56	60	Ukraine
United Kingdom	7	19	11	12	24	16	6	22	6	United Kingdom
USA	13	33	1	17	2	12	2	3	12	USA
Venezuela	63	62	50	63	63	62	62	49	63	Venezuela

Digital Competitiveness Country Profiles

ARGENTINA

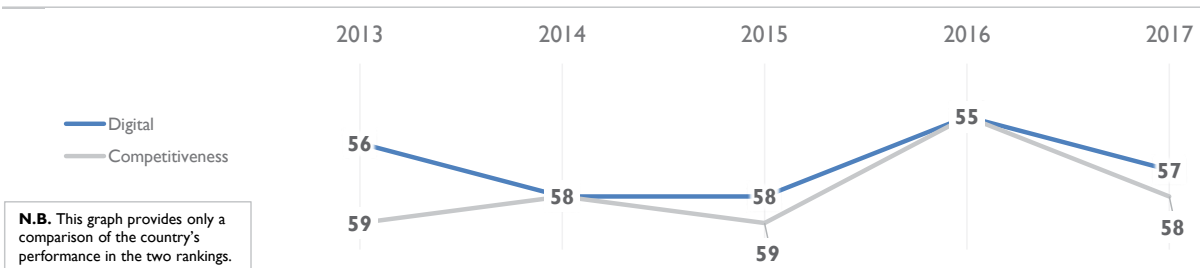
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

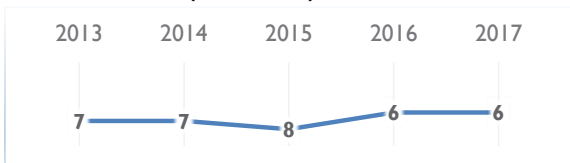
	2013	2014	2015	2016	2017
OVERALL	56	58	58	55	57
Knowledge	49	54	57	53	56
Technology	59	59	59	56	58
Future readiness	47	46	45	46	49

COMPETITIVENESS & DIGITAL RANKINGS

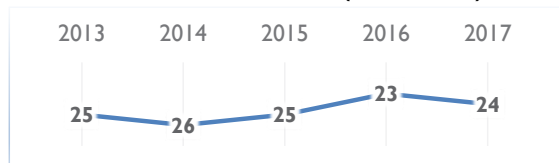


PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS > 20 MILLION (29 countries)



ARGENTINA

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	55	58	59	50	54
Training & education	45	44	56	57	61
Scientific concentration	44	45	42	40	42

Talent Rank

Educational assessment PISA - Math	49
► International experience	24
Foreign highly-skilled personnel	46
Management of cities	51
Digital/Technological skills	56
Net flow of international students	24

Training & education Rank

Employee training	57
▷ Total public expenditure on education	61
Higher education achievement	56
Pupil-teacher ratio (tertiary education)	-
Graduates in Sciences	54
► Women with degrees	3

Scientific concentration Rank

Total expenditure on R&D (%)	49
Total R&D personnel per capita	42
► Female researchers	3
R&D productivity by publication	29
Scientific and technical employment	-
High-tech patent grants	56

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	53	51	54	46	46
Capital	59	59	59	59	59
Technological framework	58	56	56	54	56

Regulatory framework Rank

▷ Starting a business	60
Enforcing contracts	37
► Immigration laws	2
Technological regulation	55
Scientific research legislation	46
Intellectual property rights	52

Capital Rank

IT & media stock market capitalization	31
Funding for technological development	56
▷ Banking and financial services	60
▷ Investment risk	61
Venture capital	55
Investment in Telecommunications	53

Technological framework Rank

▷ Communications technology	62
Mobile Broadband subscribers	51
Wireless broadband	40
Internet users	54
Internet bandwidth speed	57
High-tech exports (%)	39

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	53	53	49	49	49
Business agility	34	32	33	42	36
IT integration	52	52	54	51	54

Adaptive attitudes Rank

E-Participation	44
Internet retailing	37
Tablet possession	46
Smartphone possession	44
Attitudes toward globalization	59

Business agility Rank

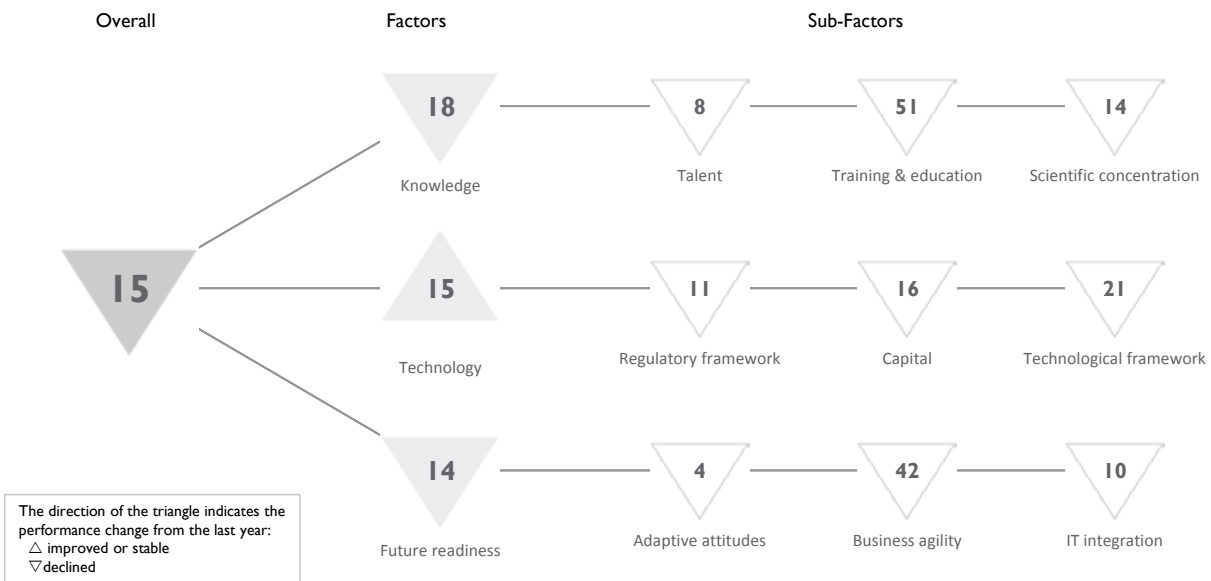
► Opportunities and threats	12
Innovative firms	-
Agility of companies	46
Use of big data and analytics	44
Knowledge transfer	39

IT integration Rank

E-Government	34
Public-private partnerships	59
Cyber security	50
Software piracy	56

AUSTRALIA

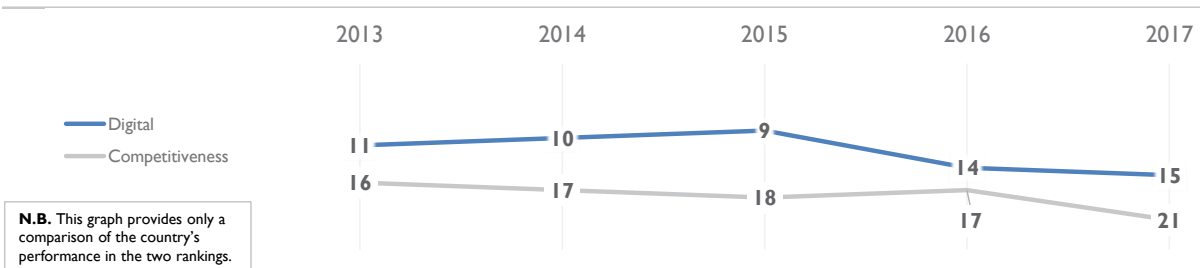
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

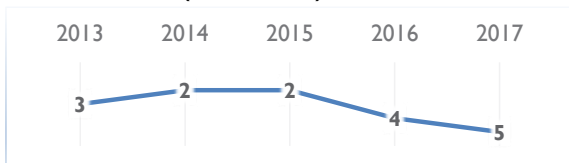
	2013	2014	2015	2016	2017
OVERALL	11	10	9	14	15
Knowledge	9	9	11	16	18
Technology	15	12	12	15	15
Future readiness	10	13	8	7	14

COMPETITIVENESS & DIGITAL RANKINGS

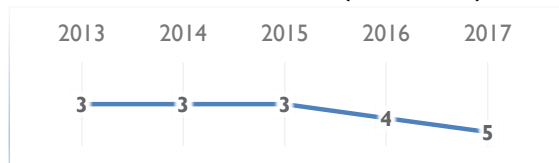


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	3	3	3	6	8
Training & education	31	36	38	47	51
Scientific concentration	8	10	10	12	14

Talent

	Rank
Educational assessment PISA - Math	23
International experience	37
Foreign highly-skilled personnel	8
Management of cities	25
Digital/Technological skills	45
▶ Net flow of international students	1

Training & education

	Rank
Employee training	43
Total public expenditure on education	25
Higher education achievement	15
▷ Pupil-teacher ratio (tertiary education)	52
▷ Graduates in Sciences	50
Women with degrees	31

Scientific concentration

	Rank
Total expenditure on R&D (%)	17
Total R&D personnel per capita	-
Female researchers	-
R&D productivity by publication	19
Scientific and technical employment	9
High-tech patent grants	37

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	13	13	8	6	11
Capital	22	19	15	15	16
Technological framework	15	10	13	17	21

Regulatory framework

	Rank
Starting a business	5
▶ Enforcing contracts	3
Immigration laws	32
Technological regulation	28
Scientific research legislation	19
Intellectual property rights	15

Capital

	Rank
IT & media stock market capitalization	34
▷ Funding for technological development	35
Banking and financial services	23
Investment risk	11
Venture capital	33
Investment in Telecommunications	9

Technological framework

	Rank
▷ Communications technology	54
Mobile Broadband subscribers	8
Wireless broadband	9
Internet users	21
Internet bandwidth speed	40
High-tech exports (%)	28

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	3	4	2	2	4
Business agility	22	27	26	22	42
IT integration	13	13	6	8	10

Adaptive attitudes

	Rank
▶ E-Participation	2
Internet retailing	10
▶ Tablet possession	3
Smartphone possession	13
Attitudes toward globalization	39

Business agility

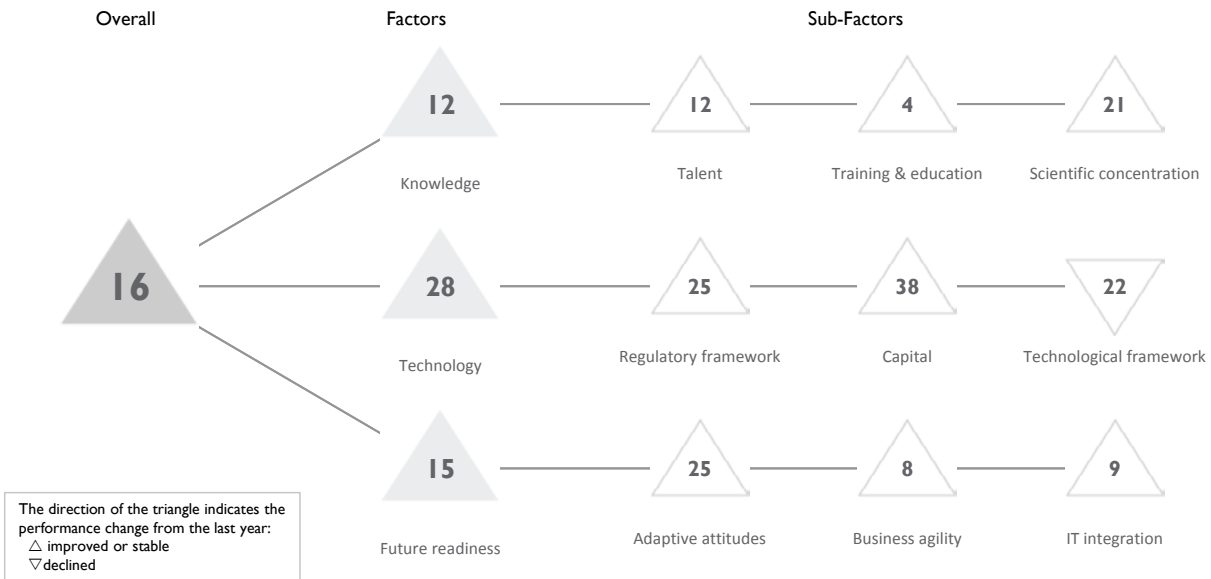
	Rank
▷ Opportunities and threats	56
Innovative firms	18
▷ Agility of companies	56
Use of big data and analytics	37
Knowledge transfer	25

IT integration

	Rank
▶ E-Government	2
Public-private partnerships	24
Cyber security	40
Software piracy	5

AUSTRIA

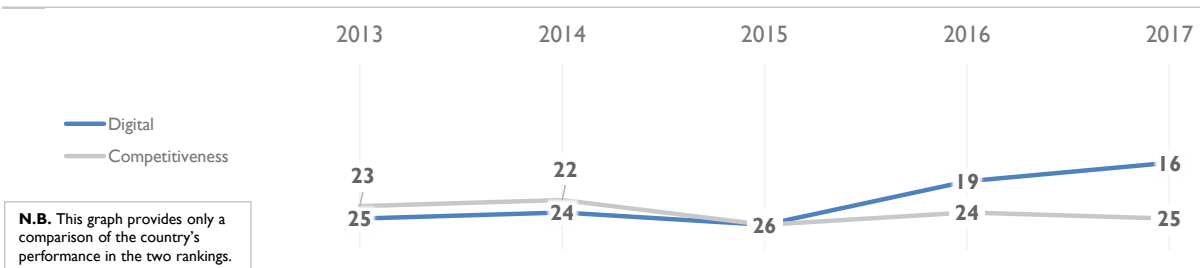
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

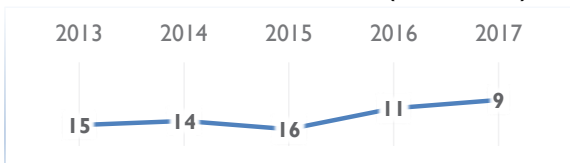
	2013	2014	2015	2016	2017
OVERALL	25	24	26	19	16
Knowledge	18	14	16	12	12
Technology	30	27	29	28	28
Future readiness	22	16	19	19	15

COMPETITIVENESS & DIGITAL RANKINGS

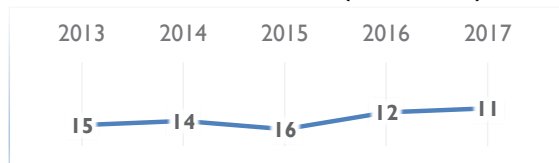


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	13	11	17	13	12
Training & education	16	14	16	4	4
Scientific concentration	22	23	22	22	21

Talent

	Rank
Educational assessment PISA - Math	19
International experience	16
Foreign highly-skilled personnel	26
Management of cities	18
Digital/Technological skills	36
▶ Net flow of international students	5

Training & education

	Rank
▶ Employee training	1
Total public expenditure on education	21
Higher education achievement	33
▶ Pupil-teacher ratio (tertiary education)	3
Graduates in Sciences	6
▷ Women with degrees	41

Scientific concentration

	Rank
▶ Total expenditure on R&D (%)	5
Total R&D personnel per capita	12
Female researchers	39
▷ R&D productivity by publication	48
Scientific and technical employment	18
High-tech patent grants	28

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	28	24	31	29	25
Capital	43	40	47	39	38
Technological framework	25	18	18	19	22

Regulatory framework

	Rank
▷ Starting a business	52
Enforcing contracts	10
Immigration laws	31
Technological regulation	34
Scientific research legislation	21
Intellectual property rights	14

Capital

	Rank
IT & media stock market capitalization	38
Funding for technological development	19
Banking and financial services	30
Investment risk	13
Venture capital	38
▷ Investment in Telecommunications	62

Technological framework

	Rank
Communications technology	29
Mobile Broadband subscribers	10
Wireless broadband	38
Internet users	24
Internet bandwidth speed	28
High-tech exports (%)	29

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	26	27	31	30	25
Business agility	9	7	10	9	8
IT integration	16	17	15	16	9

Adaptive attitudes

	Rank
E-Participation	14
Internet retailing	17
Tablet possession	30
Smartphone possession	37
▷ Attitudes toward globalization	45

Business agility

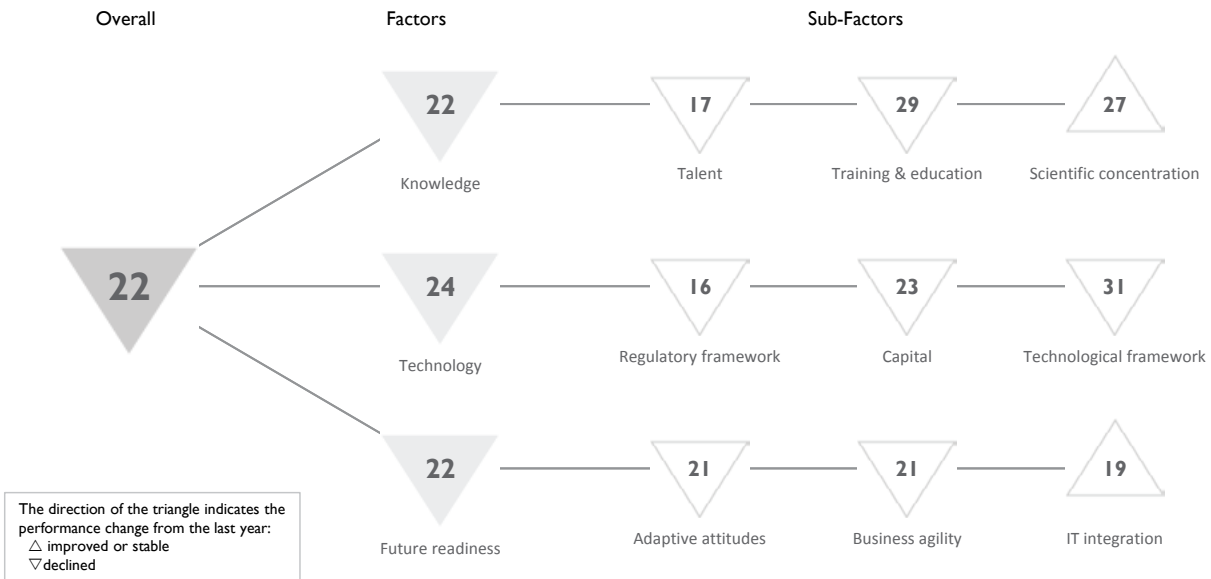
	Rank
Opportunities and threats	15
Innovative firms	6
Agility of companies	11
Use of big data and analytics	31
Knowledge transfer	12

IT integration

	Rank
E-Government	16
Public-private partnerships	28
▶ Cyber security	5
Software piracy	6

BELGIUM

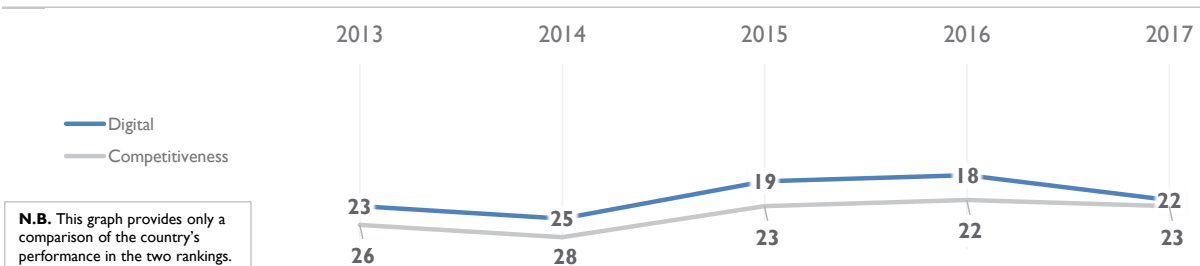
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

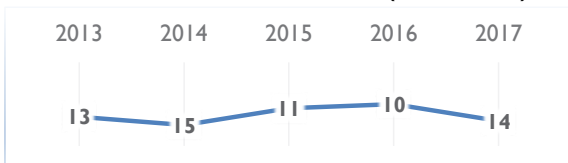
	2013	2014	2015	2016	2017
OVERALL	23	25	19	18	22
Knowledge	24	26	21	20	22
Technology	24	29	24	21	24
Future readiness	21	17	15	16	22

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	16	22	11	12	17
Training & education	21	22	26	24	29
Scientific concentration	34	30	31	30	27

Talent Rank

Educational assessment PISA - Math	14
International experience	10
Foreign highly-skilled personnel	28
Management of cities	36
Digital/Technological skills	32
► Net flow of international students	9

Training & education Rank

Employee training	30
► Total public expenditure on education	9
Higher education achievement	24
Pupil-teacher ratio (tertiary education)	34
▷ Graduates in Sciences	47
Women with degrees	24

Scientific concentration Rank

Total expenditure on R&D (%)	12
Total R&D personnel per capita	16
Female researchers	31
R&D productivity by publication	35
Scientific and technical employment	22
▷ High-tech patent grants	46

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	10	18	15	13	16
Capital	29	34	24	19	23
Technological framework	34	33	30	29	31

Regulatory framework Rank

Starting a business	11
Enforcing contracts	39
► Immigration laws	8
Technological regulation	20
Scientific research legislation	16
Intellectual property rights	20

Capital Rank

IT & media stock market capitalization	37
Funding for technological development	16
Banking and financial services	29
Investment risk	19
Venture capital	17
Investment in Telecommunications	31

Technological framework Rank

Communications technology	20
▷ Mobile Broadband subscribers	42
Wireless broadband	39
Internet users	20
Internet bandwidth speed	17
High-tech exports (%)	30

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	30	26	20	18	21
Business agility	4	3	7	7	21
IT integration	22	25	22	23	19

Adaptive attitudes Rank

▷ E-Participation	42
Internet retailing	13
► Tablet possession	10
Smartphone possession	31
Attitudes toward globalization	29

Business agility Rank

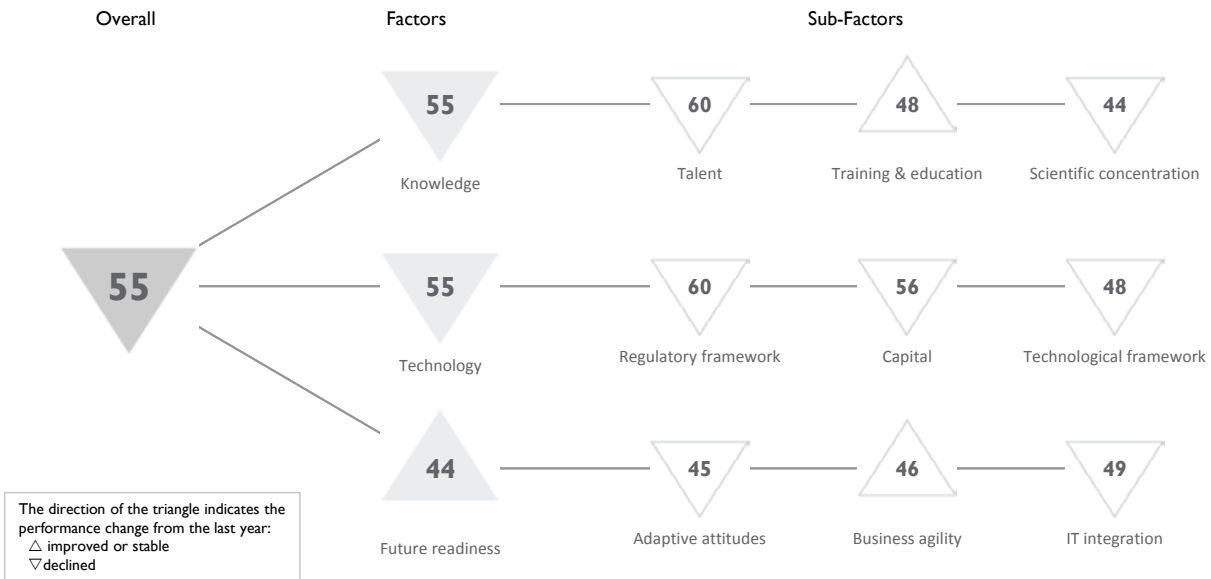
▷ Opportunities and threats	44
► Innovative firms	8
Agility of companies	37
Use of big data and analytics	36
Knowledge transfer	16

IT integration Rank

E-Government	19
Public-private partnerships	20
Cyber security	25
Software piracy	11

BRAZIL

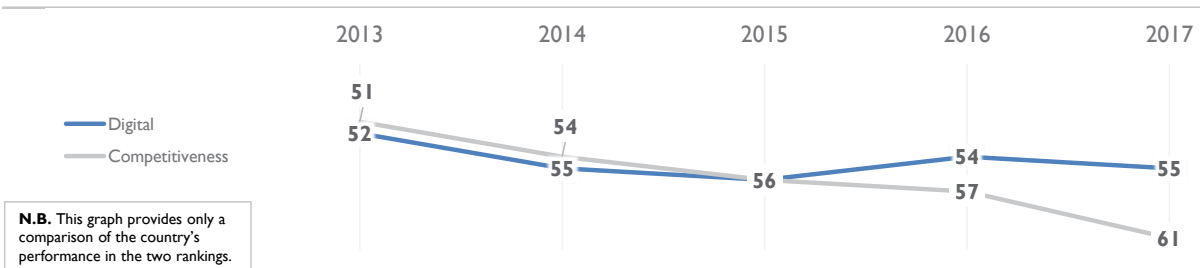
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

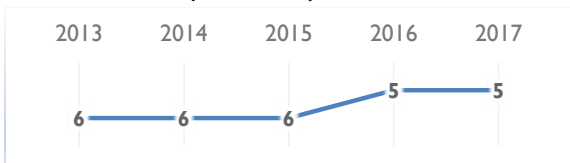
	2013	2014	2015	2016	2017
OVERALL	52	55	56	54	55
Knowledge	52	52	55	54	55
Technology	57	56	55	54	55
Future readiness	43	49	51	49	44

COMPETITIVENESS & DIGITAL RANKINGS

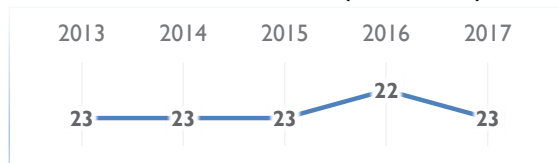


PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS > 20 MILLION (29 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	54	57	60	59	60
Training & education	46	46	52	49	48
Scientific concentration	45	41	40	43	44

Talent	Rank
Educational assessment PISA - Math	56
International experience	53
Foreign highly-skilled personnel	54
▷ Management of cities	60
▷ Digital/Technological skills	58
Net flow of international students	34

Training & education	Rank
Employee training	49
▶ Total public expenditure on education	8
Higher education achievement	57
Pupil-teacher ratio (tertiary education)	39
Graduates in Sciences	51
▶ Women with degrees	14

Scientific concentration	Rank
Total expenditure on R&D (%)	23
Total R&D personnel per capita	51
Female researchers	-
▶ R&D productivity by publication	16
Scientific and technical employment	-
High-tech patent grants	50

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	58	58	57	58	60
Capital	44	51	55	54	56
Technological framework	53	49	49	47	48

Regulatory framework	Rank
▷ Starting a business	62
Enforcing contracts	31
Immigration laws	38
▷ Technological regulation	58
Scientific research legislation	56
Intellectual property rights	55

Capital	Rank
IT & media stock market capitalization	40
Funding for technological development	57
Banking and financial services	50
Investment risk	44
Venture capital	54
Investment in Telecommunications	49

Technological framework	Rank
▷ Communications technology	60
Mobile Broadband subscribers	26
▶ Wireless broadband	20
Internet users	46
Internet bandwidth speed	54
High-tech exports (%)	31

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	42	43	43	44	45
Business agility	43	45	54	51	46
IT integration	46	49	51	48	49

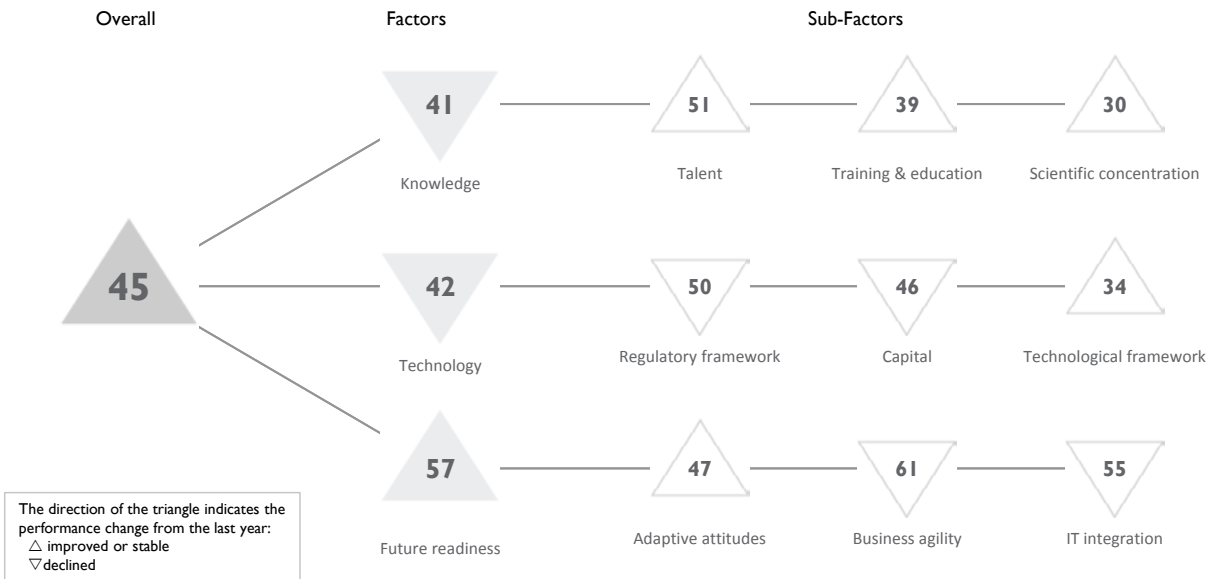
Adaptive attitudes	Rank
E-Participation	32
Internet retailing	42
Tablet possession	41
Smartphone possession	53
Attitudes toward globalization	37

Business agility	Rank
Opportunities and threats	37
Innovative firms	-
▶ Agility of companies	20
Use of big data and analytics	54
Knowledge transfer	56

IT integration	Rank
E-Government	42
Public-private partnerships	58
Cyber security	57
Software piracy	36

BULGARIA

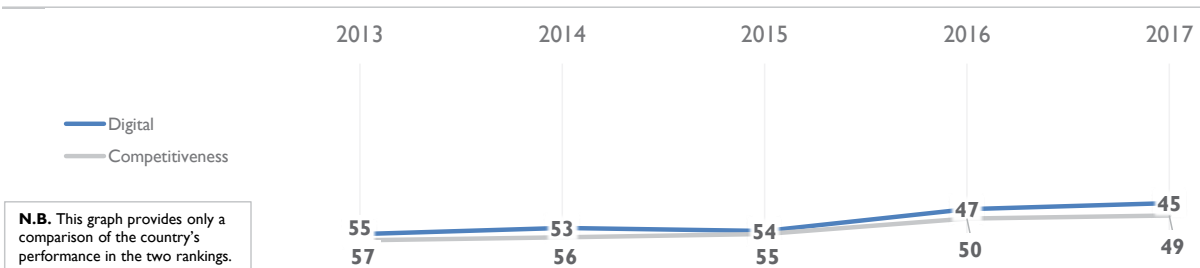
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

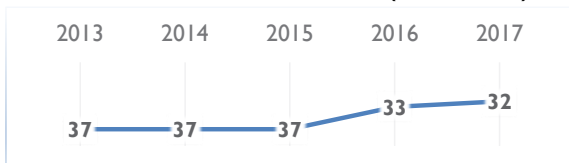
	2013	2014	2015	2016	2017
OVERALL	55	53	54	47	45
Knowledge	55	47	45	38	41
Technology	43	45	42	38	42
Future readiness	60	59	59	58	57

COMPETITIVENESS & DIGITAL RANKINGS

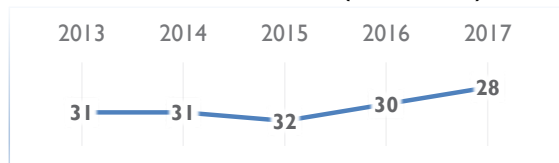


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	59	56	54	52	51
Training & education	49	45	47	40	39
Scientific concentration	35	35	32	31	30

Talent Rank

Educational assessment PISA - Math	43
▷ International experience	58
Foreign highly-skilled personnel	55
Management of cities	43
Digital/Technological skills	16
Net flow of international students	52

Training & education Rank

Employee training	42
Total public expenditure on education	36
Higher education achievement	40
▶ Pupil-teacher ratio (tertiary education)	16
Graduates in Sciences	33
Women with degrees	20

Scientific concentration Rank

Total expenditure on R&D (%)	38
Total R&D personnel per capita	34
▶ Female researchers	7
R&D productivity by publication	46
Scientific and technical employment	37
▶ High-tech patent grants	12

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	56	52	51	48	50
Capital	42	43	43	36	46
Technological framework	40	39	35	34	34

Regulatory framework Rank

Starting a business	43
Enforcing contracts	36
Immigration laws	48
Technological regulation	51
▷ Scientific research legislation	60
Intellectual property rights	57

Capital Rank

IT & media stock market capitalization	46
Funding for technological development	47
Banking and financial services	47
Investment risk	52
Venture capital	43
▶ Investment in Telecommunications	3

Technological framework Rank

▶ Communications technology	15
Mobile Broadband subscribers	47
Wireless broadband	24
Internet users	43
Internet bandwidth speed	18
High-tech exports (%)	44

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	60	57	59	58	47
Business agility	59	59	60	60	61
IT integration	50	50	52	53	55

Adaptive attitudes Rank

E-Participation	37
Internet retailing	45
Tablet possession	53
Smartphone possession	47
Attitudes toward globalization	47

Business agility Rank

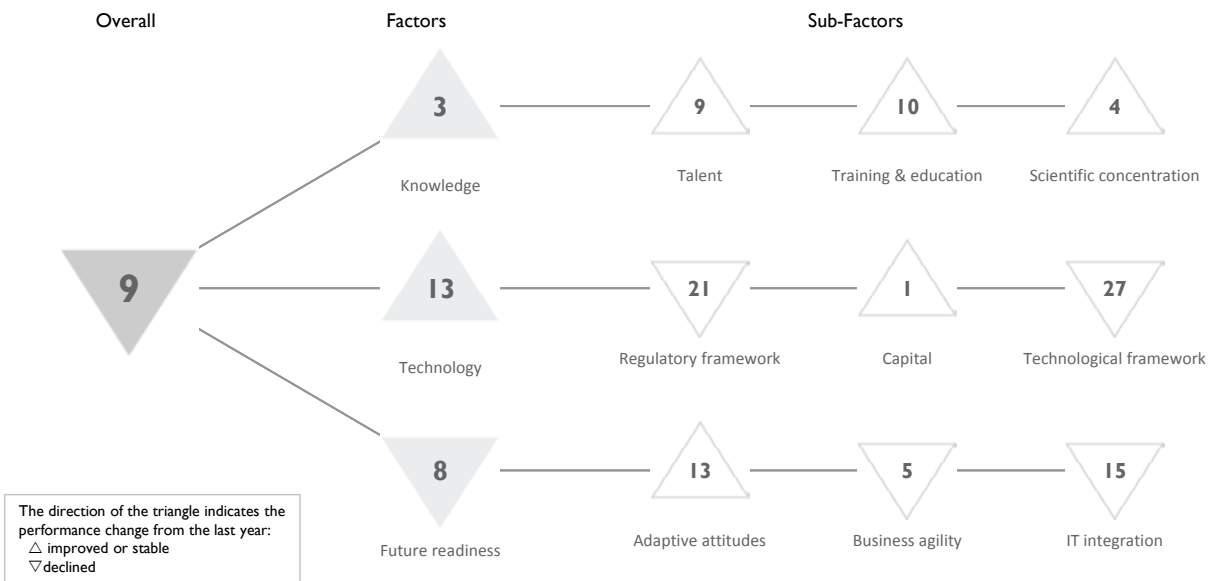
Opportunities and threats	55
Innovative firms	42
▷ Agility of companies	58
▷ Use of big data and analytics	63
▷ Knowledge transfer	60

IT integration Rank

E-Government	43
Public-private partnerships	57
Cyber security	58
Software piracy	50

CANADA

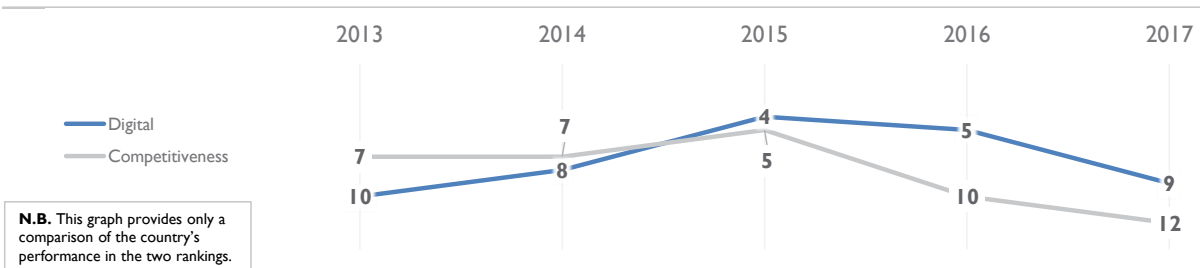
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

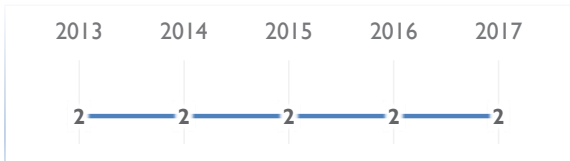
	2013	2014	2015	2016	2017
OVERALL	10	8	4	5	9
Knowledge	4	3	3	7	3
Technology	14	15	17	14	13
Future readiness	12	12	2	3	8

COMPETITIVENESS & DIGITAL RANKINGS

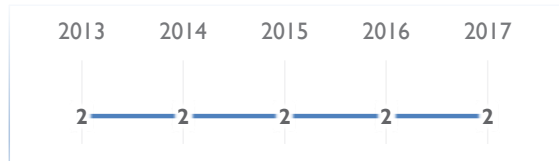


PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	11	8	8	10	9
Training & education	9	13	12	13	10
Scientific concentration	3	3	4	4	4

Talent	Rank
Educational assessment PISA - Math	9
International experience	19
Foreign highly-skilled personnel	11
Management of cities	13
Digital/Technological skills	21
Net flow of international students	12

Training & education	Rank
Employee training	20
Total public expenditure on education	19
Higher education achievement	6
Pupil-teacher ratio (tertiary education)	-
▷ Graduates in Sciences	34
Women with degrees	-

Scientific concentration	Rank
Total expenditure on R&D (%)	24
Total R&D personnel per capita	19
Female researchers	-
R&D productivity by publication	11
Scientific and technical employment	10
► High-tech patent grants	6

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	9	15	12	17	21
Capital	8	6	8	5	1
Technological framework	23	24	26	24	27

Regulatory framework	Rank
► Starting a business	2
▷ Enforcing contracts	52
Immigration laws	13
Technological regulation	16
Scientific research legislation	15
Intellectual property rights	19

Capital	Rank
IT & media stock market capitalization	26
Funding for technological development	21
► Banking and financial services	4
Investment risk	9
Venture capital	12
► Investment in Telecommunications	1

Technological framework	Rank
Communications technology	27
Mobile Broadband subscribers	21
▷ Wireless broadband	46
Internet users	9
Internet bandwidth speed	22
▷ High-tech exports (%)	25

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	17	17	16	16	13
Business agility	11	15	1	1	5
IT integration	11	9	3	7	15

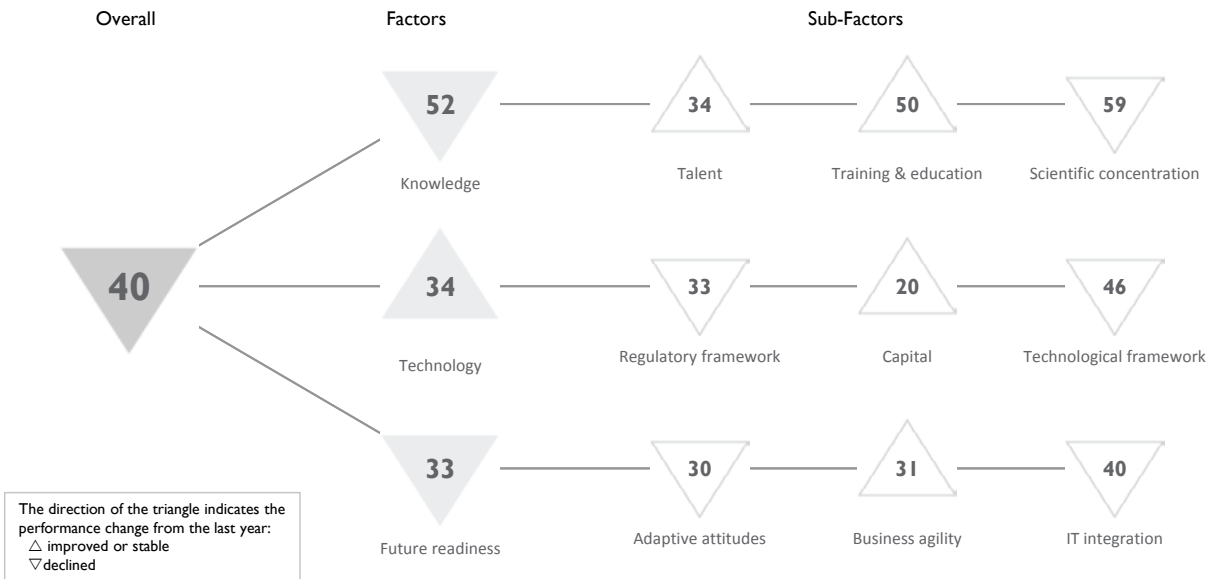
Adaptive attitudes	Rank
E-Participation	8
Internet retailing	16
Tablet possession	16
Smartphone possession	18
Attitudes toward globalization	13

Business agility	Rank
▷ Opportunities and threats	43
► Innovative firms	1
Agility of companies	30
Use of big data and analytics	9
Knowledge transfer	13

IT integration	Rank
E-Government	14
Public-private partnerships	16
Cyber security	17
Software piracy	14

CHILE

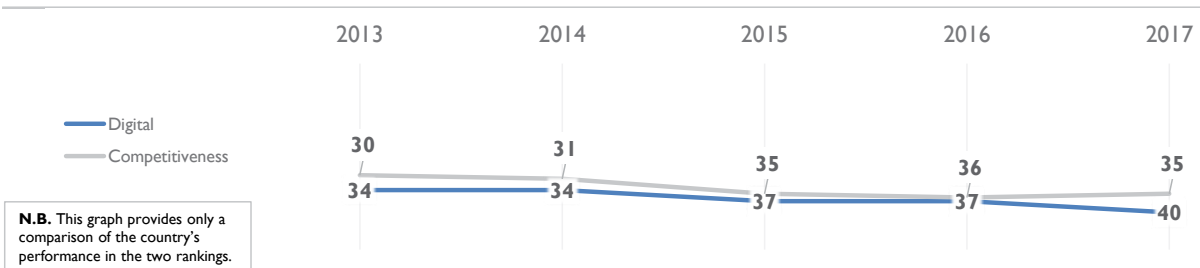
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	34	34	37	37	40
Knowledge	53	55	53	51	52
Technology	31	31	31	34	34
Future readiness	32	32	32	32	33

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	32	30	35	35	34
Training & education	51	54	51	52	50
Scientific concentration	57	58	58	58	59

Talent Rank

Educational assessment PISA - Math	46
International experience	17
► Foreign highly-skilled personnel	9
Management of cities	39
Digital/Technological skills	35
Net flow of international students	40

Training & education Rank

Employee training	40
Total public expenditure on education	30
Higher education achievement	48
Pupil-teacher ratio (tertiary education)	28
Graduates in Sciences	39
Women with degrees	39

Scientific concentration Rank

▷ Total expenditure on R&D (%)	54
▷ Total R&D personnel per capita	52
Female researchers	36
R&D productivity by publication	28
Scientific and technical employment	-
▷ High-tech patent grants	61

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	31	30	30	32	33
Capital	15	15	21	23	20
Technological framework	47	47	46	45	46

Regulatory framework Rank

Starting a business	32
Enforcing contracts	41
► Immigration laws	10
Technological regulation	33
▷ Scientific research legislation	49
Intellectual property rights	36

Capital Rank

IT & media stock market capitalization	44
Funding for technological development	43
Banking and financial services	12
Investment risk	15
Venture capital	32
► Investment in Telecommunications	5

Technological framework Rank

Communications technology	25
Mobile Broadband subscribers	35
Wireless broadband	44
Internet users	40
Internet bandwidth speed	44
▷ High-tech exports (%)	54

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	22	24	23	22	30
Business agility	41	39	45	44	31
IT integration	39	36	35	37	40

Adaptive attitudes Rank

E-Participation	28
Internet retailing	40
Tablet possession	29
Smartphone possession	23
► Attitudes toward globalization	8

Business agility Rank

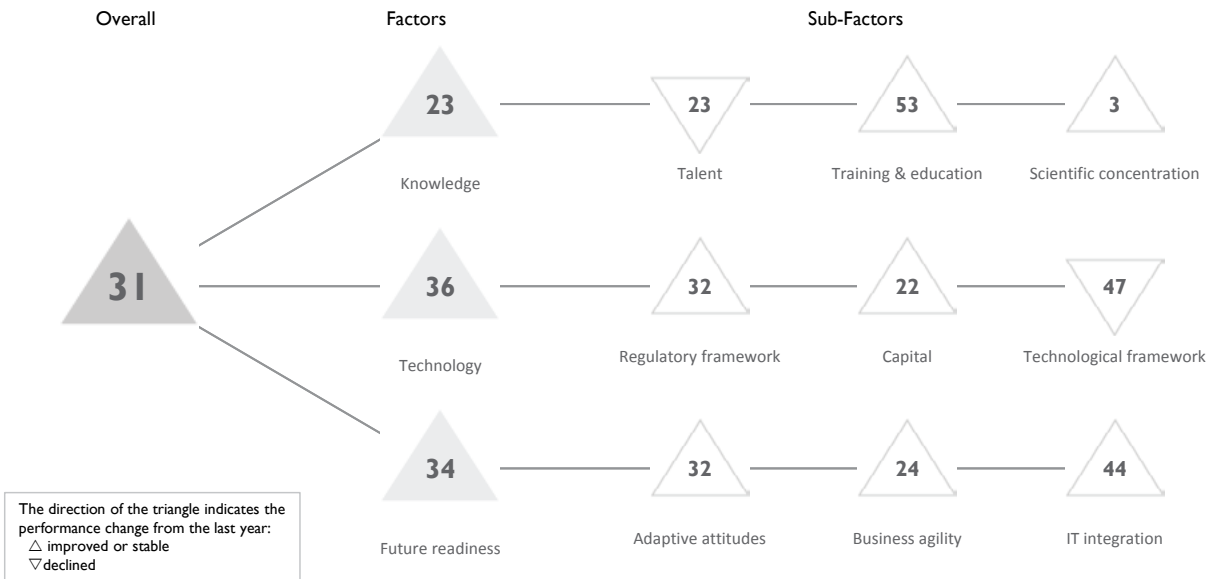
► Opportunities and threats	9
Innovative firms	35
Agility of companies	10
Use of big data and analytics	23
Knowledge transfer	34

IT integration Rank

E-Government	35
Public-private partnerships	38
Cyber security	29
Software piracy	47

CHINA MAINLAND

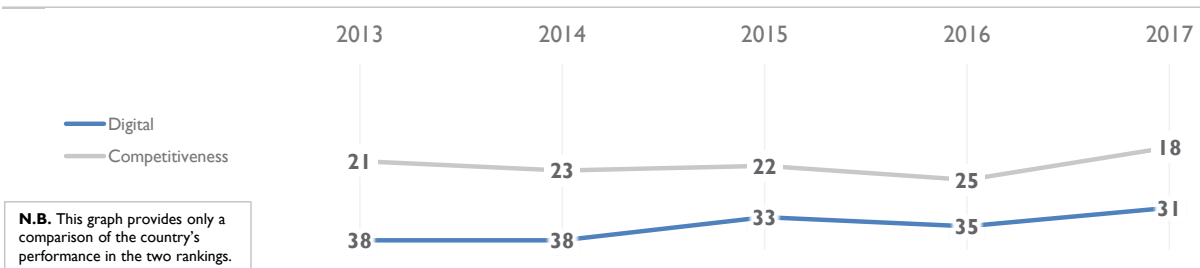
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	38	38	33	35	31
Knowledge	28	27	22	24	23
Technology	39	42	37	39	36
Future readiness	50	48	39	38	34

COMPETITIVENESS & DIGITAL RANKINGS

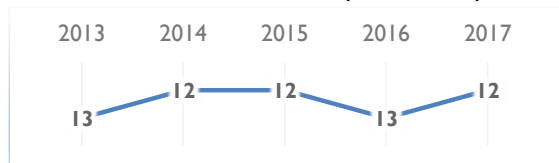


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



CHINA MAINLAND

- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	22	23	18	21	23
Training & education	55	53	55	54	53
Scientific concentration	6	5	3	3	3

Talent	Rank
▶ Educational assessment PISA - Math	5
▷ International experience	52
Foreign highly-skilled personnel	34
Management of cities	23
Digital/Technological skills	27
Net flow of international students	43

Training & education	Rank
Employee training	23
Total public expenditure on education	44
Higher education achievement	34
Pupil-teacher ratio (tertiary education)	41
Graduates in Sciences	-
Women with degrees	49

Scientific concentration	Rank
Total expenditure on R&D (%)	18
Total R&D personnel per capita	37
Female researchers	-
▶ R&D productivity by publication	1
Scientific and technical employment	49
High-tech patent grants	18

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	47	53	34	38	32
Capital	34	33	27	27	22
Technological framework	44	46	45	46	47

Regulatory framework	Rank
▷ Starting a business	55
▶ Enforcing contracts	5
Immigration laws	45
Technological regulation	25
Scientific research legislation	26
Intellectual property rights	49

Capital	Rank
IT & media stock market capitalization	32
Funding for technological development	20
Banking and financial services	40
Investment risk	37
Venture capital	27
▶ Investment in Telecommunications	10

Technological framework	Rank
Communications technology	19
Mobile Broadband subscribers	35
Wireless broadband	45
▷ Internet users	56
▷ Internet bandwidth speed	55
High-tech exports (%)	10

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	49	45	38	36	32
Business agility	42	38	34	32	24
IT integration	54	54	49	50	44

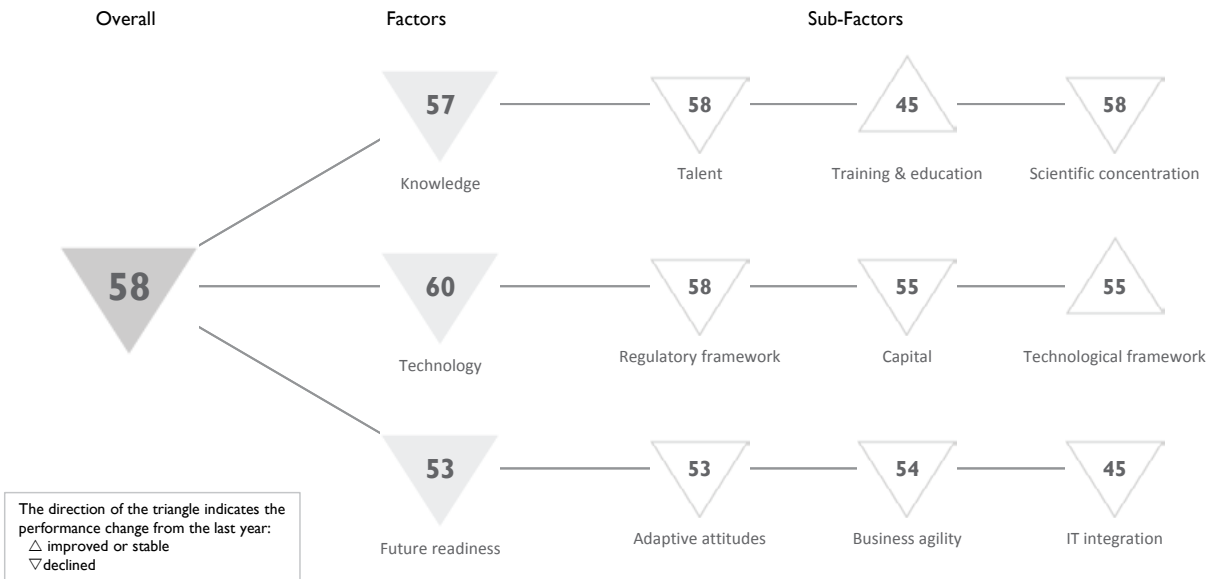
Adaptive attitudes	Rank
E-Participation	19
Internet retailing	22
Tablet possession	47
Smartphone possession	48
▶ Attitudes toward globalization	7

Business agility	Rank
Opportunities and threats	18
Innovative firms	21
Agility of companies	39
Use of big data and analytics	21
Knowledge transfer	27

IT integration	Rank
E-Government	48
Public-private partnerships	15
Cyber security	14
▷ Software piracy	58

COLOMBIA

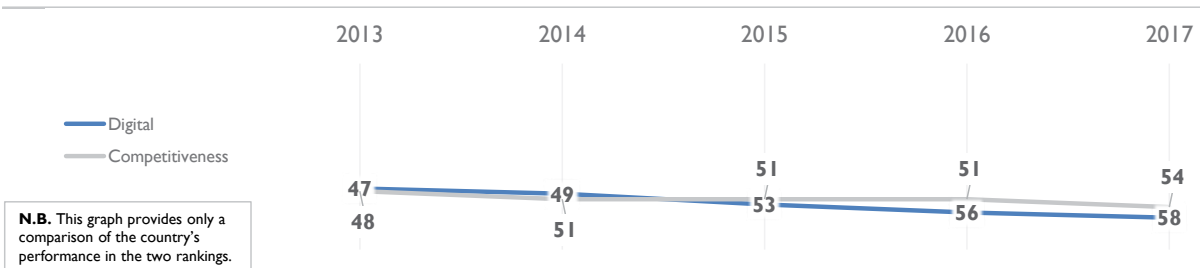
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	47	49	53	56	58
Knowledge	47	51	52	56	57
Technology	56	55	56	59	60
Future readiness	35	38	43	44	53

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	50	53	53	55	58
Training & education	37	40	42	46	45
Scientific concentration	53	52	50	57	58

Talent	Rank
Educational assessment PISA - Math	52
International experience	57
Foreign highly-skilled personnel	37
Management of cities	53
▷ Digital/Technological skills	60
Net flow of international students	32

Training & education	Rank
Employee training	34
Total public expenditure on education	31
Higher education achievement	46
► Pupil-teacher ratio (tertiary education)	32
Graduates in Sciences	28
Women with degrees	40

Scientific concentration	Rank
Total expenditure on R&D (%)	55
Total R&D personnel per capita	56
► Female researchers	24
► R&D productivity by publication	22
Scientific and technical employment	-
▷ High-tech patent grants	60

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	51	55	56	57	58
Capital	50	54	53	53	55
Technological framework	54	54	52	55	55

Regulatory framework	Rank
Starting a business	33
▷ Enforcing contracts	63
Immigration laws	43
Technological regulation	49
▷ Scientific research legislation	58
Intellectual property rights	46

Capital	Rank
IT & media stock market capitalization	47
Funding for technological development	54
Banking and financial services	53
Investment risk	39
Venture capital	49
► Investment in Telecommunications	22

Technological framework	Rank
Communications technology	55
Mobile Broadband subscribers	50
Wireless broadband	56
Internet users	49
▷ Internet bandwidth speed	60
High-tech exports (%)	38

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	43	38	40	42	53
Business agility	37	35	47	47	54
IT integration	40	44	43	44	45

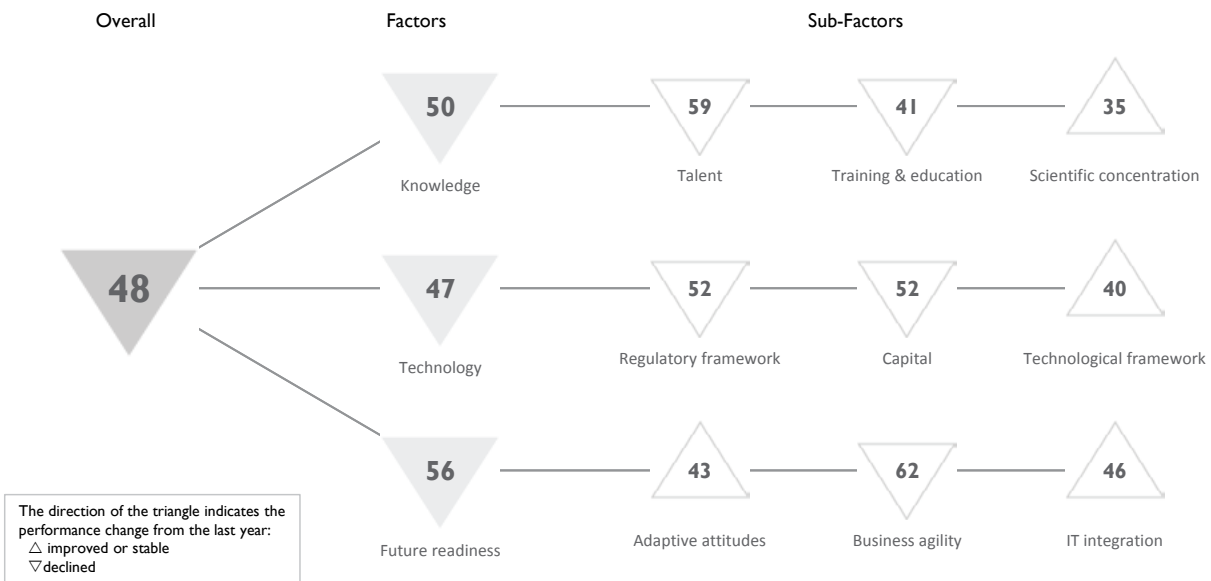
Adaptive attitudes	Rank
► E-Participation	23
Internet retailing	49
Tablet possession	33
Smartphone possession	56
Attitudes toward globalization	40

Business agility	Rank
Opportunities and threats	58
Innovative firms	37
Agility of companies	50
Use of big data and analytics	45
Knowledge transfer	43

IT integration	Rank
E-Government	44
Public-private partnerships	40
Cyber security	55
Software piracy	41

CROATIA

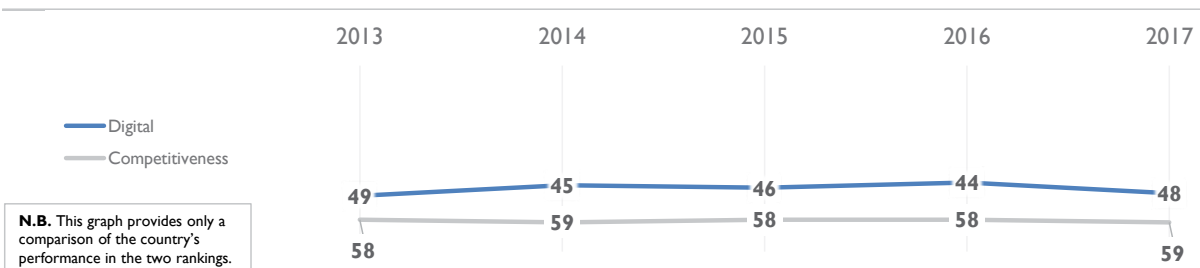
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

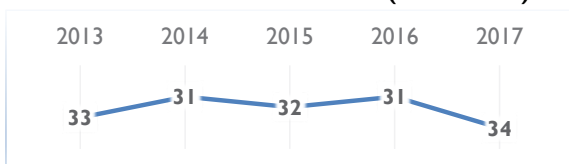
	2013	2014	2015	2016	2017
OVERALL	49	45	46	44	48
Knowledge	50	49	46	45	50
Technology	48	44	41	43	47
Future readiness	49	47	52	50	56

COMPETITIVENESS & DIGITAL RANKINGS

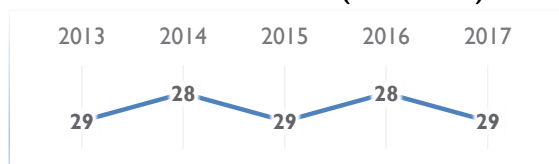


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	58	59	57	56	59
Training & education	42	37	39	37	41
Scientific concentration	39	40	35	36	35

Talent	Rank
Educational assessment PISA - Math	38
▷ International experience	62
▷ Foreign highly-skilled personnel	62
Management of cities	58
Digital/Technological skills	51
Net flow of international students	53

Training & education	Rank
▷ Employee training	63
Total public expenditure on education	32
Higher education achievement	43
► Pupil-teacher ratio (tertiary education)	8
Graduates in Sciences	24
Women with degrees	21

Scientific concentration	Rank
Total expenditure on R&D (%)	43
Total R&D personnel per capita	40
► Female researchers	11
R&D productivity by publication	41
Scientific and technical employment	27
► High-tech patent grants	15

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	48	48	47	47	52
Capital	56	46	42	48	52
Technological framework	31	37	39	40	40

Regulatory framework	Rank
Starting a business	48
► Enforcing contracts	7
Immigration laws	60
Technological regulation	61
Scientific research legislation	59
Intellectual property rights	58

Capital	Rank
IT & media stock market capitalization	-
Funding for technological development	58
Banking and financial services	59
Investment risk	55
Venture capital	57
► Investment in Telecommunications	7

Technological framework	Rank
Communications technology	51
Mobile Broadband subscribers	37
Wireless broadband	30
Internet users	33
Internet bandwidth speed	45
High-tech exports (%)	40

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	45	44	54	54	43
Business agility	56	56	50	45	62
IT integration	37	38	44	46	46

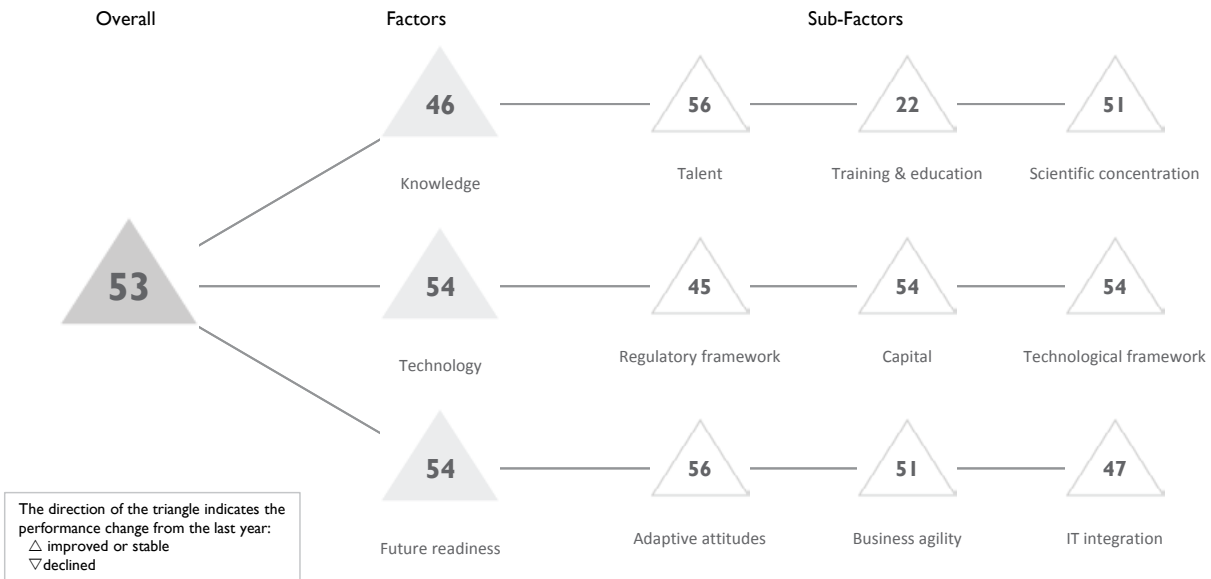
Adaptive attitudes	Rank
E-Participation	22
Internet retailing	43
Tablet possession	45
Smartphone possession	29
Attitudes toward globalization	61

Business agility	Rank
▷ Opportunities and threats	63
Innovative firms	29
▷ Agility of companies	62
Use of big data and analytics	61
Knowledge transfer	62

IT integration	Rank
E-Government	32
Public-private partnerships	62
Cyber security	48
Software piracy	42

CYPRUS

OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

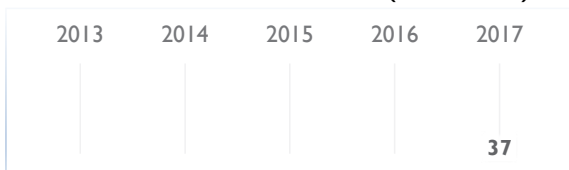
	2013	2014	2015	2016	2017
OVERALL					53
Knowledge					46
Technology					54
Future readiness					54

COMPETITIVENESS & DIGITAL RANKINGS

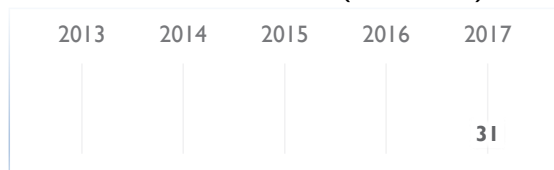


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent					56
Training & education					22
Scientific concentration					51

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	44	▷ Employee training	59	Total expenditure on R&D (%)	53
International experience	26	▶ Total public expenditure on education	11	Total R&D personnel per capita	44
Foreign highly-skilled personnel	21	▶ Higher education achievement	9	Female researchers	22
Management of cities	26	▶ Pupil-teacher ratio (tertiary education)	18	R&D productivity by publication	53
Digital/Technological skills	38	Graduates in Sciences	48	▶ Scientific and technical employment	12
▷ Net flow of international students	60	▶ Women with degrees	9	High-tech patent grants	47

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework					45
Capital					54
Technological framework					54

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	29	IT & media stock market capitalization	41	Communications technology	50
▷ Enforcing contracts	60	Funding for technological development	55	▷ Mobile Broadband subscribers	60
Immigration laws	30	Banking and financial services	43	Wireless broadband	48
Technological regulation	47	Investment risk	43	Internet users	-
Scientific research legislation	39	Venture capital	58	Internet bandwidth speed	50
Intellectual property rights	40	Investment in Telecommunications	40	High-tech exports (%)	53

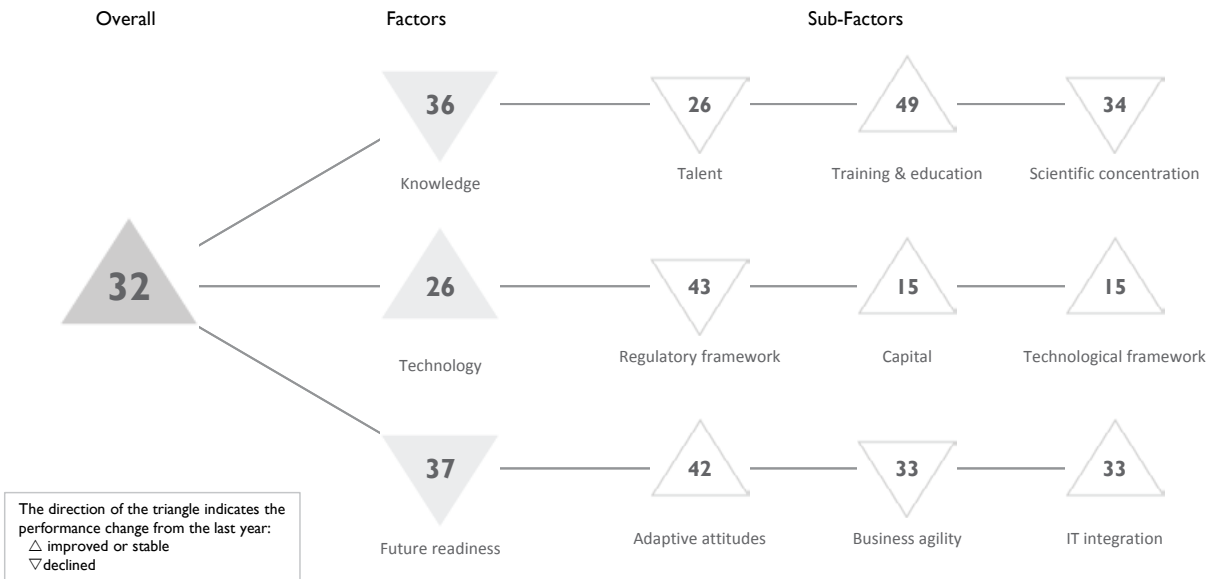
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes					56
Business agility					51
IT integration					47

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	56	Opportunities and threats	53	E-Government	49
Internet retailing	-	Innovative firms	24	Public-private partnerships	50
Tablet possession	-	Agility of companies	53	Cyber security	51
Smartphone possession	-	▷ Use of big data and analytics	60	Software piracy	33
Attitudes toward globalization	42	Knowledge transfer	49		

CZECH REPUBLIC

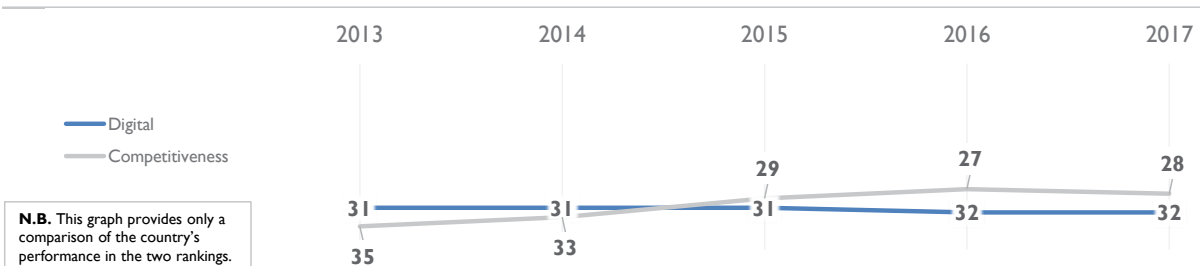
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

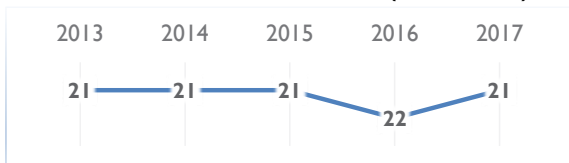
	2013	2014	2015	2016	2017
OVERALL	31	31	31	32	32
Knowledge	37	38	36	34	36
Technology	28	26	26	26	26
Future readiness	33	33	33	34	37

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



CZECH REPUBLIC

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	29	25	20	22	26
Training & education	41	49	50	50	49
Scientific concentration	41	39	36	33	34

Talent Rank

Educational assessment PISA - Math	26
International experience	39
Foreign highly-skilled personnel	39
Management of cities	34
Digital/Technological skills	33
► Net flow of international students	11

Training & education Rank

Employee training	26
▷ Total public expenditure on education	50
Higher education achievement	42
▷ Pupil-teacher ratio (tertiary education)	51
Graduates in Sciences	25
Women with degrees	19

Scientific concentration Rank

Total expenditure on R&D (%)	20
Total R&D personnel per capita	23
Female researchers	42
R&D productivity by publication	33
Scientific and technical employment	26
High-tech patent grants	27

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	35	34	35	39	43
Capital	26	23	20	17	15
Technological framework	22	25	24	15	15

Regulatory framework Rank

Starting a business	42
Enforcing contracts	43
▷ Immigration laws	52
Technological regulation	45
Scientific research legislation	31
Intellectual property rights	27

Capital Rank

► IT & media stock market capitalization	11
Funding for technological development	25
Banking and financial services	14
Investment risk	21
Venture capital	15
► Investment in Telecommunications	14

Technological framework Rank

Communications technology	31
► Mobile Broadband subscribers	9
Wireless broadband	25
Internet users	28
► Internet bandwidth speed	12
High-tech exports (%)	22

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	37	35	46	48	42
Business agility	33	34	30	29	33
IT integration	33	31	31	36	33

Adaptive attitudes Rank

▷ E-Participation	52
Internet retailing	23
Tablet possession	37
Smartphone possession	41
Attitudes toward globalization	34

Business agility Rank

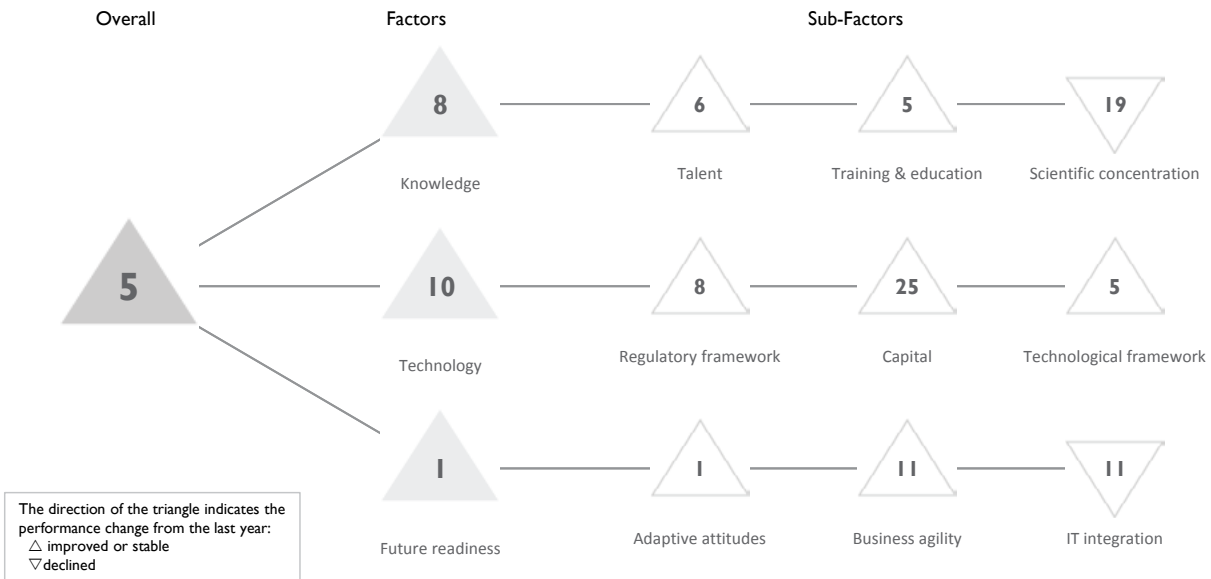
Opportunities and threats	31
Innovative firms	22
Agility of companies	31
▷ Use of big data and analytics	48
Knowledge transfer	48

IT integration Rank

E-Government	41
Public-private partnerships	43
Cyber security	33
Software piracy	20

DENMARK

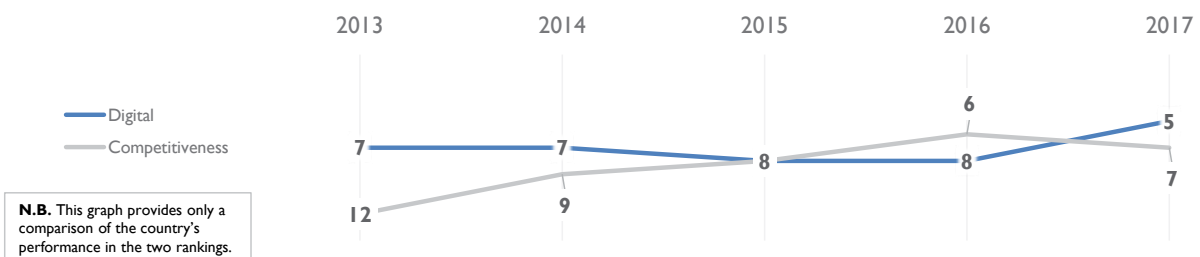
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

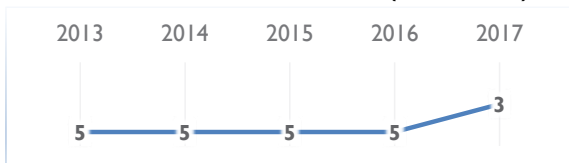
	2013	2014	2015	2016	2017
OVERALL	7	7	8	8	5
Knowledge	8	8	9	8	8
Technology	12	14	13	12	10
Future readiness	4	4	6	6	1

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	10	15	10	8	6
Training & education	7	6	9	7	5
Scientific concentration	17	17	16	18	19

Talent	Rank
Educational assessment PISA - Math	11
International experience	13
Foreign highly-skilled personnel	25
▶ Management of cities	2
Digital/Technological skills	10
Net flow of international students	8

Training & education	Rank
▶ Employee training	2
Total public expenditure on education	5
Higher education achievement	22
Pupil-teacher ratio (tertiary education)	12
▷ Graduates in Sciences	35
Women with degrees	30

Scientific concentration	Rank
Total expenditure on R&D (%)	8
▶ Total R&D personnel per capita	1
Female researchers	30
▷ R&D productivity by publication	47
Scientific and technical employment	20
▷ High-tech patent grants	39

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	14	16	9	9	8
Capital	25	21	23	26	25
Technological framework	7	8	8	8	5

Regulatory framework	Rank
Starting a business	17
Enforcing contracts	23
Immigration laws	33
Technological regulation	7
Scientific research legislation	7
Intellectual property rights	2

Capital	Rank
▷ IT & media stock market capitalization	45
Funding for technological development	13
Banking and financial services	18
Investment risk	4
Venture capital	14
▷ Investment in Telecommunications	41

Technological framework	Rank
Communications technology	7
Mobile Broadband subscribers	5
Wireless broadband	7
Internet users	6
Internet bandwidth speed	6
High-tech exports (%)	20

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	9	5	4	5	1
Business agility	13	14	14	15	11
IT integration	2	1	9	10	11

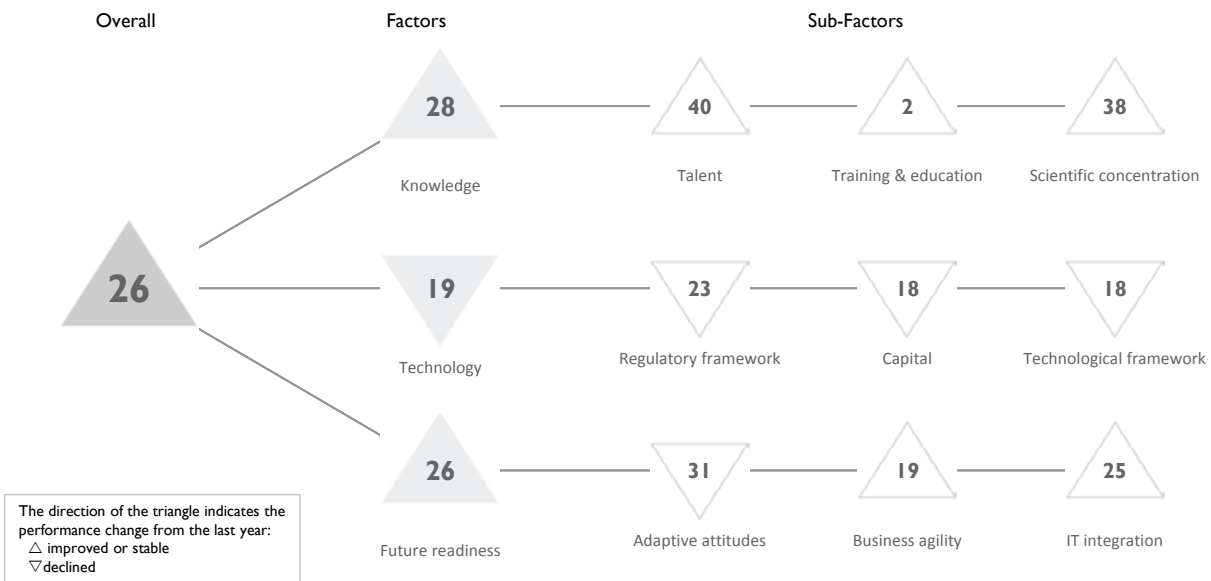
Adaptive attitudes	Rank
E-Participation	19
▶ Internet retailing	2
Tablet possession	5
▶ Smartphone possession	2
Attitudes toward globalization	6

Business agility	Rank
Opportunities and threats	8
Innovative firms	20
Agility of companies	9
Use of big data and analytics	15
Knowledge transfer	4

IT integration	Rank
E-Government	9
Public-private partnerships	11
Cyber security	21
Software piracy	8

ESTONIA

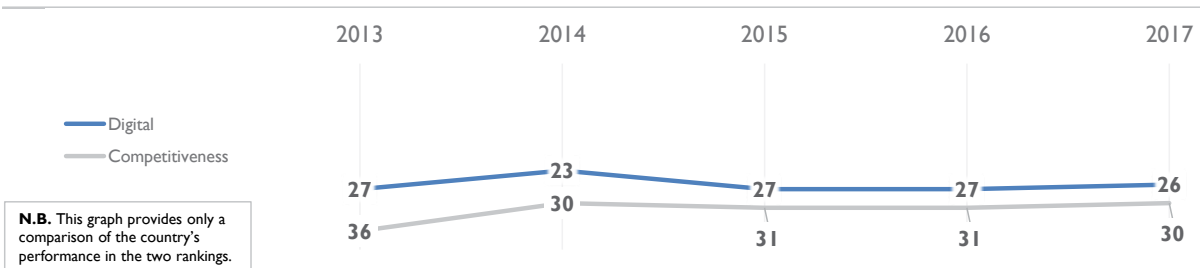
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	27	23	27	27	26
Knowledge	25	23	30	30	28
Technology	25	20	19	17	19
Future readiness	24	22	26	26	26

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	53	51	51	46	40
Training & education	2	2	1	3	2
Scientific concentration	24	19	38	38	38

Talent	Rank
► Educational assessment PISA - Math	8
▷ International experience	50
Foreign highly-skilled personnel	45
Management of cities	40
Digital/Technological skills	46
▷ Net flow of international students	50

Training & education	Rank
► Employee training	8
Total public expenditure on education	15
Higher education achievement	28
Pupil-teacher ratio (tertiary education)	-
Graduates in Sciences	22
► Women with degrees	1

Scientific concentration	Rank
Total expenditure on R&D (%)	26
Total R&D personnel per capita	29
Female researchers	16
▷ R&D productivity by publication	58
Scientific and technical employment	28
High-tech patent grants	21

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	29	27	24	19	23
Capital	31	10	16	16	18
Technological framework	19	19	14	14	18

Regulatory framework	Rank
► Starting a business	8
Enforcing contracts	11
▷ Immigration laws	49
Technological regulation	22
Scientific research legislation	28
Intellectual property rights	30

Capital	Rank
IT & media stock market capitalization	-
Funding for technological development	29
Banking and financial services	20
Investment risk	23
Venture capital	26
Investment in Telecommunications	20

Technological framework	Rank
Communications technology	26
Mobile Broadband subscribers	19
► Wireless broadband	6
Internet users	30
Internet bandwidth speed	37
High-tech exports (%)	33

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	25	23	29	28	31
Business agility	12	13	21	20	19
IT integration	25	24	25	25	25

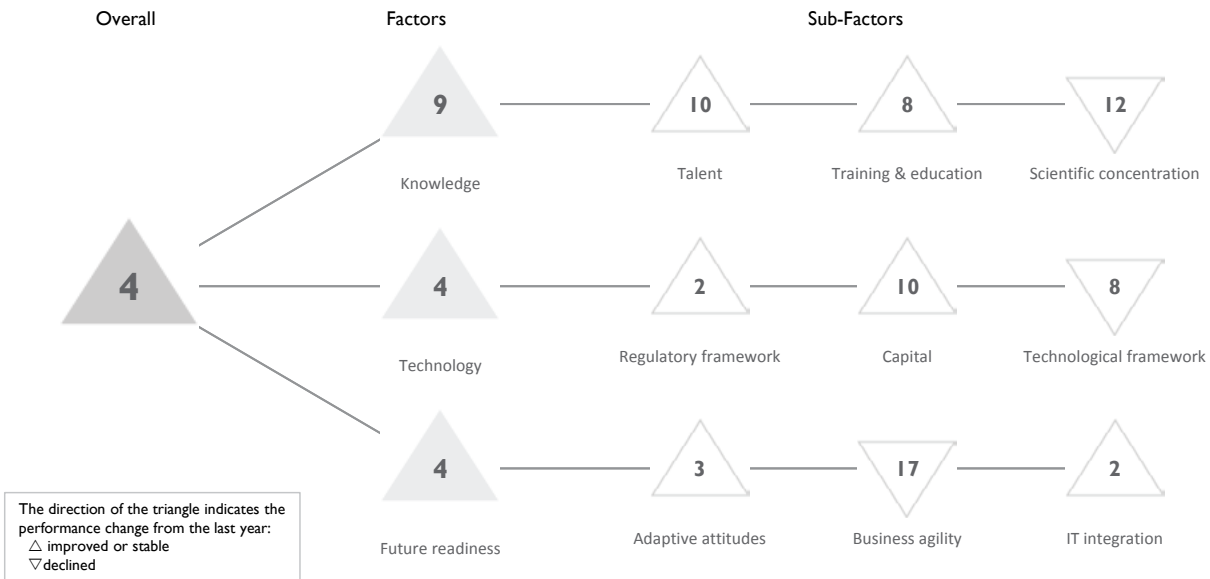
Adaptive attitudes	Rank
E-Participation	19
Internet retailing	21
▷ Tablet possession	48
Smartphone possession	21
Attitudes toward globalization	43

Business agility	Rank
Opportunities and threats	29
Innovative firms	11
Agility of companies	24
Use of big data and analytics	26
Knowledge transfer	31

IT integration	Rank
E-Government	13
Public-private partnerships	42
Cyber security	9
Software piracy	30

FINLAND

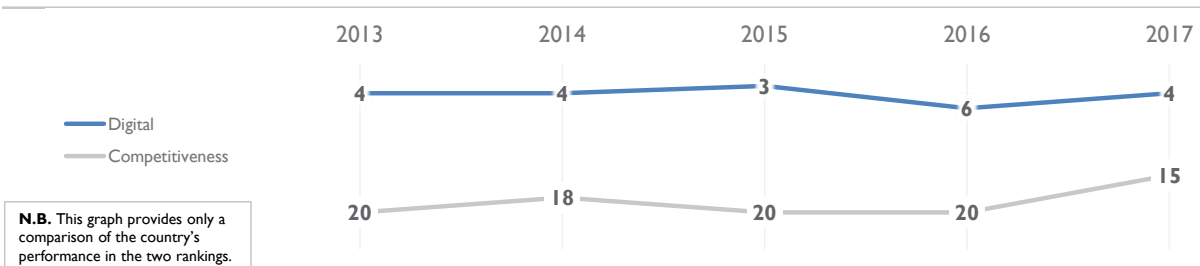
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

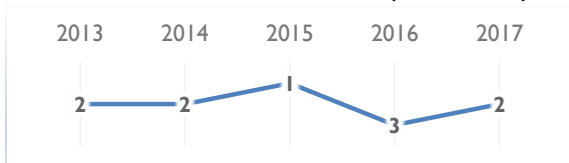
	2013	2014	2015	2016	2017
OVERALL	4	4	3	6	4
Knowledge	5	5	7	9	9
Technology	5	2	7	7	4
Future readiness	11	6	4	5	4

COMPETITIVENESS & DIGITAL RANKINGS

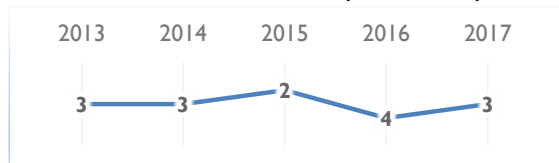


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	9	12	13	15	10
Training & education	11	7	6	8	8
Scientific concentration	4	6	6	7	12

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	12	Employee training	15	Total expenditure on R&D (%)	9
International experience	20	Total public expenditure on education	6	Total R&D personnel per capita	6
▷ Foreign highly-skilled personnel	43	Higher education achievement	27	Female researchers	35
Management of cities	8	▷ Pupil-teacher ratio (tertiary education)	40	▷ R&D productivity by publication	50
► Digital/Technological skills	4	Graduates in Sciences	12	Scientific and technical employment	13
Net flow of international students	13	Women with degrees	17	High-tech patent grants	9

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	4	1	6	7	2
Capital	7	8	9	13	10
Technological framework	10	6	6	7	8

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	20	IT & media stock market capitalization	5	► Communications technology	4
Enforcing contracts	27	Funding for technological development	5	Mobile Broadband subscribers	16
Immigration laws	6	Banking and financial services	5	► Wireless broadband	2
► Technological regulation	4	Investment risk	7	Internet users	11
Scientific research legislation	8	Venture capital	8	Internet bandwidth speed	7
► Intellectual property rights	3	▷ Investment in Telecommunications	52	▷ High-tech exports (%)	42

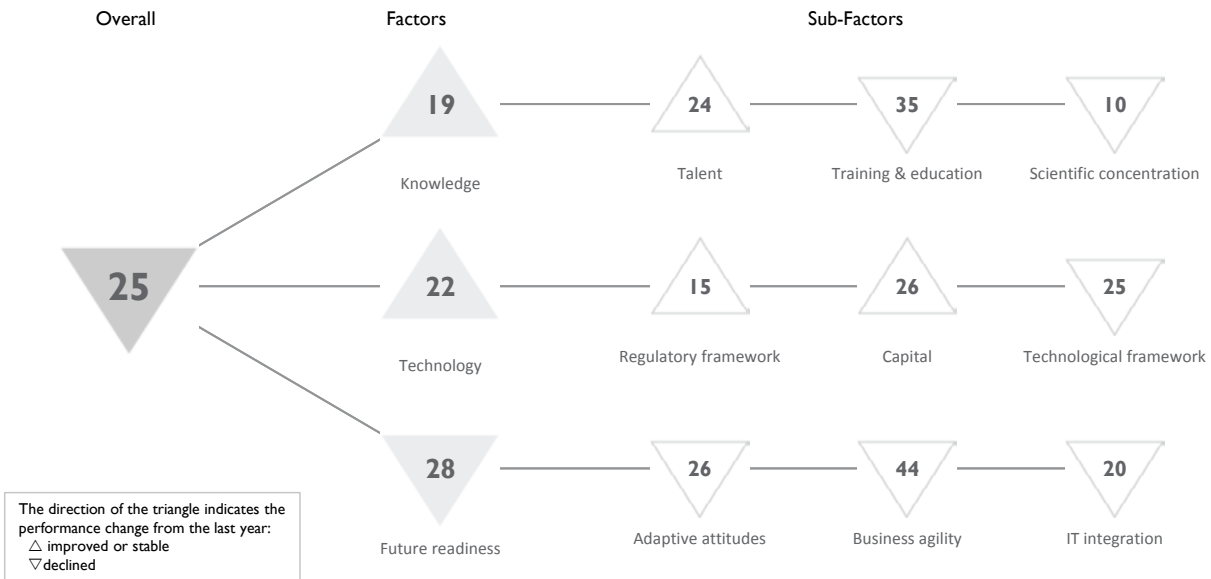
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	15	10	9	9	3
Business agility	14	11	8	12	17
IT integration	4	2	4	5	2

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	8	Opportunities and threats	40	E-Government	5
Internet retailing	5	Innovative firms	13	Public-private partnerships	9
Tablet possession	13	Agility of companies	32	Cyber security	10
Smartphone possession	16	Use of big data and analytics	12	Software piracy	14
Attitudes toward globalization	11	Knowledge transfer	8		

FRANCE

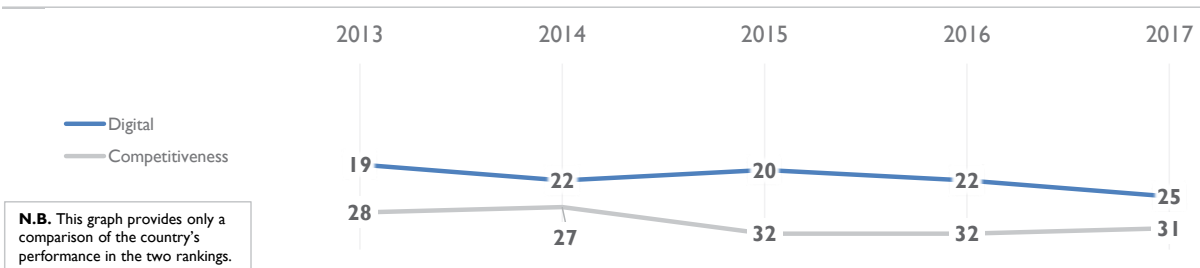
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	19	22	20	22	25
Knowledge	16	15	20	21	19
Technology	16	19	23	23	22
Future readiness	25	26	21	20	28

COMPETITIVENESS & DIGITAL RANKINGS

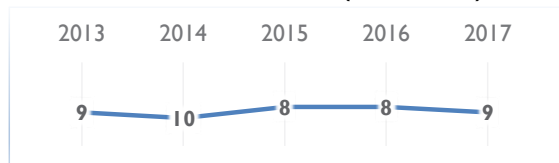


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	21	20	24	24	24
Training & education	24	19	37	34	35
Scientific concentration	7	8	8	9	10

Talent	Rank
Educational assessment PISA - Math	24
▷ International experience	54
Foreign highly-skilled personnel	33
Management of cities	15
Digital/Technological skills	31
Net flow of international students	17

Training & education	Rank
Employee training	38
Total public expenditure on education	16
Higher education achievement	21
Pupil-teacher ratio (tertiary education)	45
Graduates in Sciences	21
Women with degrees	37

Scientific concentration	Rank
Total expenditure on R&D (%)	14
Total R&D personnel per capita	22
Female researchers	43
R&D productivity by publication	14
► Scientific and technical employment	3
High-tech patent grants	20

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	16	10	18	15	15
Capital	30	26	31	31	26
Technological framework	14	16	20	22	25

Regulatory framework	Rank
Starting a business	19
Enforcing contracts	17
Immigration laws	21
Technological regulation	21
Scientific research legislation	23
Intellectual property rights	12

Capital	Rank
IT & media stock market capitalization	20
Funding for technological development	18
Banking and financial services	42
Investment risk	24
Venture capital	21
Investment in Telecommunications	39

Technological framework	Rank
Communications technology	18
Mobile Broadband subscribers	34
Wireless broadband	32
Internet users	25
Internet bandwidth speed	41
► High-tech exports (%)	6

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	27	28	25	23	26
Business agility	20	19	18	21	44
IT integration	17	19	19	19	20

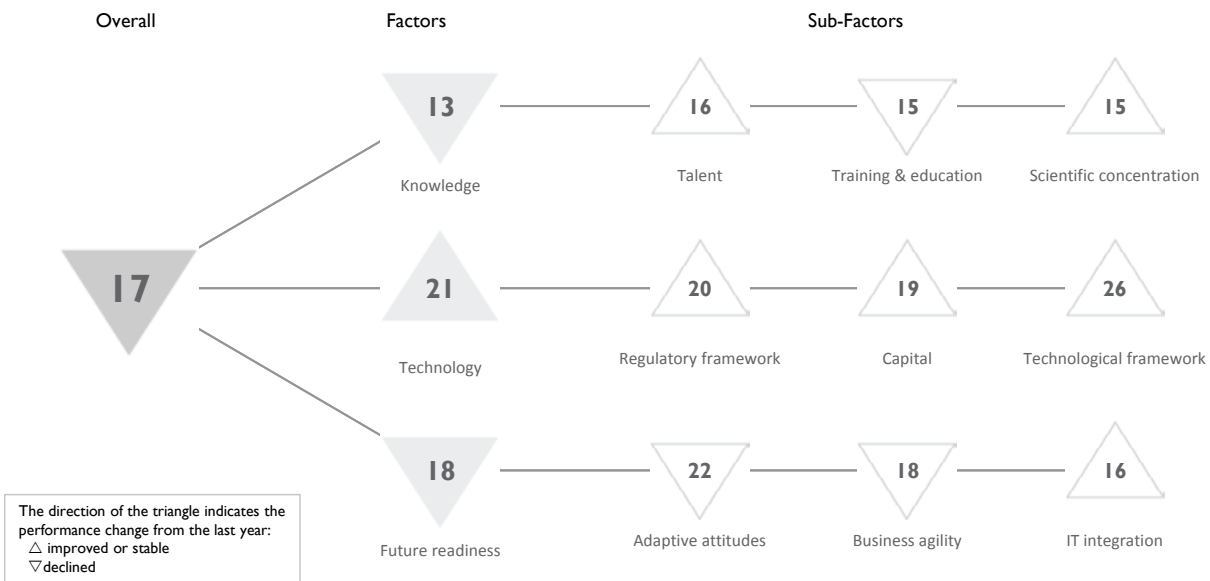
Adaptive attitudes	Rank
► E-Participation	12
Internet retailing	14
Tablet possession	27
Smartphone possession	31
▷ Attitudes toward globalization	62

Business agility	Rank
▷ Opportunities and threats	59
► Innovative firms	10
▷ Agility of companies	60
▷ Use of big data and analytics	49
Knowledge transfer	26

IT integration	Rank
► E-Government	10
Public-private partnerships	30
Cyber security	23
Software piracy	22

GERMANY

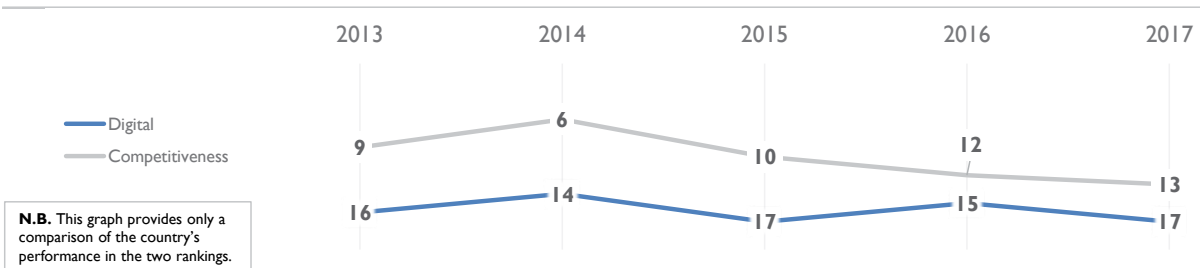
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

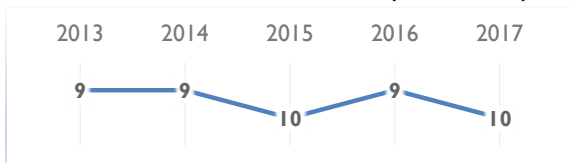
	2013	2014	2015	2016	2017
OVERALL	16	14	17	15	17
Knowledge	19	16	10	10	13
Technology	22	24	25	25	21
Future readiness	8	8	13	14	18

COMPETITIVENESS & DIGITAL RANKINGS

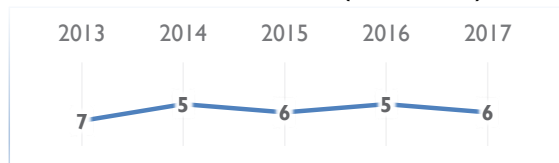


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	18	16	15	16	16
Training & education	26	24	4	2	15
Scientific concentration	15	15	17	15	15

Talent	Rank
Educational assessment PISA - Math	15
International experience	11
Foreign highly-skilled personnel	16
Management of cities	11
Digital/Technological skills	43
Net flow of international students	20

Training & education	Rank
► Employee training	4
Total public expenditure on education	37
▷ Higher education achievement	44
► Pupil-teacher ratio (tertiary education)	4
► Graduates in Sciences	3
▷ Women with degrees	51

Scientific concentration	Rank
Total expenditure on R&D (%)	10
Total R&D personnel per capita	14
Female researchers	40
R&D productivity by publication	9
Scientific and technical employment	23
High-tech patent grants	25

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	22	20	27	23	20
Capital	17	17	19	22	19
Technological framework	24	30	31	30	26

Regulatory framework	Rank
▷ Starting a business	54
Enforcing contracts	16
Immigration laws	14
Technological regulation	27
Scientific research legislation	20
► Intellectual property rights	5

Capital	Rank
IT & media stock market capitalization	10
Funding for technological development	22
Banking and financial services	28
Investment risk	10
Venture capital	24
▷ Investment in Telecommunications	51

Technological framework	Rank
▷ Communications technology	44
Mobile Broadband subscribers	30
Wireless broadband	28
Internet users	18
Internet bandwidth speed	23
High-tech exports (%)	19

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	16	15	18	20	22
Business agility	1	1	5	6	18
IT integration	15	18	18	17	16

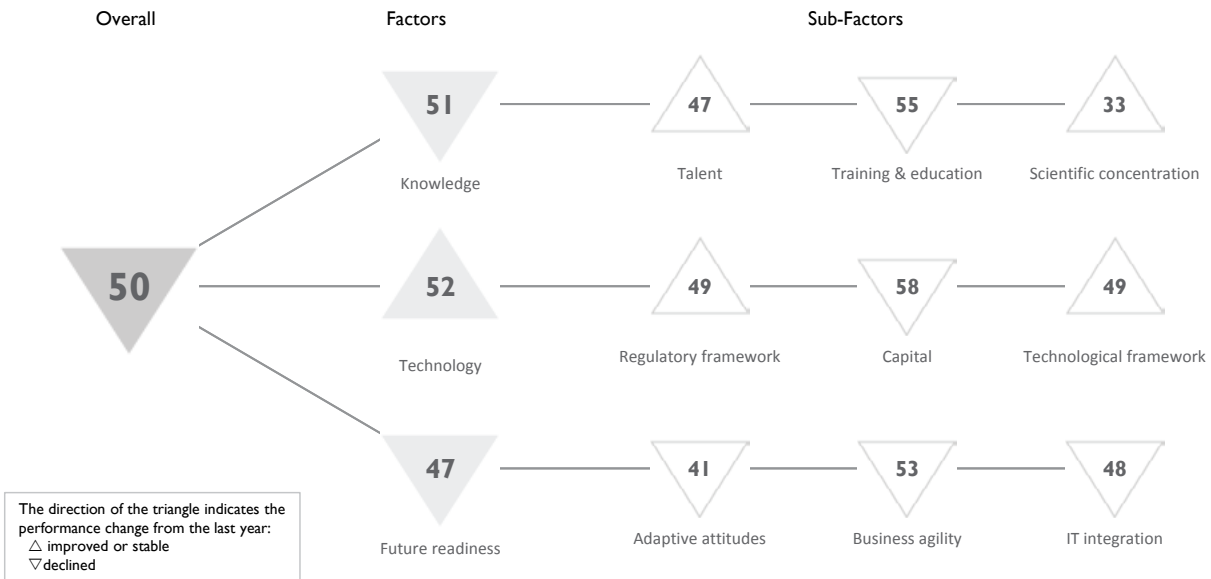
Adaptive attitudes	Rank
E-Participation	23
Internet retailing	15
Tablet possession	22
Smartphone possession	25
Attitudes toward globalization	28

Business agility	Rank
Opportunities and threats	39
► Innovative firms	7
Agility of companies	29
Use of big data and analytics	39
Knowledge transfer	11

IT integration	Rank
E-Government	15
Public-private partnerships	21
Cyber security	24
Software piracy	8

GREECE

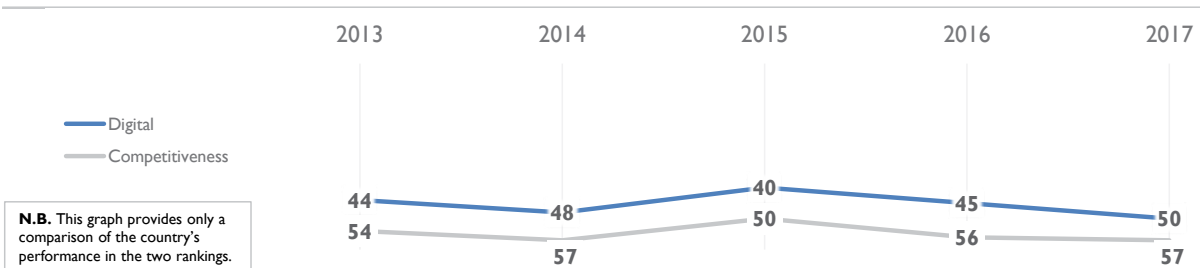
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

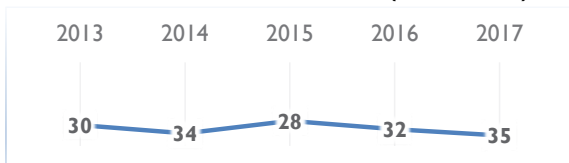
	2013	2014	2015	2016	2017
OVERALL	44	48	40	45	50
Knowledge	41	44	34	46	51
Technology	50	52	51	52	52
Future readiness	40	42	36	36	47

COMPETITIVENESS & DIGITAL RANKINGS

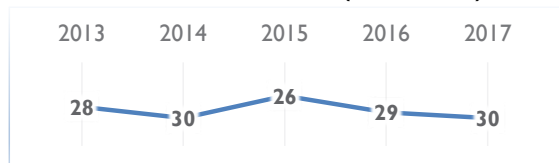


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	42	48	38	47	47
Training & education	47	48	28	51	55
Scientific concentration	33	33	29	34	33

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	40	▷ Employee training	62	Total expenditure on R&D (%)	39
International experience	35	Total public expenditure on education	34	Total R&D personnel per capita	27
▷ Foreign highly-skilled personnel	61	Higher education achievement	29	Female researchers	20
Management of cities	55	Pupil-teacher ratio (tertiary education)	54	R&D productivity by publication	26
Digital/Technological skills	20	▶ Graduates in Sciences	7	▶ Scientific and technical employment	16
Net flow of international students	46	Women with degrees	25	High-tech patent grants	41

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	52	50	40	51	49
Capital	55	57	57	55	58
Technological framework	43	45	48	49	49

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	31	▶ IT & media stock market capitalization	19	Communications technology	39
Enforcing contracts	57	Funding for technological development	60	Mobile Broadband subscribers	59
Immigration laws	26	▷ Banking and financial services	63	Wireless broadband	55
Technological regulation	53	▷ Investment risk	60	▶ Internet users	19
Scientific research legislation	52	▷ Venture capital	61	Internet bandwidth speed	48
Intellectual property rights	45	▶ Investment in Telecommunications	12	High-tech exports (%)	34

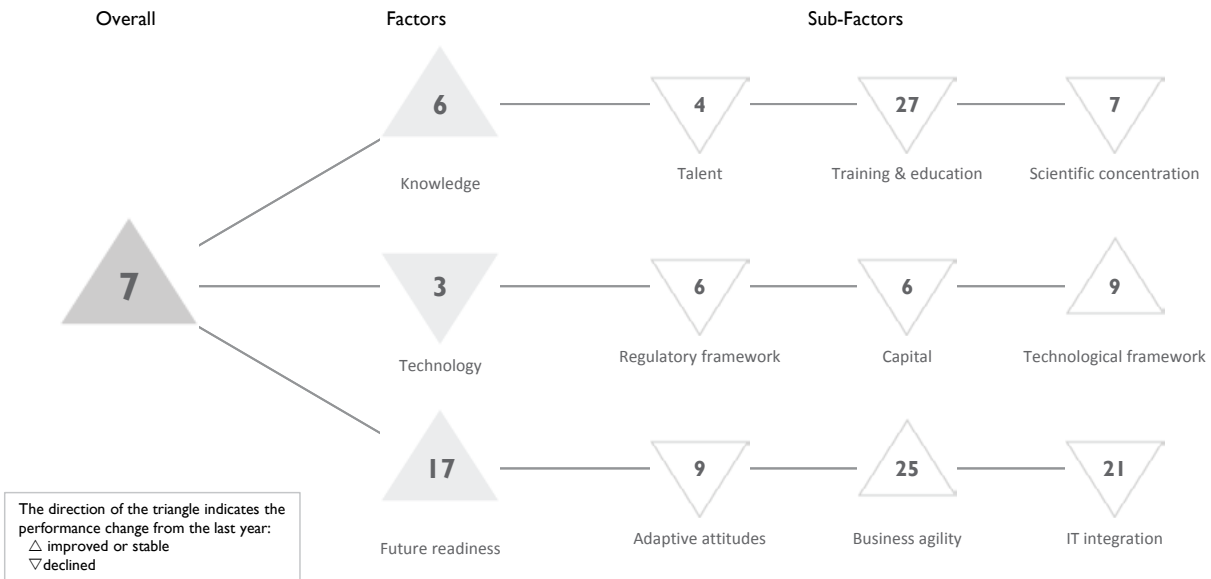
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	34	36	32	33	41
Business agility	46	48	39	40	53
IT integration	41	43	39	43	48

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	47	Opportunities and threats	52	E-Government	36
Internet retailing	28	Innovative firms	27	Public-private partnerships	52
Tablet possession	40	Agility of companies	55	Cyber security	44
Smartphone possession	27	Use of big data and analytics	53	Software piracy	52
Attitudes toward globalization	56	Knowledge transfer	57		

HONG KONG SAR

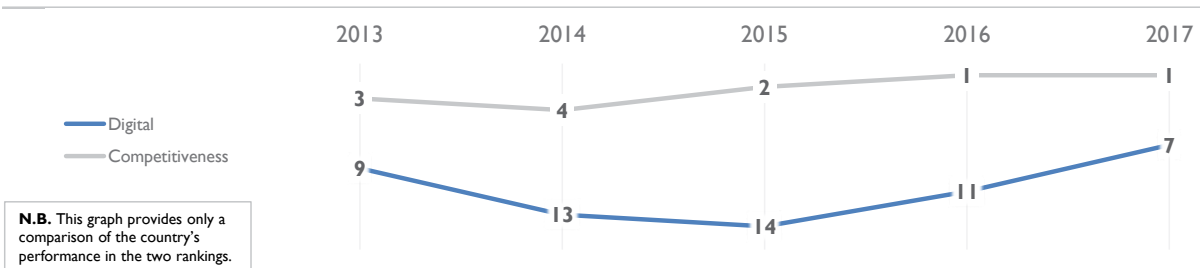
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

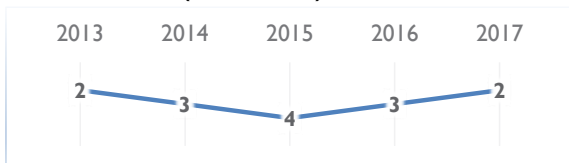
	2013	2014	2015	2016	2017
OVERALL	9	13	14	11	7
Knowledge	11	10	8	6	6
Technology	3	6	5	2	3
Future readiness	13	27	25	27	17

COMPETITIVENESS & DIGITAL RANKINGS

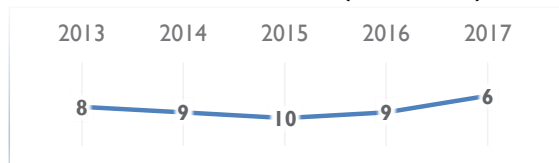


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS < 20 MILLION (34 countries)



HONG KONG SAR

- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	5	5	4	3	4
Training & education	34	35	31	26	27
Scientific concentration	9	7	7	6	7

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
▶ Educational assessment PISA - Math	2	Employee training	16	▷ Total expenditure on R&D (%)	44
▶ International experience	1	▷ Total public expenditure on education	55	Total R&D personnel per capita	31
Foreign highly-skilled personnel	5	Higher education achievement	10	Female researchers	-
Management of cities	6	Pupil-teacher ratio (tertiary education)	-	R&D productivity by publication	20
Digital/Technological skills	13	Graduates in Sciences	-	Scientific and technical employment	4
▷ Net flow of international students	45	Women with degrees	-	▶ High-tech patent grants	1

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	8	12	7	4	6
Capital	1	4	5	2	6
Technological framework	11	9	10	11	9

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	3	IT & media stock market capitalization	3	Communications technology	9
Enforcing contracts	20	Funding for technological development	11	Mobile Broadband subscribers	11
Immigration laws	15	Banking and financial services	2	Wireless broadband	8
Technological regulation	12	Investment risk	14	Internet users	10
Scientific research legislation	13	Venture capital	7	Internet bandwidth speed	4
Intellectual property rights	16	Investment in Telecommunications	32	▷ High-tech exports (%)	35

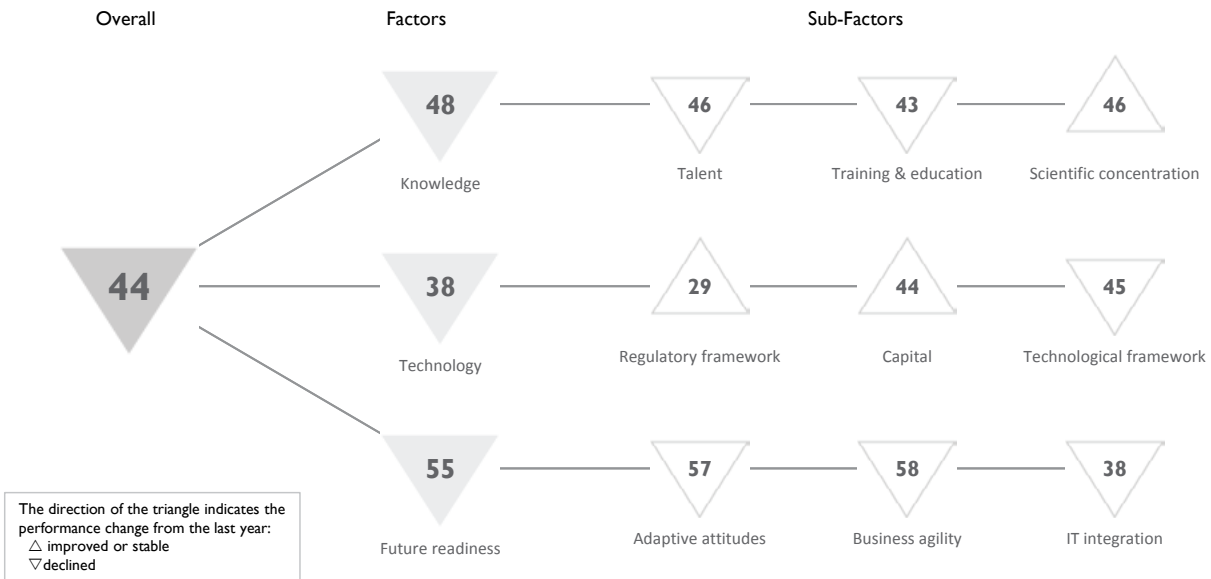
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	7	8	6	6	9
Business agility	19	54	46	57	25
IT integration	24	23	20	20	21

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	-	▶ Opportunities and threats	1	E-Government	-
Internet retailing	24	▷ Innovative firms	46	Public-private partnerships	14
Tablet possession	4	▶ Agility of companies	1	Cyber security	4
Smartphone possession	3	Use of big data and analytics	8	Software piracy	29
Attitudes toward globalization	3	Knowledge transfer	18		

HUNGARY

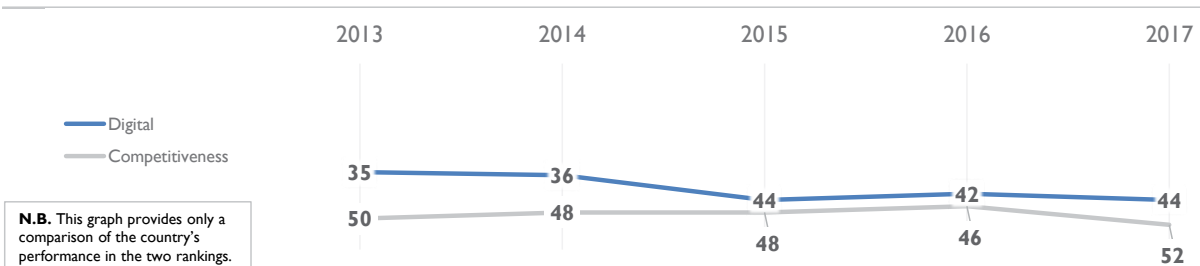
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

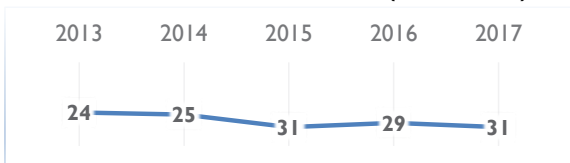
	2013	2014	2015	2016	2017
OVERALL	35	36	44	42	44
Knowledge	42	42	44	43	48
Technology	33	34	39	37	38
Future readiness	42	36	47	45	55

COMPETITIVENESS & DIGITAL RANKINGS

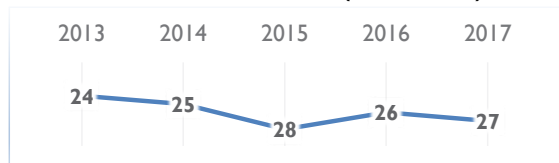


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	39	38	46	43	46
Training & education	39	43	46	41	43
Scientific concentration	47	49	48	46	46

Talent		Rank	Training & education		Rank	Scientific concentration		Rank
Educational assessment PISA - Math	34		Employee training	56		Total expenditure on R&D (%)	27	
International experience	40		Total public expenditure on education	33		Total R&D personnel per capita	32	
Foreign highly-skilled personnel	56		Higher education achievement	38		Female researchers	37	
Management of cities	47		Pupil-teacher ratio (tertiary education)	29		R&D productivity by publication	44	
▷ Digital/Technological skills	61		Graduates in Sciences	43		Scientific and technical employment	33	
▶ Net flow of international students	19		▶ Women with degrees	11		High-tech patent grants	35	

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	25	23	32	30	29
Capital	45	50	49	47	44
Technological framework	27	36	44	44	45

Regulatory framework		Rank	Capital		Rank	Technological framework		Rank
Starting a business	39		IT & media stock market capitalization	30		Communications technology	47	
▶ Enforcing contracts	8		Funding for technological development	45		Mobile Broadband subscribers	49	
Immigration laws	28		Banking and financial services	51		▷ Wireless broadband	59	
Technological regulation	43		Investment risk	53		Internet users	35	
Scientific research legislation	33		Venture capital	48		Internet bandwidth speed	26	
Intellectual property rights	35		▶ Investment in Telecommunications	15		High-tech exports (%)	27	

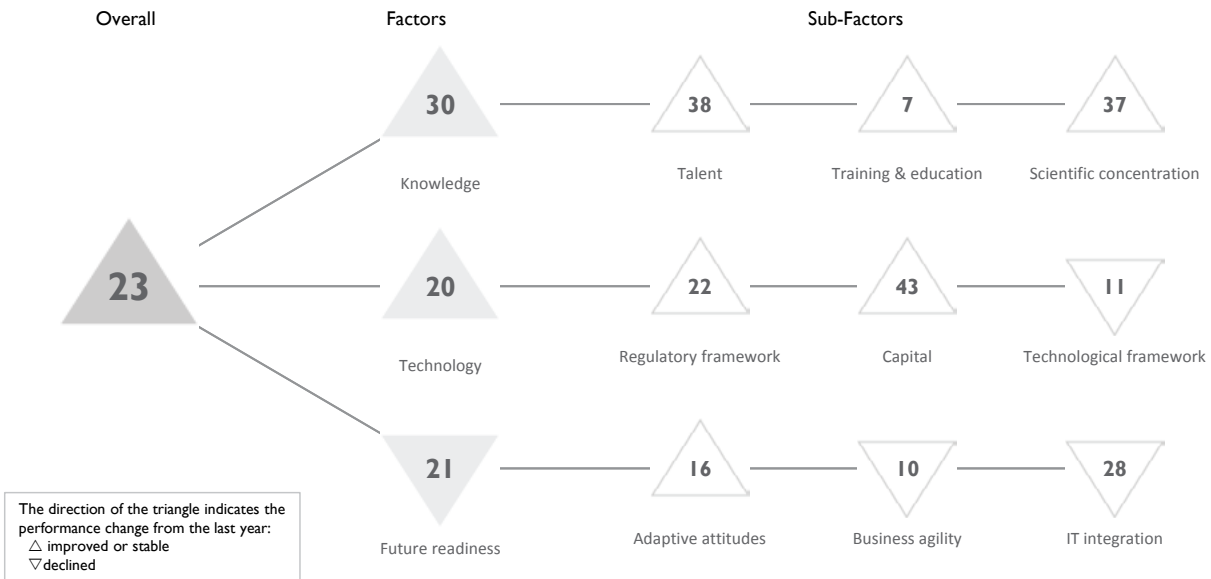
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	40	39	51	50	57
Business agility	50	47	51	50	58
IT integration	35	33	36	35	38

Adaptive attitudes		Rank	Business agility		Rank	IT integration		Rank
▷ E-Participation	58		▷ Opportunities and threats	61		E-Government	39	
Internet retailing	35		Innovative firms	39		Public-private partnerships	47	
Tablet possession	51		Agility of companies	57		Cyber security	52	
▶ Smartphone possession	23		Use of big data and analytics	51		Software piracy	27	
▷ Attitudes toward globalization	63		Knowledge transfer	41				

ICELAND

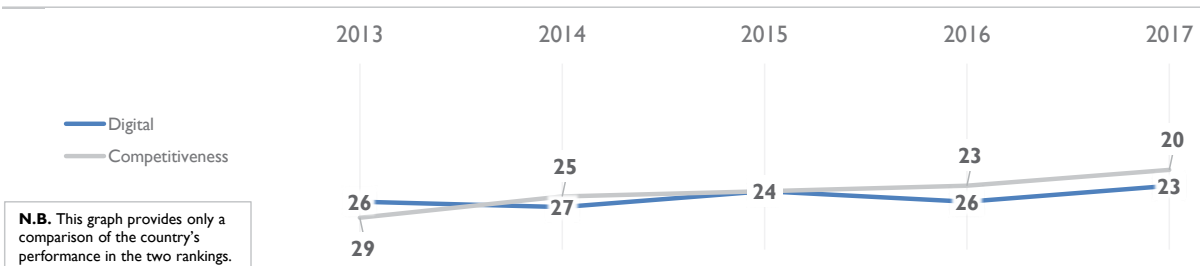
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

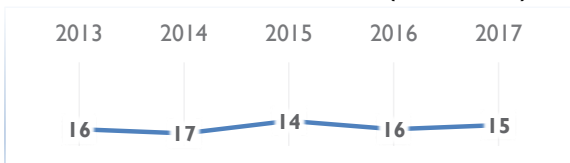
	2013	2014	2015	2016	2017
OVERALL	26	27	24	26	23
Knowledge	20	24	33	32	30
Technology	21	21	20	22	20
Future readiness	28	29	17	18	21

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	40	35	40	41	38
Training & education	1	1	8	10	7
Scientific concentration	29	38	47	37	37

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	29	Employee training	32	Total expenditure on R&D (%)	16
▷ International experience	55	► Total public expenditure on education	2	Total R&D personnel per capita	7
Foreign highly-skilled personnel	42	Higher education achievement	30	Female researchers	15
Management of cities	19	► Pupil-teacher ratio (tertiary education)	5	▷ R&D productivity by publication	62
Digital/Technological skills	5	▷ Graduates in Sciences	49	Scientific and technical employment	21
▷ Net flow of international students	58	► Women with degrees	5	▷ High-tech patent grants	52

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	11	11	11	22	22
Capital	46	45	37	43	43
Technological framework	9	12	9	10	11

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	23	IT & media stock market capitalization	-	Communications technology	12
Enforcing contracts	29	Funding for technological development	27	Mobile Broadband subscribers	7
Immigration laws	22	Banking and financial services	37	Wireless broadband	15
Technological regulation	18	Investment risk	33	Internet users	8
Scientific research legislation	27	Venture capital	42	Internet bandwidth speed	11
Intellectual property rights	24	Investment in Telecommunications	46	High-tech exports (%)	15

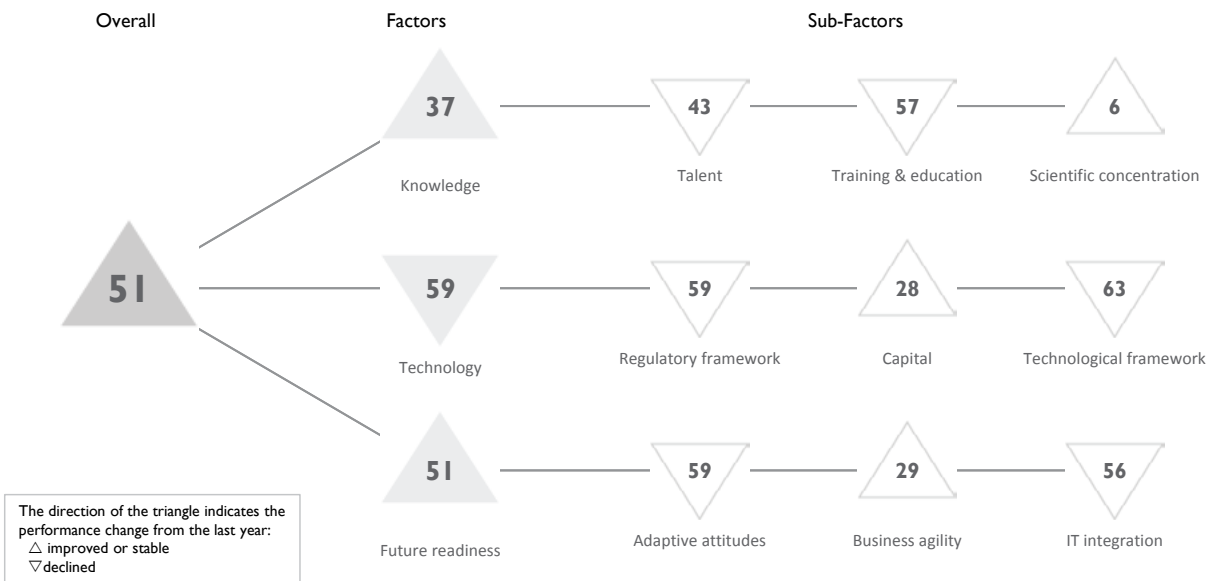
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	41	49	21	25	16
Business agility	10	8	4	5	10
IT integration	26	27	27	27	28

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	40	Opportunities and threats	11	E-Government	26
Internet retailing	-	► Innovative firms	2	Public-private partnerships	25
Tablet possession	15	Agility of companies	8	Cyber security	30
► Smartphone possession	1	Use of big data and analytics	29	Software piracy	35
Attitudes toward globalization	20	Knowledge transfer	22		

INDIA

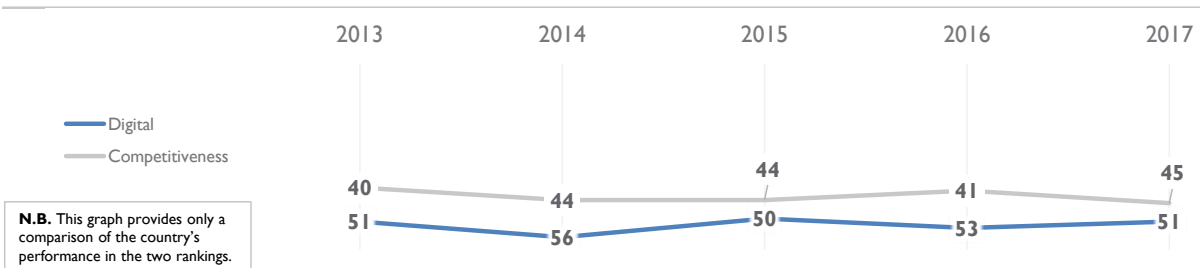
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	51	56	50	53	51
Knowledge	40	39	37	39	37
Technology	54	57	58	57	59
Future readiness	55	57	53	54	51

COMPETITIVENESS & DIGITAL RANKINGS

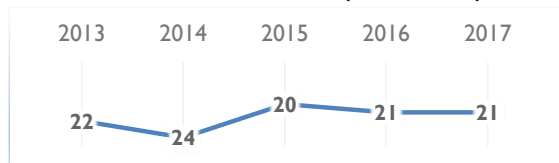


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	35	36	39	38	43
Training & education	54	56	45	56	57
Scientific concentration	19	21	21	21	6

Talent	Rank
Educational assessment PISA - Math	-
International experience	41
Foreign highly-skilled personnel	36
Management of cities	57
Digital/Technological skills	28
Net flow of international students	36

Training & education	Rank
Employee training	51
Total public expenditure on education	58
Higher education achievement	53
Pupil-teacher ratio (tertiary education)	48
▶ Graduates in Sciences	9
▶ Women with degrees	55

Scientific concentration	Rank
Total expenditure on R&D (%)	40
Total R&D personnel per capita	-
Female researchers	-
▶ R&D productivity by publication	3
Scientific and technical employment	-
▶ High-tech patent grants	11

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	59	59	59	56	59
Capital	20	28	34	30	28
Technological framework	57	60	61	61	63

Regulatory framework	Rank
Starting a business	59
▷ Enforcing contracts	62
Immigration laws	23
Technological regulation	29
Scientific research legislation	42
Intellectual property rights	51

Capital	Rank
▶ IT & media stock market capitalization	8
Funding for technological development	34
Banking and financial services	27
Investment risk	46
Venture capital	22
Investment in Telecommunications	42

Technological framework	Rank
Communications technology	43
▷ Mobile Broadband subscribers	62
▷ Wireless broadband	61
▷ Internet users	61
Internet bandwidth speed	58
High-tech exports (%)	45

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	56	60	56	57	59
Business agility	45	41	37	35	29
IT integration	56	56	53	54	56

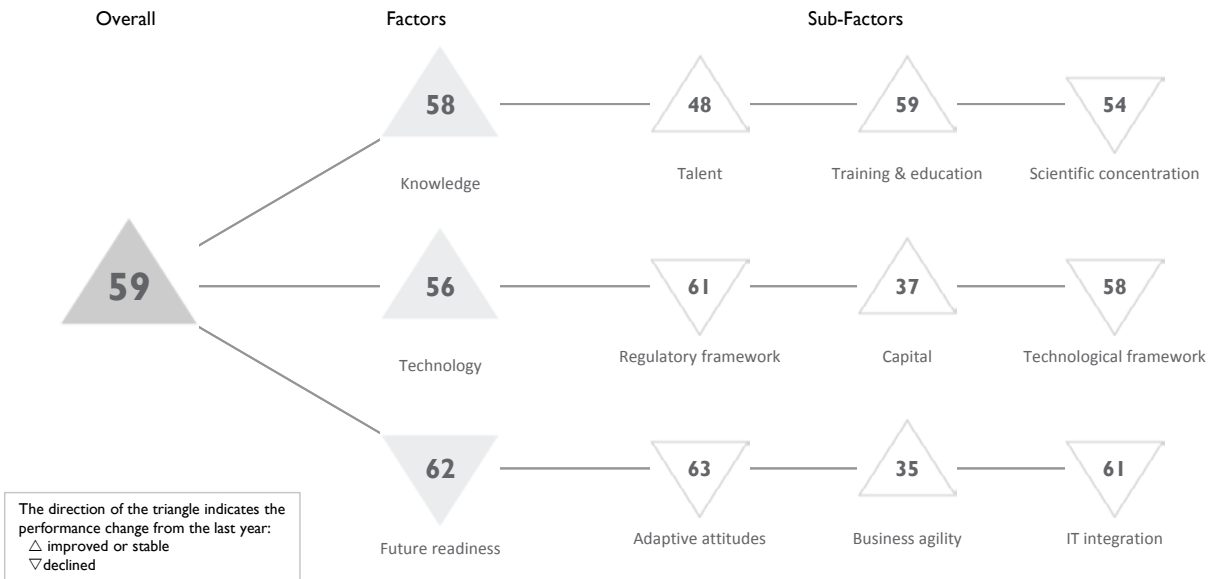
Adaptive attitudes	Rank
E-Participation	23
Internet retailing	52
Tablet possession	59
▷ Smartphone possession	60
▶ Attitudes toward globalization	14

Business agility	Rank
Opportunities and threats	14
Innovative firms	-
Agility of companies	26
Use of big data and analytics	22
Knowledge transfer	44

IT integration	Rank
E-Government	60
Public-private partnerships	26
Cyber security	47
Software piracy	48

INDONESIA

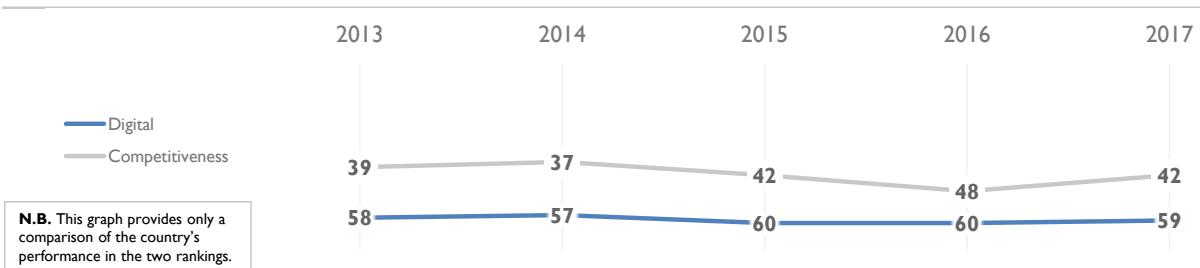
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

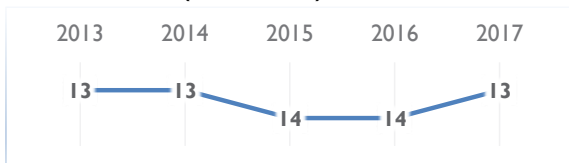
	2013	2014	2015	2016	2017
OVERALL	58	57	60	60	59
Knowledge	58	57	60	60	58
Technology	55	53	57	58	56
Future readiness	54	53	58	60	62

COMPETITIVENESS & DIGITAL RANKINGS

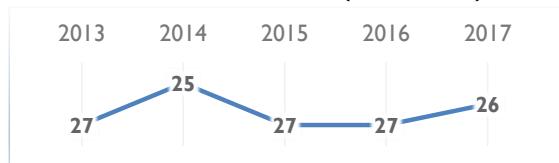


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	48	41	52	54	48
Training & education	57	57	59	60	59
Scientific concentration	54	54	56	53	54

Talent	Rank
Educational assessment PISA - Math	54
International experience	29
► Foreign highly-skilled personnel	18
Management of cities	45
Digital/Technological skills	48
Net flow of international students	35

Training & education	Rank
► Employee training	19
Total public expenditure on education	51
Higher education achievement	59
Pupil-teacher ratio (tertiary education)	50
Graduates in Sciences	36
Women with degrees	47

Scientific concentration	Rank
Total expenditure on R&D (%)	56
Total R&D personnel per capita	50
Female researchers	-
► R&D productivity by publication	10
Scientific and technical employment	-
High-tech patent grants	53

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	57	57	60	60	61
Capital	35	25	35	42	37
Technological framework	55	57	59	57	58

Regulatory framework	Rank
Starting a business	58
▷ Enforcing contracts	61
Immigration laws	36
Technological regulation	42
Scientific research legislation	41
Intellectual property rights	56

Capital	Rank
► IT & media stock market capitalization	16
Funding for technological development	42
► Banking and financial services	25
Investment risk	54
Venture capital	31
Investment in Telecommunications	34

Technological framework	Rank
Communications technology	49
Mobile Broadband subscribers	58
Wireless broadband	58
▷ Internet users	60
Internet bandwidth speed	52
High-tech exports (%)	50

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	55	56	61	61	63
Business agility	44	36	41	48	35
IT integration	58	57	59	59	61

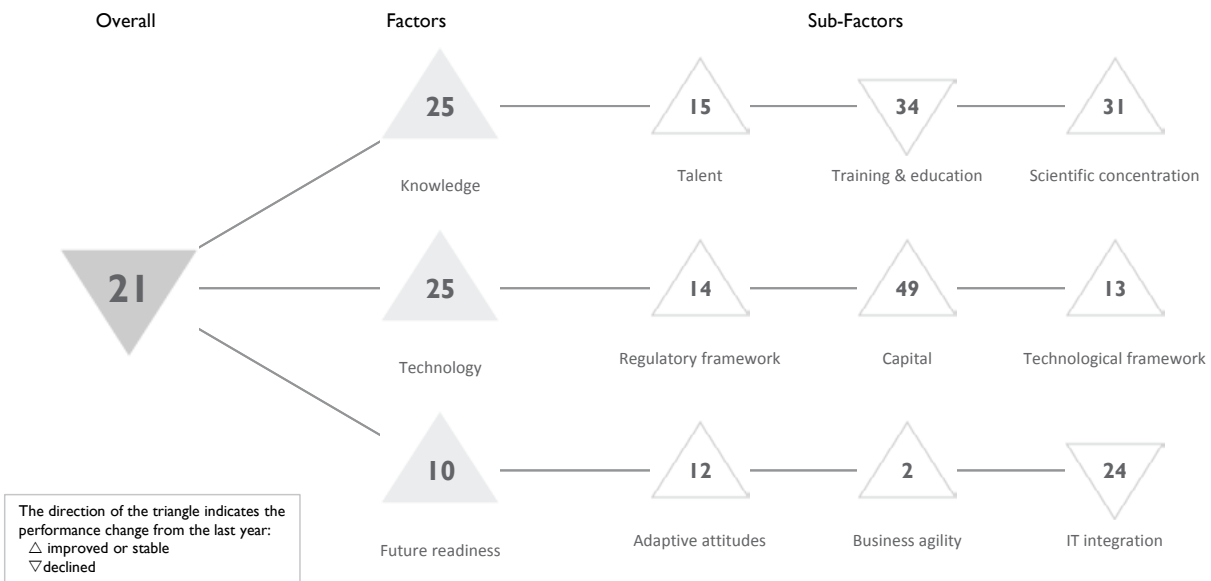
Adaptive attitudes	Rank
▷ E-Participation	61
Internet retailing	54
Tablet possession	54
Smartphone possession	59
Attitudes toward globalization	27

Business agility	Rank
Opportunities and threats	25
Innovative firms	33
Agility of companies	28
Use of big data and analytics	27
Knowledge transfer	37

IT integration	Rank
▷ E-Government	61
Public-private partnerships	34
Cyber security	43
▷ Software piracy	61

IRELAND

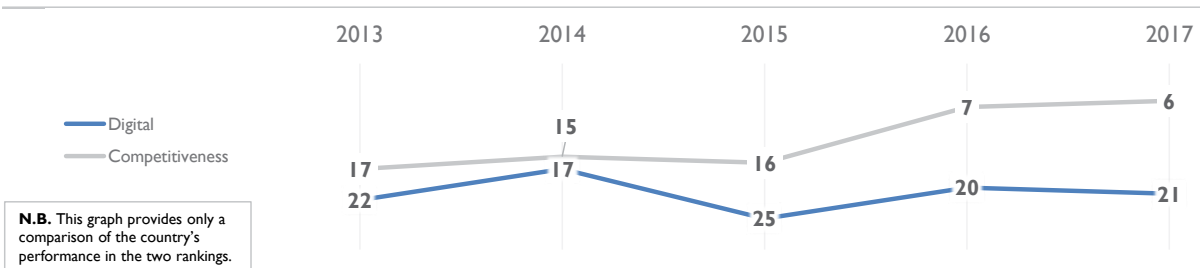
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

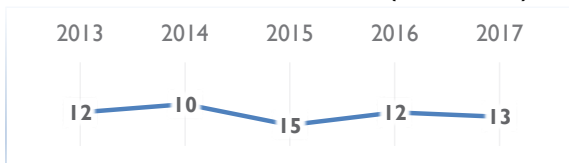
	2013	2014	2015	2016	2017
OVERALL	22	17	25	20	21
Knowledge	26	21	26	25	25
Technology	27	22	27	27	25
Future readiness	15	11	12	12	10

COMPETITIVENESS & DIGITAL RANKINGS

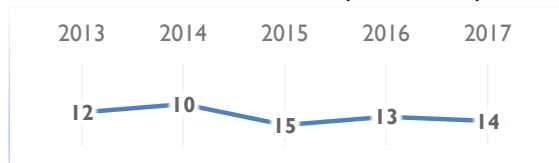


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	24	9	21	18	15
Training & education	19	17	29	25	34
Scientific concentration	37	36	34	32	31

Talent	Rank
Educational assessment PISA - Math	17
International experience	8
Foreign highly-skilled personnel	10
Management of cities	35
Digital/Technological skills	25
Net flow of international students	39

Training & education	Rank
Employee training	17
▷ Total public expenditure on education	52
Higher education achievement	11
Pupil-teacher ratio (tertiary education)	30
Graduates in Sciences	25
Women with degrees	43

Scientific concentration	Rank
Total expenditure on R&D (%)	25
Total R&D personnel per capita	21
Female researchers	34
R&D productivity by publication	45
Scientific and technical employment	14
High-tech patent grants	22

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	5	2	13	18	14
Capital	53	44	51	49	49
Technological framework	20	23	21	18	13

Regulatory framework	Rank
Starting a business	6
▷ Enforcing contracts	49
► Immigration laws	4
Technological regulation	14
Scientific research legislation	9
Intellectual property rights	11

Capital	Rank
▷ IT & media stock market capitalization	48
Funding for technological development	11
Banking and financial services	38
Investment risk	30
Venture capital	10
▷ Investment in Telecommunications	56

Technological framework	Rank
▷ Communications technology	48
Mobile Broadband subscribers	14
Wireless broadband	15
Internet users	13
Internet bandwidth speed	21
High-tech exports (%)	9

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	20	18	14	13	12
Business agility	2	4	6	8	2
IT integration	23	20	24	22	24

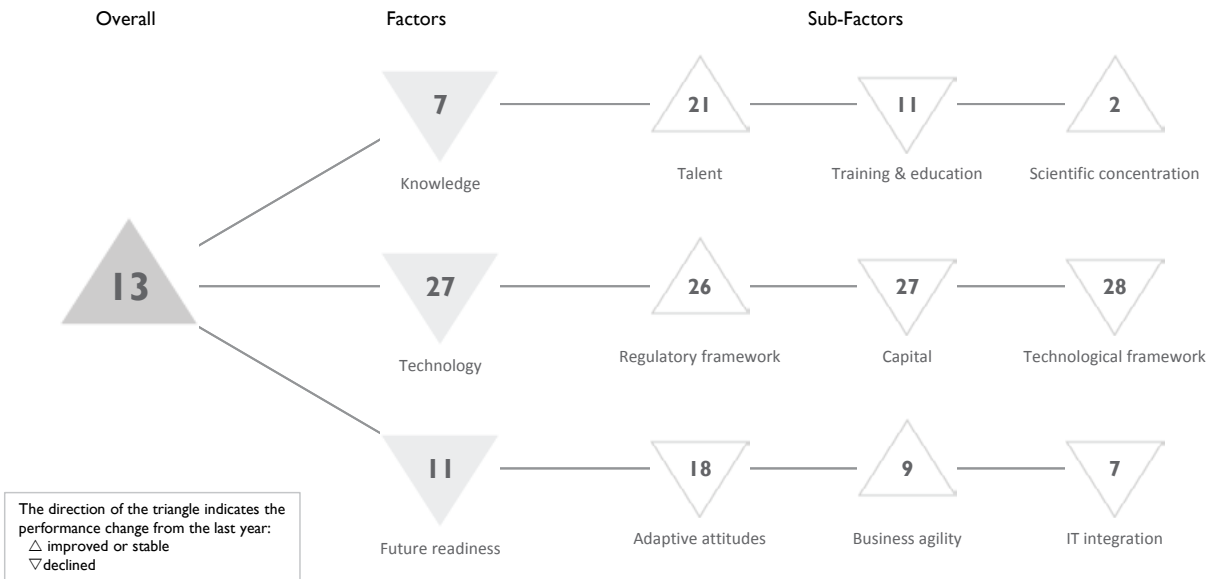
Adaptive attitudes	Rank
E-Participation	34
Internet retailing	6
Tablet possession	18
Smartphone possession	9
► Attitudes toward globalization	1

Business agility	Rank
► Opportunities and threats	3
► Innovative firms	5
► Agility of companies	2
Use of big data and analytics	17
Knowledge transfer	6

IT integration	Rank
E-Government	25
Public-private partnerships	22
Cyber security	19
Software piracy	19

ISRAEL

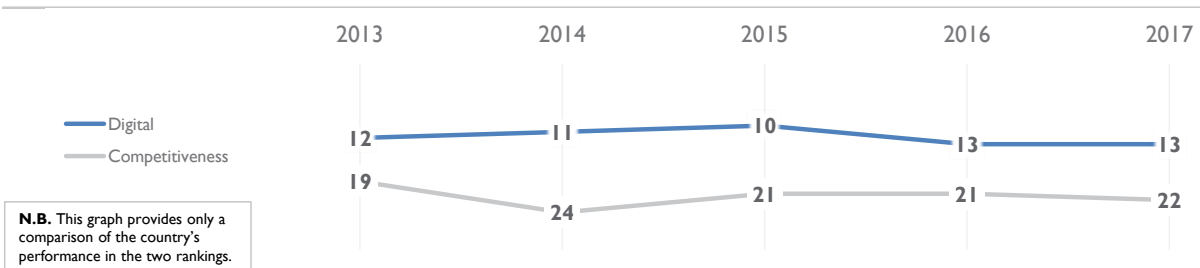
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

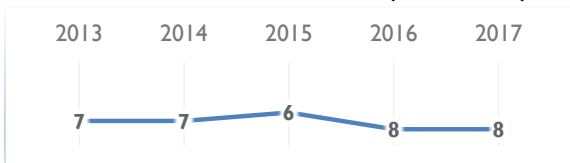
	2013	2014	2015	2016	2017
OVERALL	12	11	10	13	13
Knowledge	7	7	4	5	7
Technology	23	23	22	24	27
Future readiness	5	9	7	9	11

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	26	26	25	23	21
Training & education	12	10	7	6	11
Scientific concentration	2	2	2	2	2

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	36	Employee training	33	► Total expenditure on R&D (%)	1
International experience	21	Total public expenditure on education	7	► Total R&D personnel per capita	4
Foreign highly-skilled personnel	31	Higher education achievement	19	Female researchers	-
Management of cities	28	Pupil-teacher ratio (tertiary education)	-	▷ R&D productivity by publication	51
► Digital/Technological skills	1	Graduates in Sciences	-	Scientific and technical employment	11
Net flow of international students	42	Women with degrees	34	High-tech patent grants	10

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	32	32	26	26	26
Capital	16	18	18	20	27
Technological framework	21	22	25	26	28

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	25	IT & media stock market capitalization	27	Communications technology	23
▷ Enforcing contracts	48	Funding for technological development	7	Mobile Broadband subscribers	22
▷ Immigration laws	53	Banking and financial services	32	▷ Wireless broadband	50
Technological regulation	11	Investment risk	29	Internet users	31
► Scientific research legislation	4	Venture capital	9	Internet bandwidth speed	25
Intellectual property rights	13	▷ Investment in Telecommunications	55	High-tech exports (%)	16

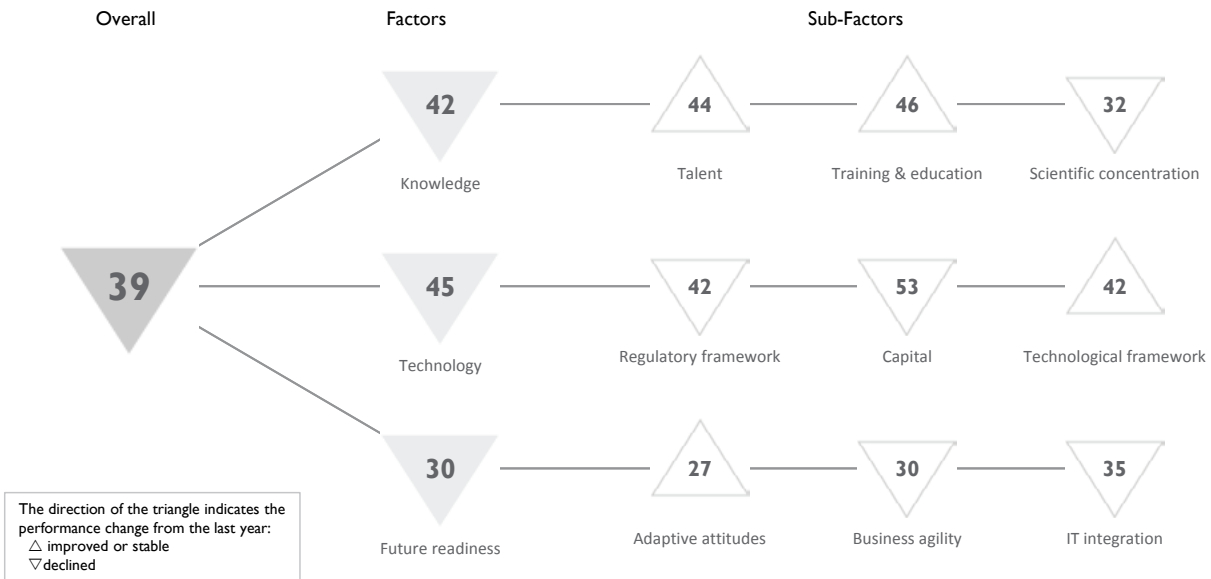
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	14	13	17	17	18
Business agility	7	12	11	11	9
IT integration	3	3	2	3	7

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	17	Opportunities and threats	13	E-Government	20
Internet retailing	20	Innovative firms	16	Public-private partnerships	4
Tablet possession	19	Agility of companies	21	► Cyber security	2
Smartphone possession	15	Use of big data and analytics	4	Software piracy	17
Attitudes toward globalization	21	Knowledge transfer	5		

ITALY

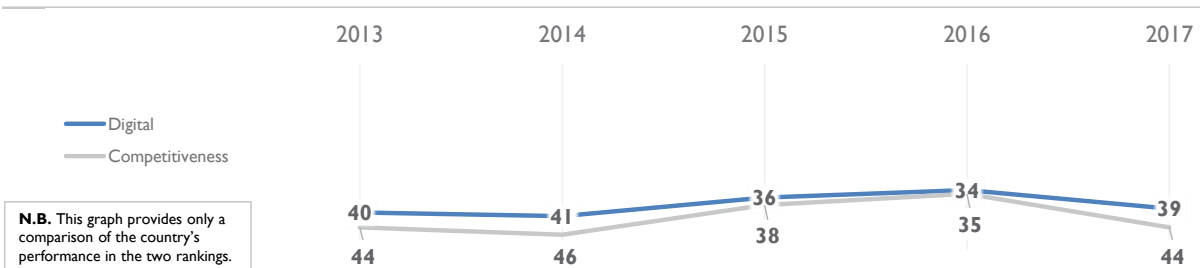
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	40	41	36	34	39
Knowledge	44	46	42	40	42
Technology	47	50	46	44	45
Future readiness	31	31	30	29	30

COMPETITIVENESS & DIGITAL RANKINGS

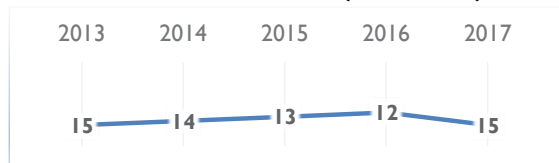


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	47	50	47	44	44
Training & education	50	51	49	48	46
Scientific concentration	32	31	30	29	32

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	28	Employee training	52	Total expenditure on R&D (%)	28
International experience	47	Total public expenditure on education	41	Total R&D personnel per capita	30
▷ Foreign highly-skilled personnel	53	Higher education achievement	51	Female researchers	29
Management of cities	44	Pupil-teacher ratio (tertiary education)	38	▶ R&D productivity by publication	5
▷ Digital/Technological skills	52	Graduates in Sciences	27	Scientific and technical employment	17
Net flow of international students	27	▶ Women with degrees	12	High-tech patent grants	51

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	50	54	43	41	42
Capital	51	55	52	51	53
Technological framework	41	40	43	43	42

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	35	IT & media stock market capitalization	36	Communications technology	52
Enforcing contracts	51	Funding for technological development	48	Mobile Broadband subscribers	44
▶ Immigration laws	16	▷ Banking and financial services	57	Wireless broadband	22
Technological regulation	48	Investment risk	42	Internet users	26
Scientific research legislation	50	▷ Venture capital	56	Internet bandwidth speed	43
Intellectual property rights	37	Investment in Telecommunications	30	High-tech exports (%)	47

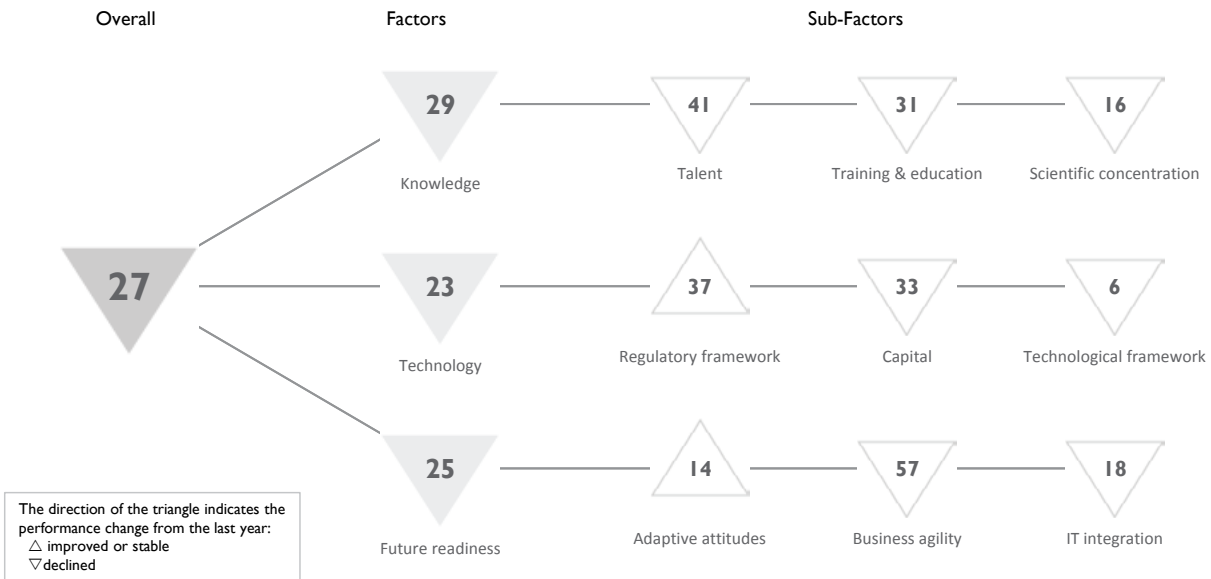
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	32	32	28	27	27
Business agility	25	22	20	16	30
IT integration	36	39	32	33	35

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
▶ E-Participation	8	Opportunities and threats	36	E-Government	22
Internet retailing	30	▶ Innovative firms	4	▷ Public-private partnerships	56
Tablet possession	25	Agility of companies	41	Cyber security	46
Smartphone possession	33	Use of big data and analytics	50	Software piracy	33
Attitudes toward globalization	46	Knowledge transfer	38		

JAPAN

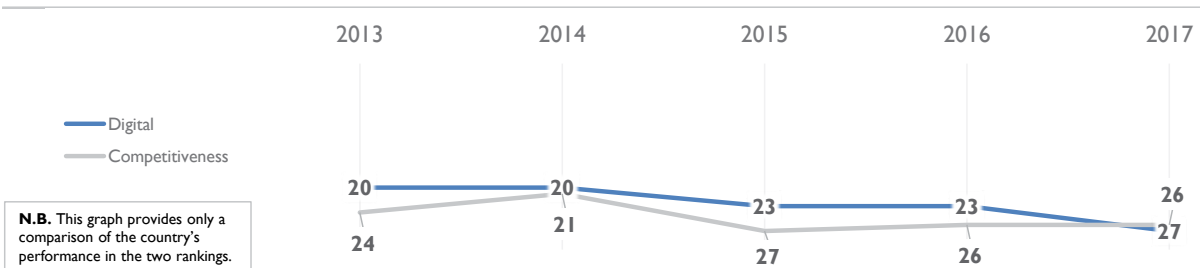
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

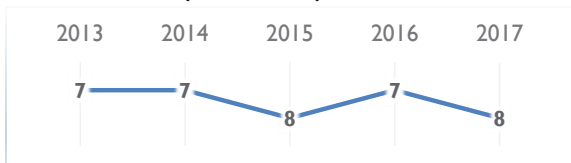
	2013	2014	2015	2016	2017
OVERALL	20	20	23	23	27
Knowledge	23	20	24	23	29
Technology	19	16	21	19	23
Future readiness	20	19	22	23	25

COMPETITIVENESS & DIGITAL RANKINGS

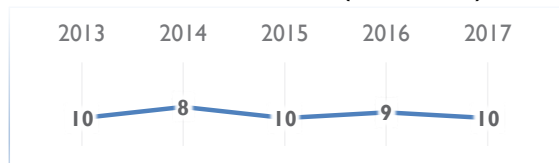


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	28	24	31	30	41
Training & education	18	15	27	28	31
Scientific concentration	14	16	14	14	16

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	4	Employee training	5	Total expenditure on R&D (%)	3
▷ International experience	63	Total public expenditure on education	56	Total R&D personnel per capita	17
Foreign highly-skilled personnel	51	Higher education achievement	5	Female researchers	48
Management of cities	9	▶ Pupil-teacher ratio (tertiary education)	2	R&D productivity by publication	15
▷ Digital/Technological skills	59	Graduates in Sciences	32	Scientific and technical employment	35
Net flow of international students	23	Women with degrees	56	▶ High-tech patent grants	3

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	27	31	39	37	37
Capital	33	27	26	29	33
Technological framework	3	2	3	3	6

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	45	IT & media stock market capitalization	12	Communications technology	24
Enforcing contracts	35	Funding for technological development	32	▶ Mobile Broadband subscribers	1
Immigration laws	54	Banking and financial services	39	Wireless broadband	4
Technological regulation	35	Investment risk	28	Internet users	5
Scientific research legislation	30	Venture capital	37	Internet bandwidth speed	9
Intellectual property rights	22	Investment in Telecommunications	47	High-tech exports (%)	18

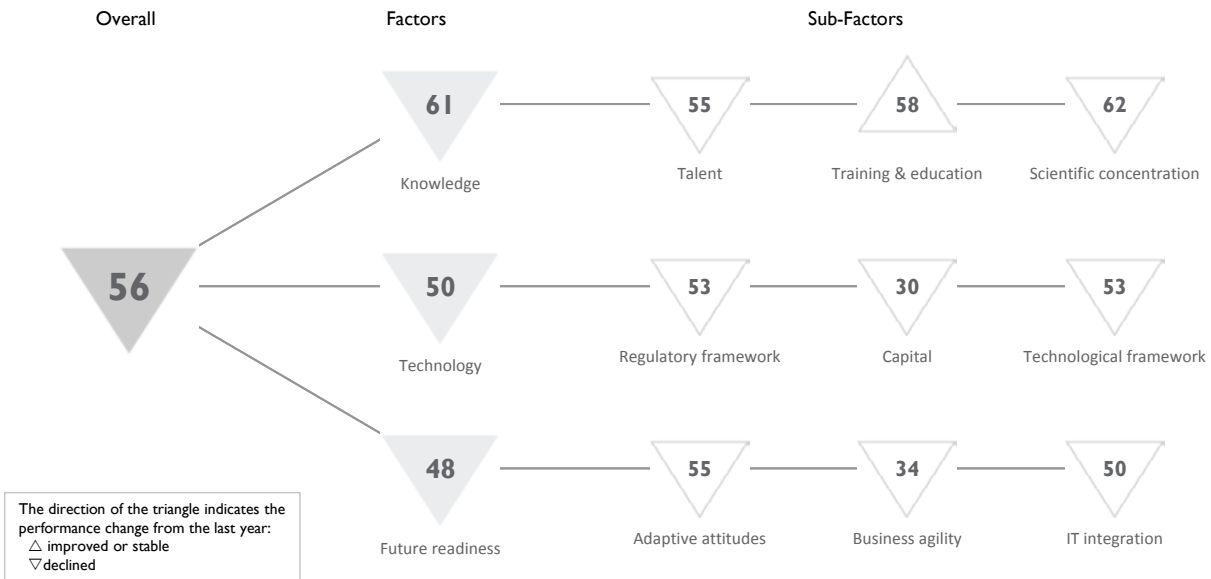
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	13	16	13	15	14
Business agility	30	33	35	33	57
IT integration	21	14	10	15	18

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
▶ E-Participation	2	▷ Opportunities and threats	60	E-Government	11
Internet retailing	11	Innovative firms	28	Public-private partnerships	36
Tablet possession	21	▷ Agility of companies	63	Cyber security	31
Smartphone possession	22	▷ Use of big data and analytics	59	▶ Software piracy	2
Attitudes toward globalization	33	Knowledge transfer	29		

JORDAN

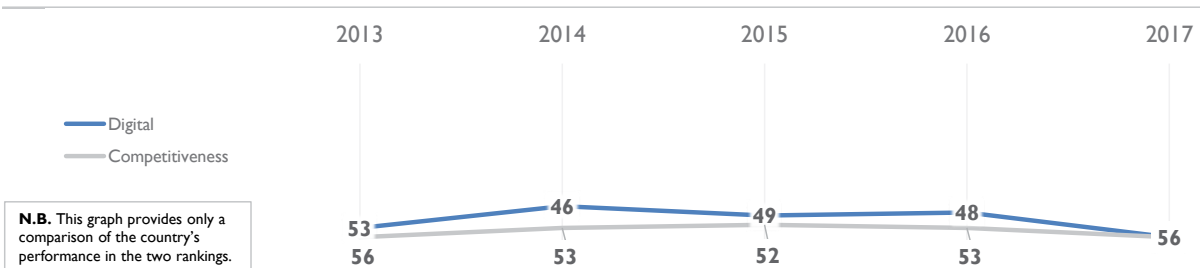
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	53	46	49	48	56
Knowledge	60	60	61	59	61
Technology	46	40	49	45	50
Future readiness	46	35	38	37	48

COMPETITIVENESS & DIGITAL RANKINGS

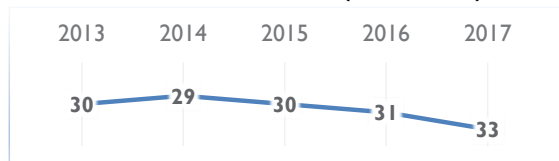


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	49	42	45	40	55
Training & education	58	58	60	59	58
Scientific concentration	59	59	60	61	62

Talent		Rank	Training & education		Rank	Scientific concentration		Rank
Educational assessment PISA - Math	55		Employee training	55		Total expenditure on R&D (%)	-	
International experience	34		Total public expenditure on education	42		Total R&D personnel per capita	-	
Foreign highly-skilled personnel	38		Higher education achievement	-		Female researchers	-	
Management of cities	52		Pupil-teacher ratio (tertiary education)	49		R&D productivity by publication	54	
Digital/Technological skills	44		▶ Graduates in Sciences	16		Scientific and technical employment	45	
▶ Net flow of international students	18		▷ Women with degrees	58		High-tech patent grants	48	

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	49	40	45	50	53
Capital	23	20	29	24	30
Technological framework	51	51	54	50	53

Regulatory framework		Rank	Capital		Rank	Technological framework		Rank
Starting a business	50		IT & media stock market capitalization	-		Communications technology	45	
Enforcing contracts	56		Funding for technological development	39		Mobile Broadband subscribers	29	
Immigration laws	55		Banking and financial services	34		Wireless broadband	54	
Technological regulation	38		Investment risk	58		Internet users	52	
Scientific research legislation	47		Venture capital	41		▷ Internet bandwidth speed	60	
Intellectual property rights	38		▶ Investment in Telecommunications	6		▷ High-tech exports (%)	61	

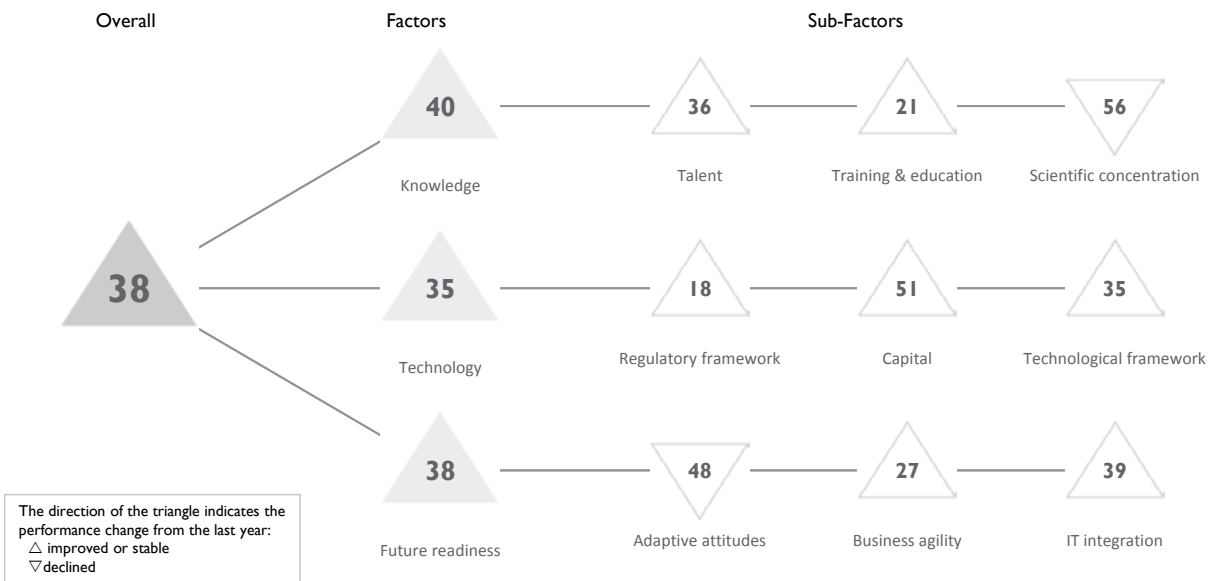
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	48	46	44	43	55
Business agility	40	25	28	31	34
IT integration	48	46	48	40	50

Adaptive attitudes		Rank	Business agility		Rank	IT integration		Rank
▷ E-Participation	59		Opportunities and threats	42		▷ E-Government	59	
Internet retailing	-		Innovative firms	-		Public-private partnerships	39	
Tablet possession	55		Agility of companies	45		▶ Cyber security	16	
Smartphone possession	30		▶ Use of big data and analytics	10		Software piracy	46	
Attitudes toward globalization	49		Knowledge transfer	35				

KAZAKHSTAN

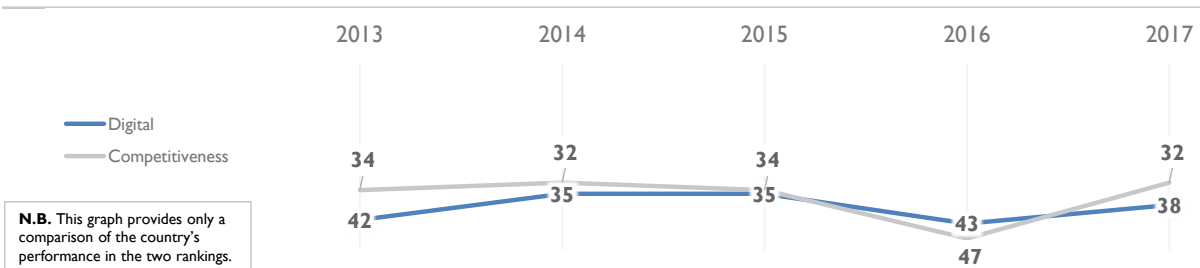
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	42	35	35	43	38
Knowledge	48	43	41	47	40
Technology	40	39	34	42	35
Future readiness	34	34	35	41	38

COMPETITIVENESS & DIGITAL RANKINGS

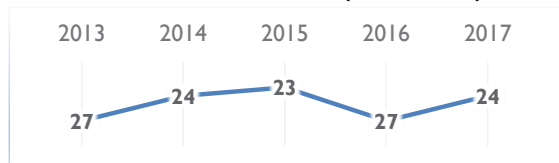


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



KAZAKHSTAN

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	44	43	37	45	36
Training & education	32	27	25	31	21
Scientific concentration	58	57	55	55	56

Talent	Rank
Educational assessment PISA - Math	39
International experience	15
Foreign highly-skilled personnel	17
Management of cities	33
Digital/Technological skills	37
Net flow of international students	56

Training & education	Rank
Employee training	14
Total public expenditure on education	47
► Higher education achievement	4
Pupil-teacher ratio (tertiary education)	26
Graduates in Sciences	-
Women with degrees	38

Scientific concentration	Rank
▷ Total expenditure on R&D (%)	57
Total R&D personnel per capita	46
► Female researchers	5
R&D productivity by publication	43
Scientific and technical employment	44
▷ High-tech patent grants	62

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	33	28	25	27	18
Capital	52	53	50	56	51
Technological framework	42	42	32	37	35

Regulatory framework	Rank
Starting a business	26
► Enforcing contracts	9
Immigration laws	20
Technological regulation	19
Scientific research legislation	18
Intellectual property rights	29

Capital	Rank
IT & media stock market capitalization	-
Funding for technological development	24
Banking and financial services	33
▷ Investment risk	56
Venture capital	35
▷ Investment in Telecommunications	61

Technological framework	Rank
Communications technology	40
Mobile Broadband subscribers	46
Wireless broadband	42
Internet users	47
Internet bandwidth speed	42
► High-tech exports (%)	5

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	29	31	41	41	48
Business agility	35	31	29	36	27
IT integration	47	47	40	45	39

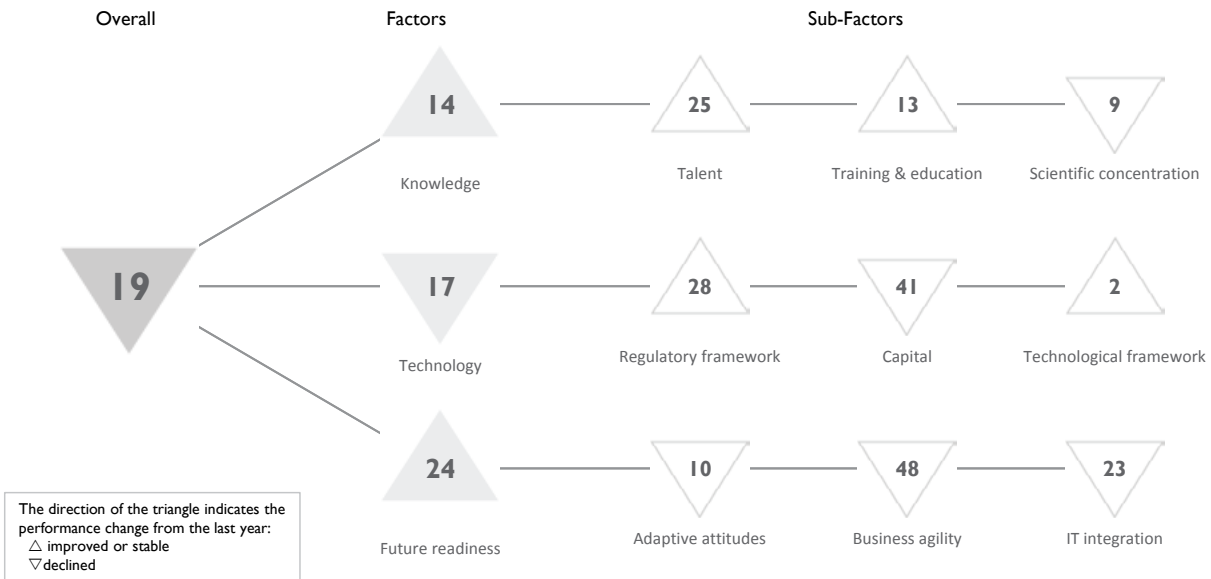
Adaptive attitudes	Rank
E-Participation	48
Internet retailing	53
Tablet possession	37
Smartphone possession	52
Attitudes toward globalization	23

Business agility	Rank
Opportunities and threats	17
Innovative firms	41
Agility of companies	18
► Use of big data and analytics	3
Knowledge transfer	23

IT integration	Rank
E-Government	29
Public-private partnerships	13
Cyber security	20
▷ Software piracy	59

KOREA REP.

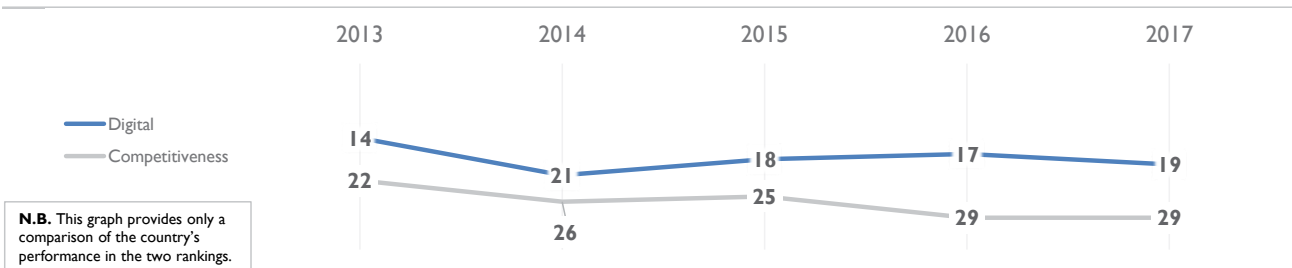
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	14	21	18	17	19
Knowledge	14	12	13	15	14
Technology	13	18	16	13	17
Future readiness	19	25	24	25	24

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



KOREA REP.

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	23	21	23	27	25
Training & education	13	12	10	14	13
Scientific concentration	10	9	9	8	9

Talent Rank

Educational assessment PISA - Math	6
▷ International experience	51
Foreign highly-skilled personnel	48
Management of cities	16
Digital/Technological skills	22
Net flow of international students	49

Training & education Rank

Employee training	46
Total public expenditure on education	26
► Higher education achievement	2
Pupil-teacher ratio (tertiary education)	27
Graduates in Sciences	5
Women with degrees	50

Scientific concentration Rank

► Total expenditure on R&D (%)	2
Total R&D personnel per capita	8
Female researchers	47
R&D productivity by publication	25
Scientific and technical employment	30
High-tech patent grants	5

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	26	29	23	28	28
Capital	19	30	32	35	41
Technological framework	2	3	2	2	2

Regulatory framework Rank

Starting a business	7
► Enforcing contracts	1
▷ Immigration laws	57
Technological regulation	44
Scientific research legislation	34
Intellectual property rights	44

Capital Rank

IT & media stock market capitalization	22
Funding for technological development	46
▷ Banking and financial services	54
Investment risk	22
▷ Venture capital	53
Investment in Telecommunications	24

Technological framework Rank

Communications technology	16
Mobile Broadband subscribers	12
Wireless broadband	13
Internet users	17
► Internet bandwidth speed	1
High-tech exports (%)	7

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	10	11	8	8	10
Business agility	31	43	38	43	48
IT integration	19	21	17	21	23

Adaptive attitudes Rank

E-Participation	4
Internet retailing	4
Tablet possession	34
Smartphone possession	8
Attitudes toward globalization	31

Business agility Rank

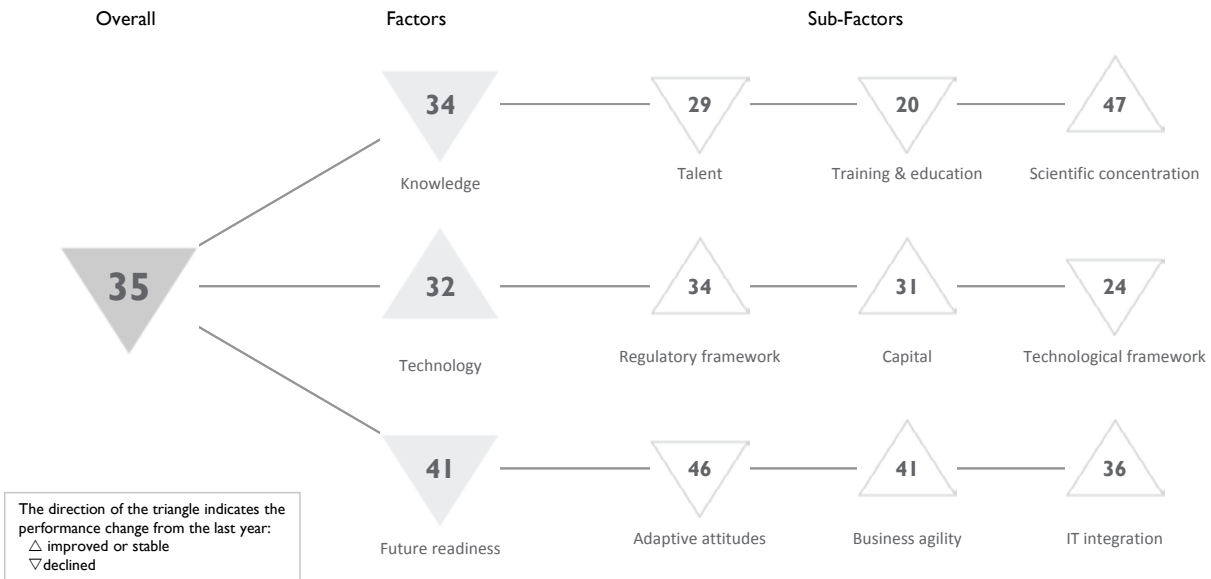
Opportunities and threats	46
Innovative firms	32
Agility of companies	34
▷ Use of big data and analytics	56
Knowledge transfer	32

IT integration Rank

► E-Government	3
Public-private partnerships	29
Cyber security	49
Software piracy	24

LATVIA

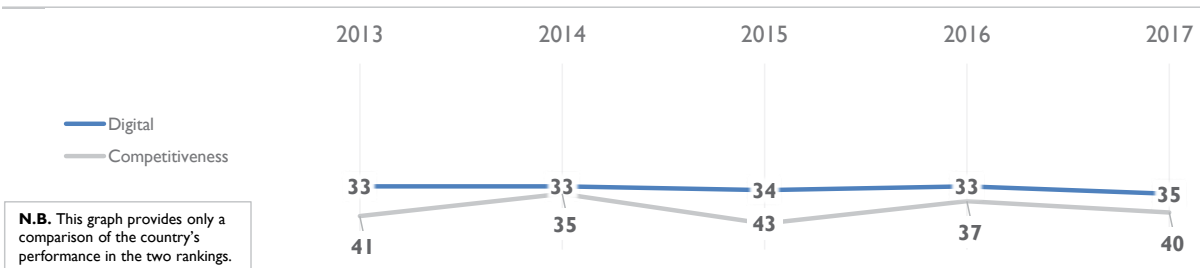
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

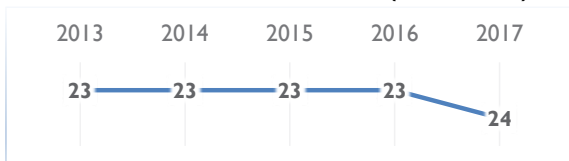
	2013	2014	2015	2016	2017
OVERALL	33	33	34	33	35
Knowledge	36	33	32	33	34
Technology	26	28	32	33	32
Future readiness	44	40	37	39	41

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	36	27	30	28	29
Training & education	17	20	14	12	20
Scientific concentration	50	50	49	48	47

Talent	Rank
Educational assessment PISA - Math	32
International experience	32
Foreign highly-skilled personnel	32
Management of cities	29
Digital/Technological skills	18
Net flow of international students	47

Training & education	Rank
Employee training	37
Total public expenditure on education	23
Higher education achievement	31
Pupil-teacher ratio (tertiary education)	21
Graduates in Sciences	37
► Women with degrees	4

Scientific concentration	Rank
Total expenditure on R&D (%)	48
Total R&D personnel per capita	36
► Female researchers	4
▷ R&D productivity by publication	55
Scientific and technical employment	29
▷ High-tech patent grants	49

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	24	21	37	35	34
Capital	28	31	39	45	31
Technological framework	26	26	29	23	24

Regulatory framework	Rank
Starting a business	15
Enforcing contracts	22
▷ Immigration laws	59
Technological regulation	32
Scientific research legislation	40
Intellectual property rights	33

Capital	Rank
IT & media stock market capitalization	-
Funding for technological development	25
Banking and financial services	41
Investment risk	38
Venture capital	30
Investment in Telecommunications	26

Technological framework	Rank
► Communications technology	8
Mobile Broadband subscribers	45
Wireless broadband	37
► Internet users	14
► Internet bandwidth speed	13
High-tech exports (%)	21

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	44	41	35	38	46
Business agility	54	49	43	46	41
IT integration	34	35	34	38	36

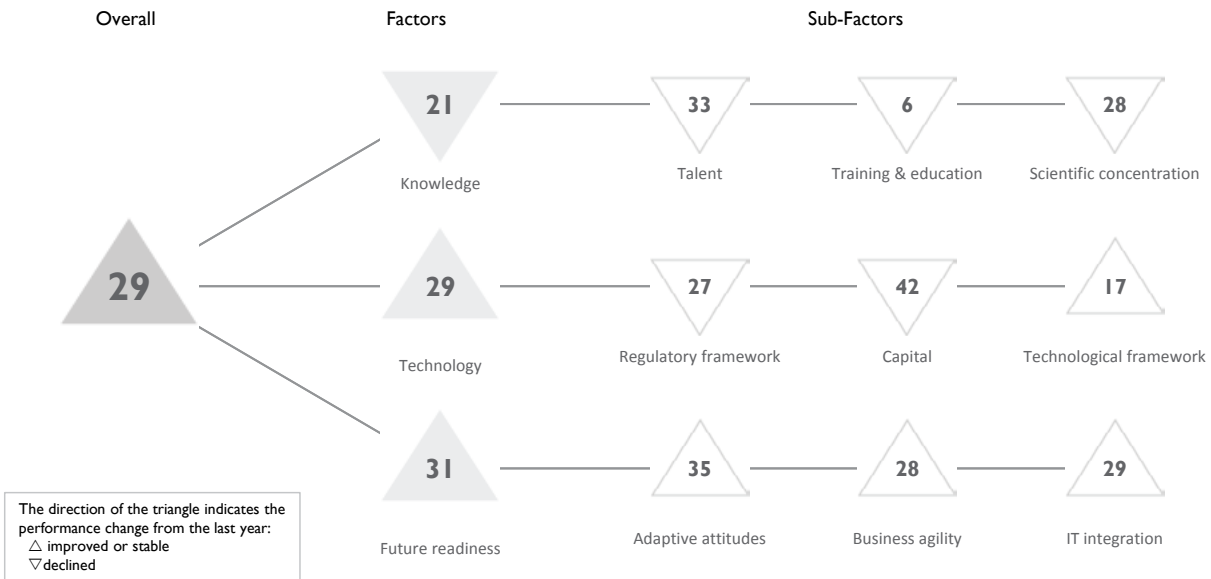
Adaptive attitudes	Rank
▷ E-Participation	56
Internet retailing	34
Tablet possession	48
Smartphone possession	35
Attitudes toward globalization	44

Business agility	Rank
Opportunities and threats	24
Innovative firms	31
Agility of companies	22
Use of big data and analytics	40
▷ Knowledge transfer	51

IT integration	Rank
E-Government	38
Public-private partnerships	45
Cyber security	26
Software piracy	39

LITHUANIA

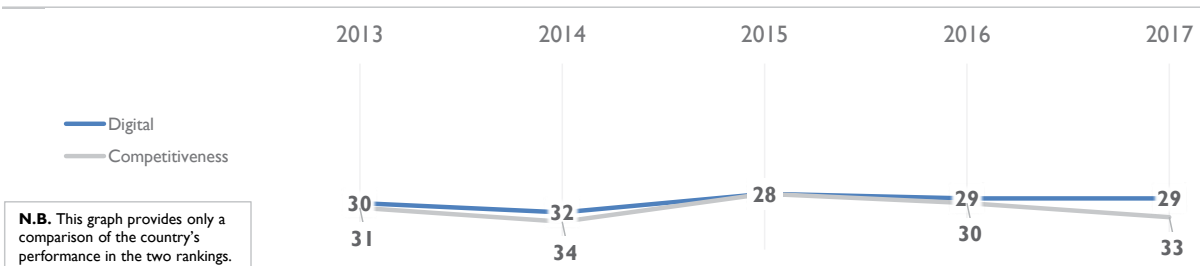
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

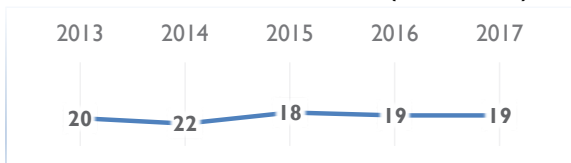
	2013	2014	2015	2016	2017
OVERALL	30	32	28	29	29
Knowledge	22	25	18	18	21
Technology	32	32	28	29	29
Future readiness	36	37	34	33	31

COMPETITIVENESS & DIGITAL RANKINGS

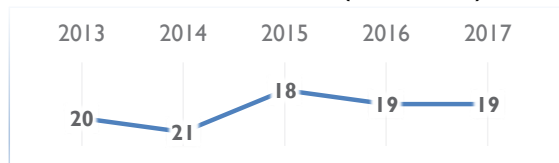


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	31	39	28	29	33
Training & education	3	5	3	5	6
Scientific concentration	27	26	25	24	28

Talent Rank

Educational assessment PISA - Math	33
International experience	33
Foreign highly-skilled personnel	49
Management of cities	31
► Digital/Technological skills	2
▷ Net flow of international students	54

Training & education Rank

Employee training	27
Total public expenditure on education	20
Higher education achievement	8
Pupil-teacher ratio (tertiary education)	11
Graduates in Sciences	30
Women with degrees	8

Scientific concentration Rank

Total expenditure on R&D (%)	36
Total R&D personnel per capita	15
► Female researchers	6
▷ R&D productivity by publication	52
Scientific and technical employment	32
High-tech patent grants	26

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	34	33	28	24	27
Capital	36	41	30	37	42
Technological framework	29	32	28	25	17

Regulatory framework Rank

Starting a business	21
► Enforcing contracts	6
▷ Immigration laws	58
Technological regulation	26
Scientific research legislation	36
Intellectual property rights	26

Capital Rank

IT & media stock market capitalization	-
Funding for technological development	28
Banking and financial services	35
Investment risk	32
Venture capital	16
▷ Investment in Telecommunications	58

Technological framework Rank

► Communications technology	1
Mobile Broadband subscribers	13
Wireless broadband	27
Internet users	38
Internet bandwidth speed	23
High-tech exports (%)	32

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	33	33	36	37	35
Business agility	52	53	42	39	28
IT integration	31	34	28	29	29

Adaptive attitudes Rank

E-Participation	17
Internet retailing	31
▷ Tablet possession	50
Smartphone possession	36
Attitudes toward globalization	35

Business agility Rank

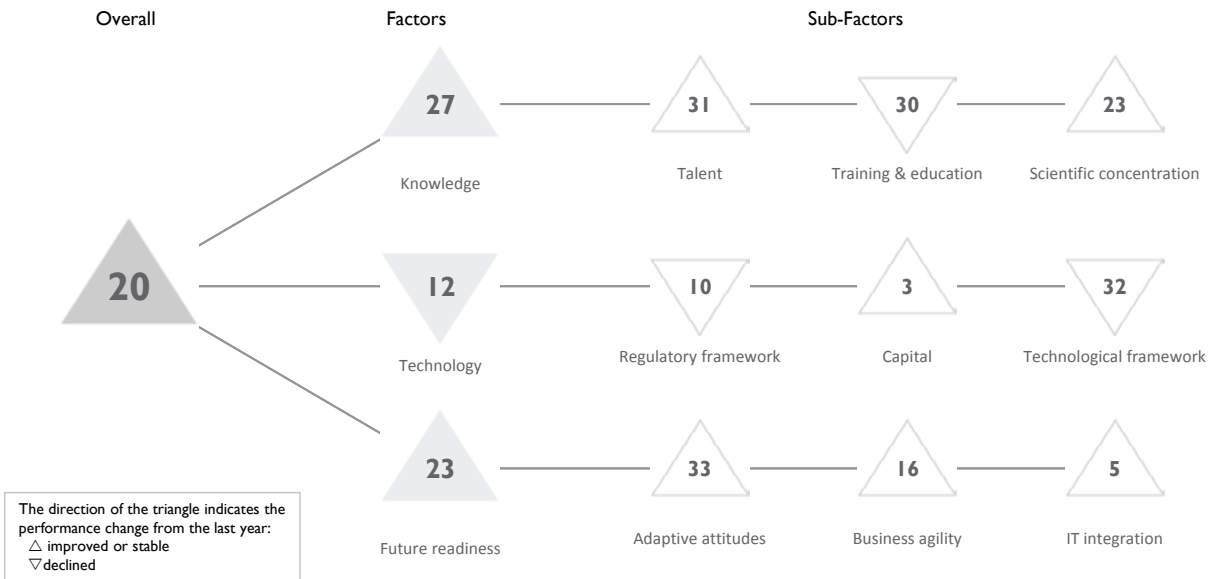
► Opportunities and threats	5
Innovative firms	36
Agility of companies	6
Use of big data and analytics	14
Knowledge transfer	36

IT integration Rank

E-Government	23
Public-private partnerships	33
Cyber security	22
Software piracy	42

LUXEMBOURG

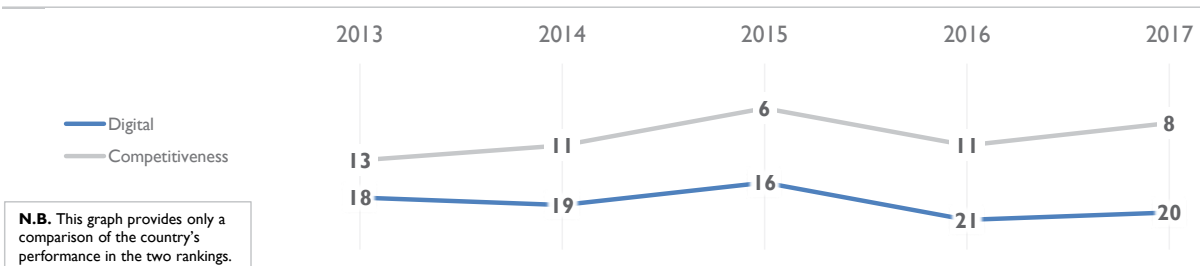
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

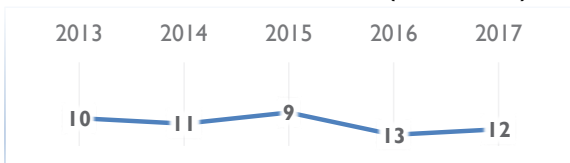
	2013	2014	2015	2016	2017
OVERALL	18	19	16	21	20
Knowledge	27	28	23	29	27
Technology	7	3	2	11	12
Future readiness	23	21	23	24	23

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



LUXEMBOURG

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	30	28	27	33	31
Training & education	14	18	13	29	30
Scientific concentration	31	34	27	25	23

Talent

Rank

Educational assessment PISA - Math	31
International experience	5
Foreign highly-skilled personnel	6
Management of cities	10
Digital/Technological skills	19
▷ Net flow of international students	59

Training & education

Rank

Employee training	7
Total public expenditure on education	40
Higher education achievement	12
► Pupil-teacher ratio (tertiary education)	1
▷ Graduates in Sciences	55
▷ Women with degrees	42

Scientific concentration

Rank

Total expenditure on R&D (%)	31
► Total R&D personnel per capita	3
Female researchers	41
▷ R&D productivity by publication	61
► Scientific and technical employment	1
High-tech patent grants	32

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	1	9	4	8	10
Capital	5	1	1	3	3
Technological framework	18	21	22	28	32

Regulatory framework

Rank

Starting a business	36
Enforcing contracts	15
Immigration laws	9
Technological regulation	8
Scientific research legislation	11
Intellectual property rights	17

Capital

Rank

► IT & media stock market capitalization	1
Funding for technological development	10
Banking and financial services	21
Investment risk	5
Venture capital	23
Investment in Telecommunications	23

Technological framework

Rank

Communications technology	13
Mobile Broadband subscribers	32
Wireless broadband	26
Internet users	12
Internet bandwidth speed	38
▷ High-tech exports (%)	51

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	31	29	34	34	33
Business agility	16	18	17	19	16
IT integration	10	12	7	12	5

Adaptive attitudes

Rank

E-Participation	37
Internet retailing	-
Tablet possession	-
Smartphone possession	-
Attitudes toward globalization	25

Business agility

Rank

Opportunities and threats	19
Innovative firms	17
Agility of companies	13
Use of big data and analytics	19
Knowledge transfer	15

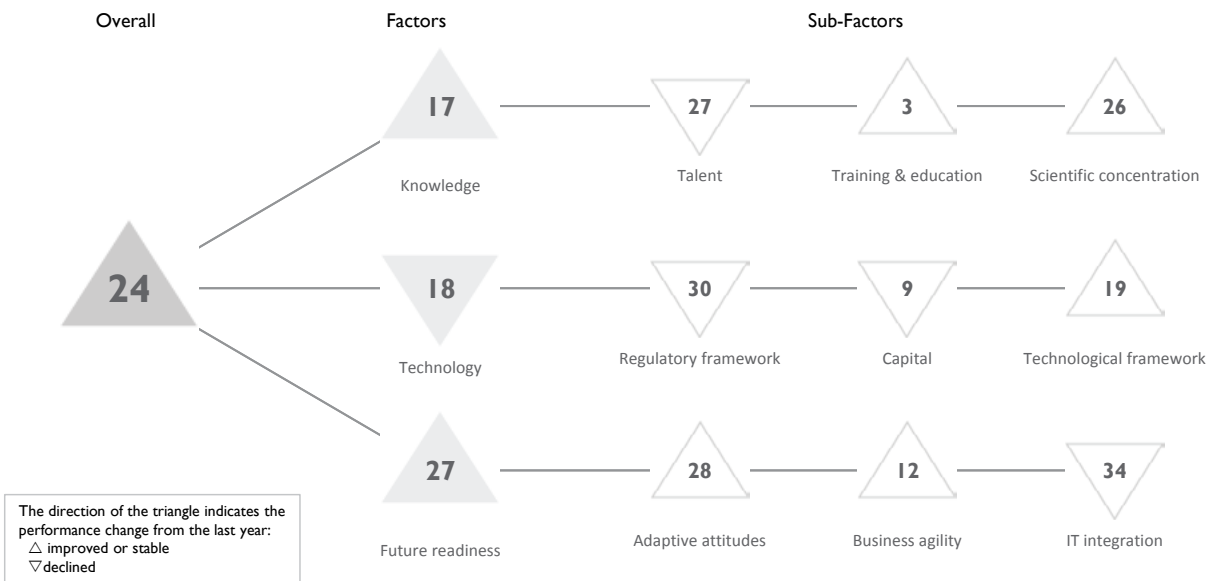
IT integration

Rank

E-Government	24
Public-private partnerships	7
Cyber security	7
► Software piracy	4

MALAYSIA

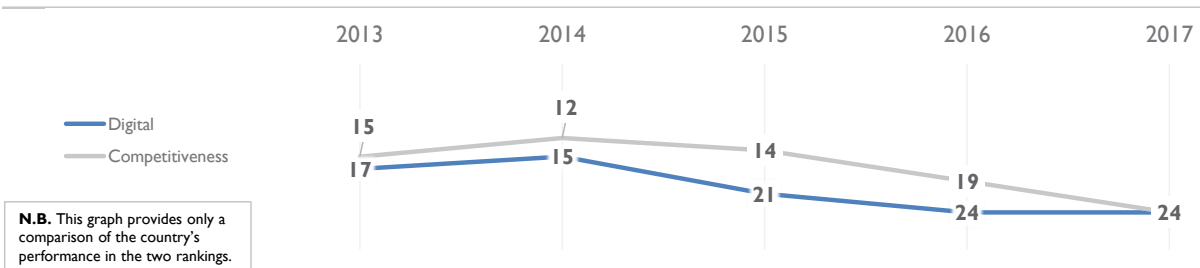
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	17	15	21	24	24
Knowledge	15	19	25	22	17
Technology	9	8	14	16	18
Future readiness	27	23	27	28	27

COMPETITIVENESS & DIGITAL RANKINGS

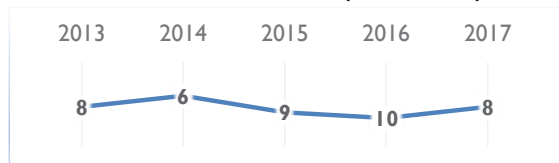


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	14	18	26	26	27
Training & education	6	9	17	11	3
Scientific concentration	30	27	28	27	26

Talent

	Rank
Educational assessment PISA - Math	41
International experience	18
Foreign highly-skilled personnel	23
Management of cities	21
Digital/Technological skills	23
▷ Net flow of international students	48

Training & education

	Rank
Employee training	13
Total public expenditure on education	29
Higher education achievement	35
Pupil-teacher ratio (tertiary education)	13
▶ Graduates in Sciences	2
Women with degrees	26

Scientific concentration

	Rank
Total expenditure on R&D (%)	29
Total R&D personnel per capita	38
Female researchers	10
R&D productivity by publication	23
Scientific and technical employment	41
High-tech patent grants	16

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	18	14	21	21	30
Capital	3	3	7	7	9
Technological framework	17	15	17	21	19

Regulatory framework

	Rank
▷ Starting a business	53
Enforcing contracts	34
Immigration laws	37
Technological regulation	15
Scientific research legislation	22
Intellectual property rights	31

Capital

	Rank
IT & media stock market capitalization	18
Funding for technological development	15
Banking and financial services	13
Investment risk	34
Venture capital	10
▶ Investment in Telecommunications	4

Technological framework

	Rank
Communications technology	33
Mobile Broadband subscribers	41
Wireless broadband	18
Internet users	41
▷ Internet bandwidth speed	45
▶ High-tech exports (%)	4

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	21	21	27	29	28
Business agility	23	16	15	17	12
IT integration	27	26	29	30	34

Adaptive attitudes

	Rank
E-Participation	39
▷ Internet retailing	50
Tablet possession	17
Smartphone possession	25
Attitudes toward globalization	16

Business agility

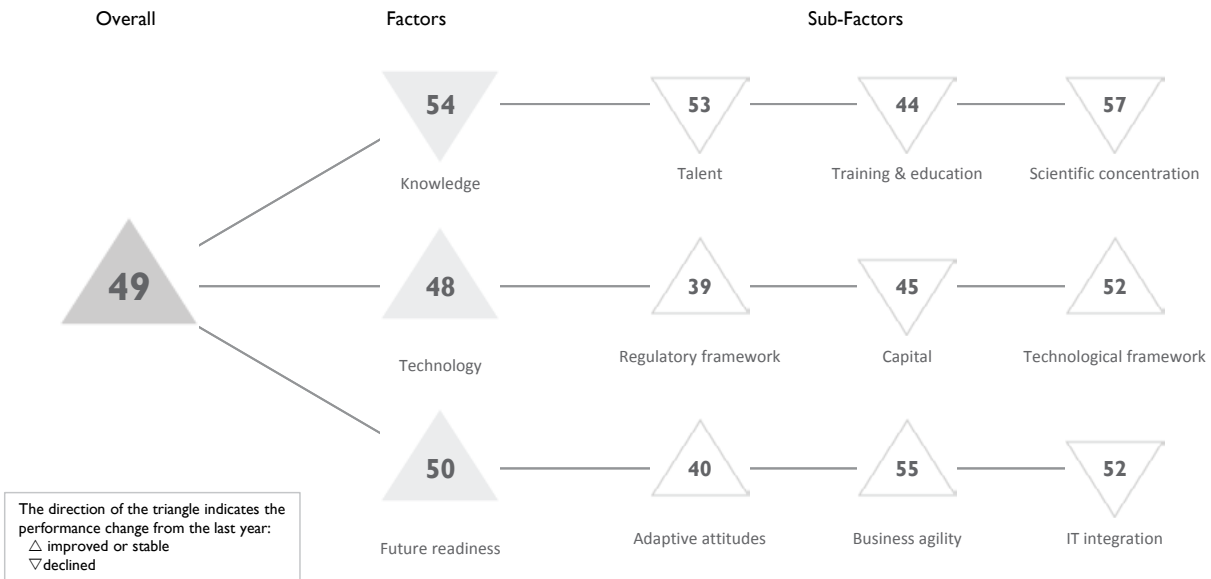
	Rank
▶ Opportunities and threats	6
Innovative firms	19
Agility of companies	19
▶ Use of big data and analytics	5
Knowledge transfer	19

IT integration

	Rank
▷ E-Government	46
Public-private partnerships	8
Cyber security	12
Software piracy	45

MEXICO

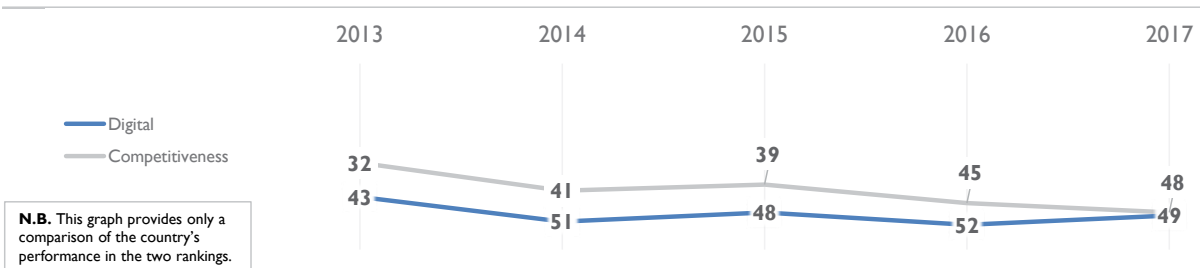
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	43	51	48	52	49
Knowledge	45	53	51	52	54
Technology	45	46	47	49	48
Future readiness	38	54	54	56	50

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS > 20 MILLION (29 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	41	52	44	51	53
Training & education	38	39	43	42	44
Scientific concentration	55	56	57	56	57

Talent	Rank
Educational assessment PISA - Math	50
International experience	30
Foreign highly-skilled personnel	29
Management of cities	54
▷ Digital/Technological skills	55
Net flow of international students	37

Training & education	Rank
Employee training	36
Total public expenditure on education	49
Higher education achievement	54
▶ Pupil-teacher ratio (tertiary education)	7
▶ Graduates in Sciences	10
Women with degrees	46

Scientific concentration	Rank
Total expenditure on R&D (%)	50
Total R&D personnel per capita	54
Female researchers	-
R&D productivity by publication	18
Scientific and technical employment	-
▷ High-tech patent grants	57

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	39	37	41	42	39
Capital	40	37	40	44	45
Technological framework	49	53	51	52	52

Regulatory framework	Rank
Starting a business	47
Enforcing contracts	33
Immigration laws	19
Technological regulation	45
Scientific research legislation	53
Intellectual property rights	48

Capital	Rank
▶ IT & media stock market capitalization	13
Funding for technological development	53
Banking and financial services	46
Investment risk	35
Venture capital	44
Investment in Telecommunications	43

Technological framework	Rank
▷ Communications technology	56
Mobile Broadband subscribers	38
Wireless broadband	53
▷ Internet users	57
Internet bandwidth speed	49
High-tech exports (%)	23

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	38	42	53	53	40
Business agility	39	58	57	58	55
IT integration	42	48	45	49	52

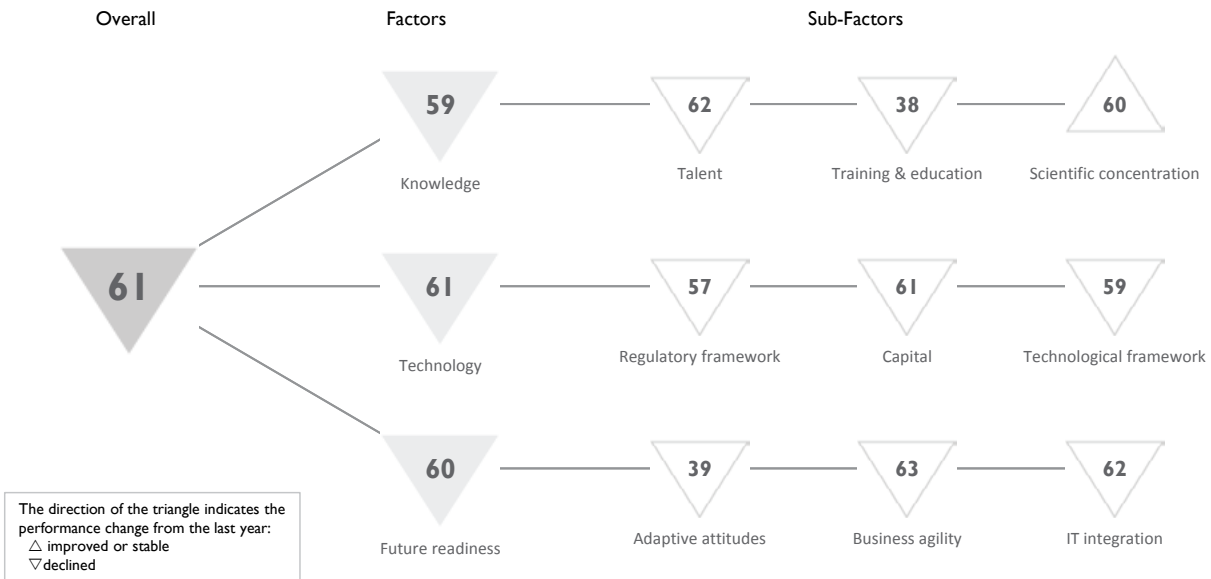
Adaptive attitudes	Rank
▶ E-Participation	14
Internet retailing	46
Tablet possession	43
Smartphone possession	54
▶ Attitudes toward globalization	12

Business agility	Rank
Opportunities and threats	41
Innovative firms	43
Agility of companies	40
Use of big data and analytics	42
Knowledge transfer	45

IT integration	Rank
E-Government	45
Public-private partnerships	51
▷ Cyber security	59
Software piracy	44

MONGOLIA

OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL			55	57	61
Knowledge			56	55	59
Technology			54	55	61
Future readiness			46	52	60

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent			56	57	62
Training & education			35	36	38
Scientific concentration			59	60	60

Talent	Rank
Educational assessment PISA - Math	-
International experience	61
Foreign highly-skilled personnel	58
Management of cities	61
Digital/Technological skills	57
Net flow of international students	55

Training & education	Rank
► Employee training	21
Total public expenditure on education	35
Higher education achievement	39
Pupil-teacher ratio (tertiary education)	42
Graduates in Sciences	46
► Women with degrees	6

Scientific concentration	Rank
Total expenditure on R&D (%)	58
Total R&D personnel per capita	48
► Female researchers	9
R&D productivity by publication	59
Scientific and technical employment	46
High-tech patent grants	-

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework			50	53	57
Capital			54	52	61
Technological framework			53	53	59

Regulatory framework	Rank
► Starting a business	24
Enforcing contracts	47
Immigration laws	50
Technological regulation	60
Scientific research legislation	62
▷ Intellectual property rights	62

Capital	Rank
IT & media stock market capitalization	-
Funding for technological development	61
Banking and financial services	62
Investment risk	59
▷ Venture capital	63
► Investment in Telecommunications	13

Technological framework	Rank
Communications technology	53
Mobile Broadband subscribers	53
Wireless broadband	-
▷ Internet users	62
Internet bandwidth speed	51
High-tech exports (%)	58

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes			30	32	39
Business agility			48	54	63
IT integration			58	58	62

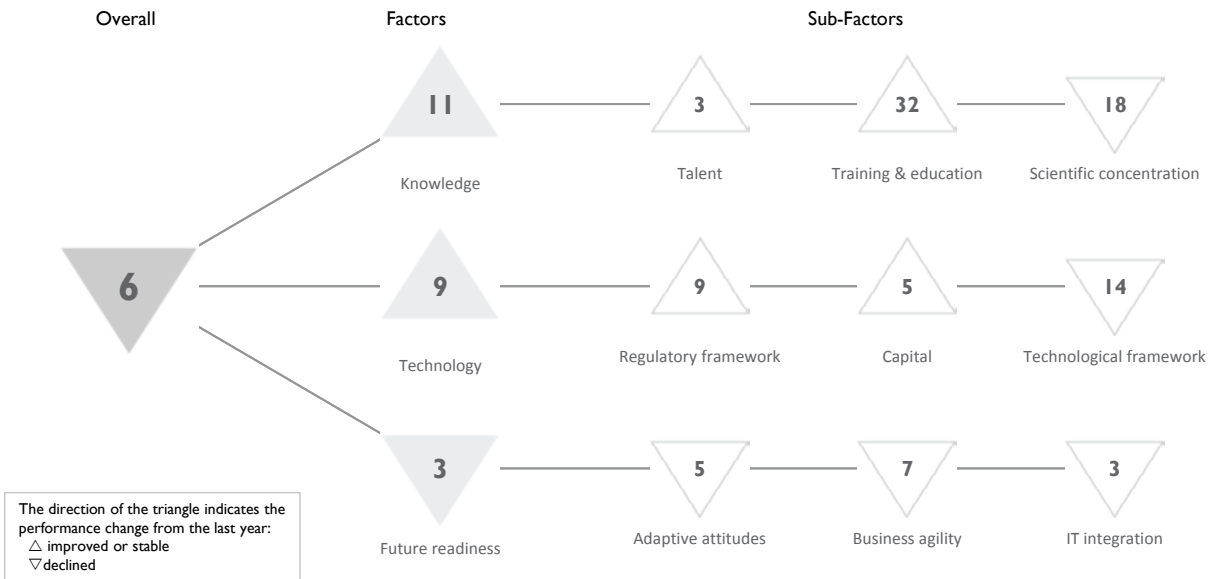
Adaptive attitudes	Rank
E-Participation	34
Internet retailing	-
Tablet possession	-
Smartphone possession	-
Attitudes toward globalization	52

Business agility	Rank
Opportunities and threats	62
Innovative firms	-
Agility of companies	61
Use of big data and analytics	62
▷ Knowledge transfer	63

IT integration	Rank
E-Government	57
Public-private partnerships	61
▷ Cyber security	62
Software piracy	-

NETHERLANDS

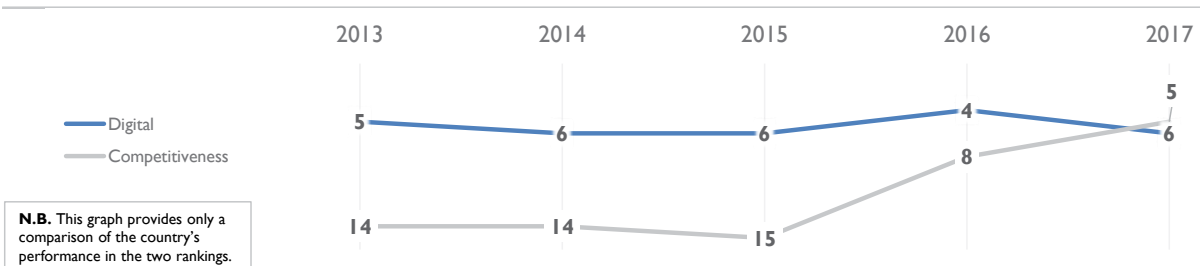
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

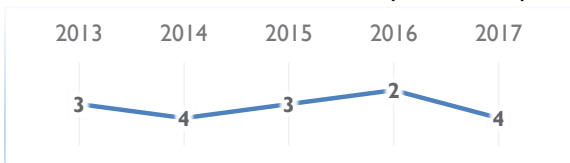
	2013	2014	2015	2016	2017
OVERALL	5	6	6	4	6
Knowledge	13	11	14	13	11
Technology	10	13	15	10	9
Future readiness	3	2	1	2	3

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



NETHERLANDS

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	6	4	5	4	3
Training & education	30	31	33	33	32
Scientific concentration	13	13	15	16	18

Talent	Rank
Educational assessment PISA - Math	10
International experience	4
Foreign highly-skilled personnel	7
Management of cities	4
Digital/Technological skills	6
Net flow of international students	10

Training & education	Rank
Employee training	6
Total public expenditure on education	18
Higher education achievement	20
Pupil-teacher ratio (tertiary education)	22
▷ Graduates in Sciences	53
▷ Women with degrees	35

Scientific concentration	Rank
Total expenditure on R&D (%)	19
Total R&D personnel per capita	13
▷ Female researchers	44
R&D productivity by publication	24
Scientific and technical employment	7
High-tech patent grants	17

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	12	8	17	14	9
Capital	13	14	12	9	5
Technological framework	13	17	16	13	14

Regulatory framework	Rank
Starting a business	15
▷ Enforcing contracts	44
Immigration laws	5
Technological regulation	6
Scientific research legislation	5
Intellectual property rights	4

Capital	Rank
IT & media stock market capitalization	7
▷ Funding for technological development	3
Banking and financial services	19
Investment risk	8
Venture capital	4
Investment in Telecommunications	25

Technological framework	Rank
▷ Communications technology	3
Mobile Broadband subscribers	31
▷ Wireless broadband	35
Internet users	4
Internet bandwidth speed	10
High-tech exports (%)	14

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	5	2	3	3	5
Business agility	6	6	3	2	7
IT integration	6	8	5	2	3

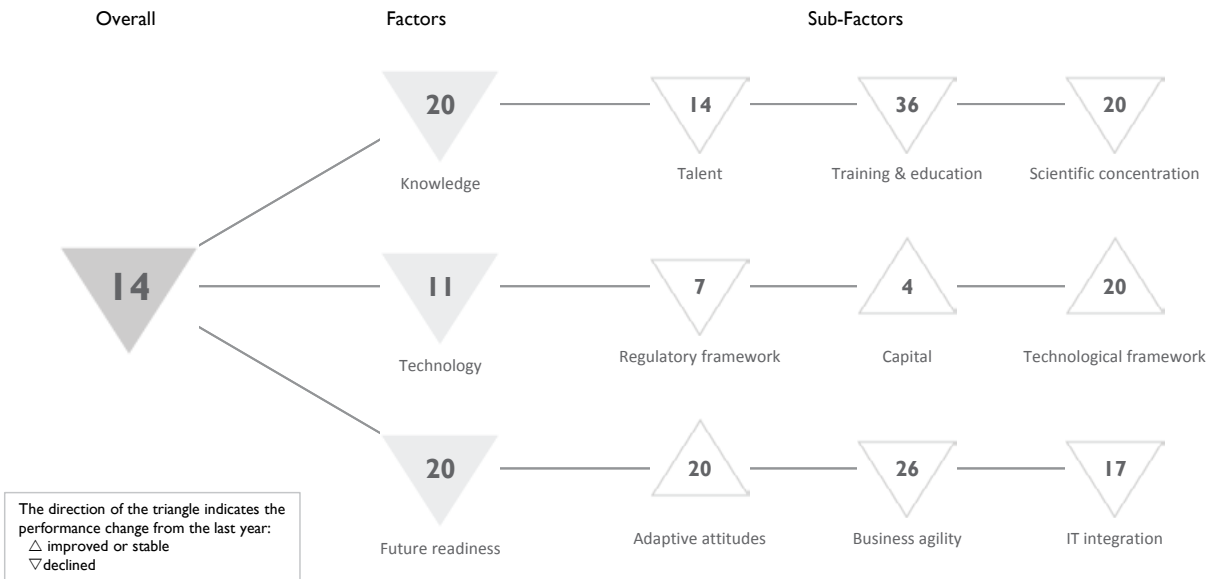
Adaptive attitudes	Rank
E-Participation	5
Internet retailing	12
Tablet possession	12
Smartphone possession	12
Attitudes toward globalization	9

Business agility	Rank
Opportunities and threats	28
▷ Innovative firms	3
Agility of companies	16
Use of big data and analytics	20
▷ Knowledge transfer	3

IT integration	Rank
E-Government	7
▷ Public-private partnerships	2
Cyber security	15
Software piracy	14

NEW ZEALAND

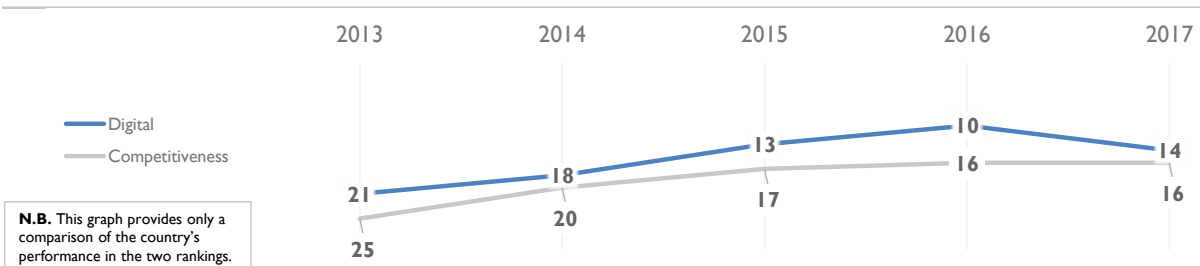
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

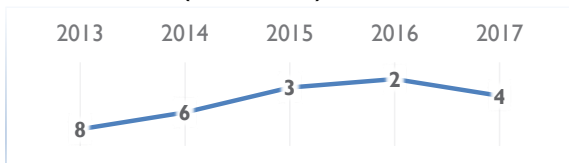
	2013	2014	2015	2016	2017
OVERALL	21	18	13	10	14
Knowledge	17	18	15	14	20
Technology	17	11	8	6	11
Future readiness	26	24	16	15	20

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS < 20 MILLION (34 countries)



NEW ZEALAND

- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	15	14	9	9	14
Training & education	20	25	30	32	36
Scientific concentration	16	18	18	17	20

Talent Rank

Educational assessment PISA - Math	20
International experience	25
Foreign highly-skilled personnel	14
▷ Management of cities	46
▷ Digital/Technological skills	53
▶ Net flow of international students	2

Training & education Rank

Employee training	39
Total public expenditure on education	22
Higher education achievement	32
Pupil-teacher ratio (tertiary education)	35
▷ Graduates in Sciences	41
Women with degrees	22

Scientific concentration Rank

Total expenditure on R&D (%)	33
Total R&D personnel per capita	25
Female researchers	-
R&D productivity by publication	37
▶ Scientific and technical employment	2
▷ High-tech patent grants	42

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	15	4	2	1	7
Capital	9	9	3	4	4
Technological framework	28	20	23	20	20

Regulatory framework Rank

▶ Starting a business	1
Enforcing contracts	13
Immigration laws	7
Technological regulation	23
Scientific research legislation	24
Intellectual property rights	18

Capital Rank

IT & media stock market capitalization	15
Funding for technological development	30
Banking and financial services	7
Investment risk	12
Venture capital	28
▶ Investment in Telecommunications	2

Technological framework Rank

Communications technology	40
Mobile Broadband subscribers	20
Wireless broadband	10
Internet users	16
Internet bandwidth speed	31
High-tech exports (%)	37

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	23	22	22	24	20
Business agility	32	29	16	14	26
IT integration	18	16	8	6	17

Adaptive attitudes Rank

E-Participation	5
Internet retailing	19
Tablet possession	23
Smartphone possession	39
Attitudes toward globalization	19

Business agility Rank

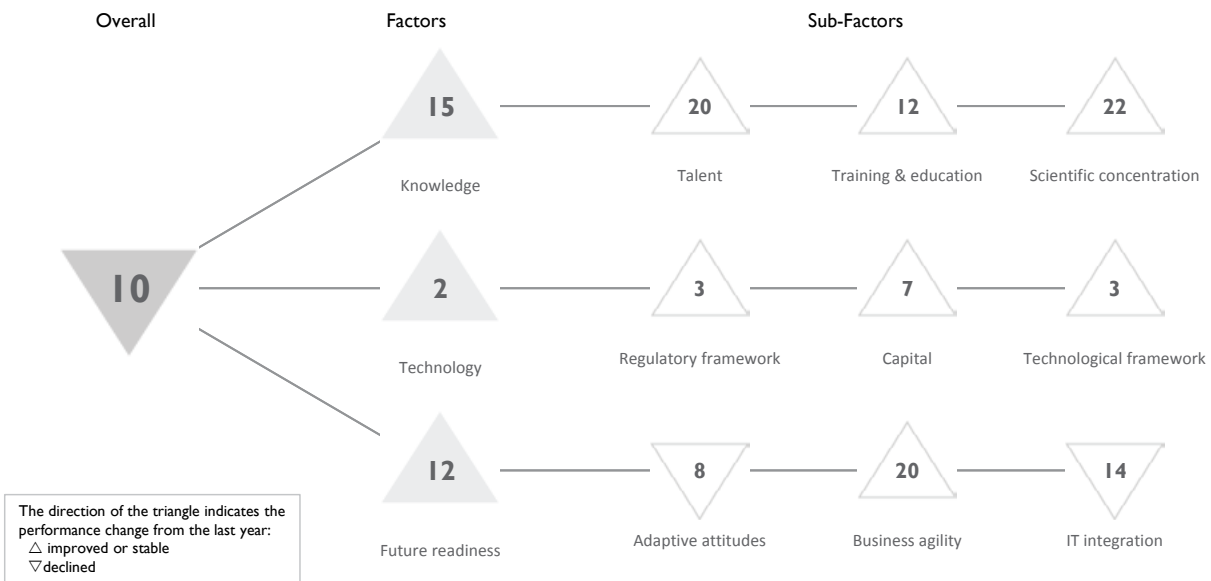
Opportunities and threats	35
Innovative firms	14
Agility of companies	27
Use of big data and analytics	34
Knowledge transfer	24

IT integration Rank

E-Government	8
▷ Public-private partnerships	41
Cyber security	37
▶ Software piracy	2

NORWAY

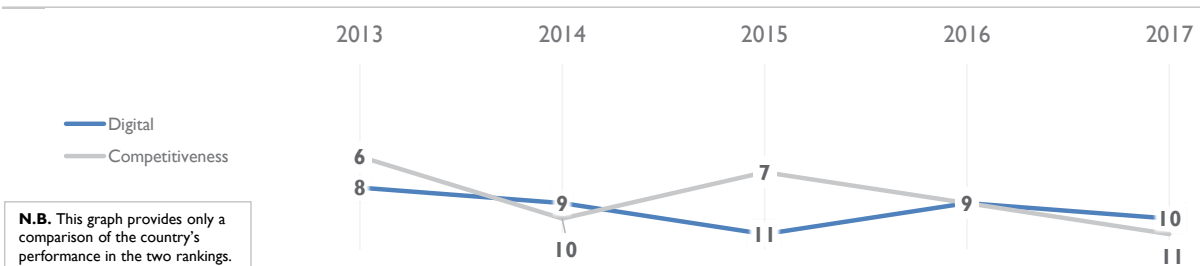
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

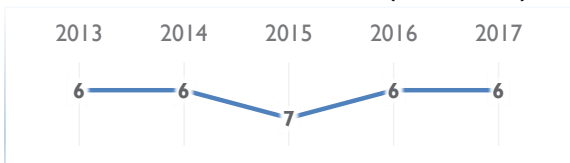
	2013	2014	2015	2016	2017
OVERALL	8	9	11	9	10
Knowledge	12	17	17	17	15
Technology	6	7	3	3	2
Future readiness	7	10	14	13	12

COMPETITIVENESS & DIGITAL RANKINGS

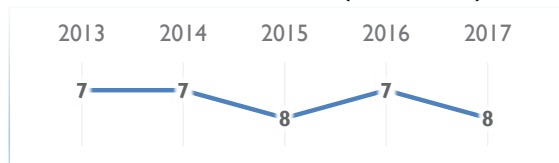


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	19	19	16	20	20
Training & education	5	8	11	15	12
Scientific concentration	23	25	24	23	22

Talent		Rank	Training & education		Rank	Scientific concentration		Rank
Educational assessment PISA - Math	18		Employee training	9		Total expenditure on R&D (%)	21	
▷ International experience	43		Total public expenditure on education	17		Total R&D personnel per capita	11	
Foreign highly-skilled personnel	19		Higher education achievement	16		Female researchers	25	
Management of cities	7		Pupil-teacher ratio (tertiary education)	9	▷	R&D productivity by publication	38	
Digital/Technological skills	9		▷ Graduates in Sciences	42		Scientific and technical employment	15	
▷ Net flow of international students	51		Women with degrees	28		High-tech patent grants	33	

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	7	3	1	5	3
Capital	12	12	11	8	7
Technological framework	6	7	7	4	3

Regulatory framework		Rank	Capital		Rank	Technological framework		Rank
Starting a business	14		IT & media stock market capitalization	9	▷	Communications technology	2	
Enforcing contracts	4		Funding for technological development	9		Mobile Broadband subscribers	4	
Immigration laws	12		▷ Banking and financial services	1		Wireless broadband	17	
Technological regulation	13		▷ Investment risk	1		Internet users	3	
Scientific research legislation	14		Venture capital	19	▷	Internet bandwidth speed	2	
Intellectual property rights	10		▷ Investment in Telecommunications	48		High-tech exports (%)	13	

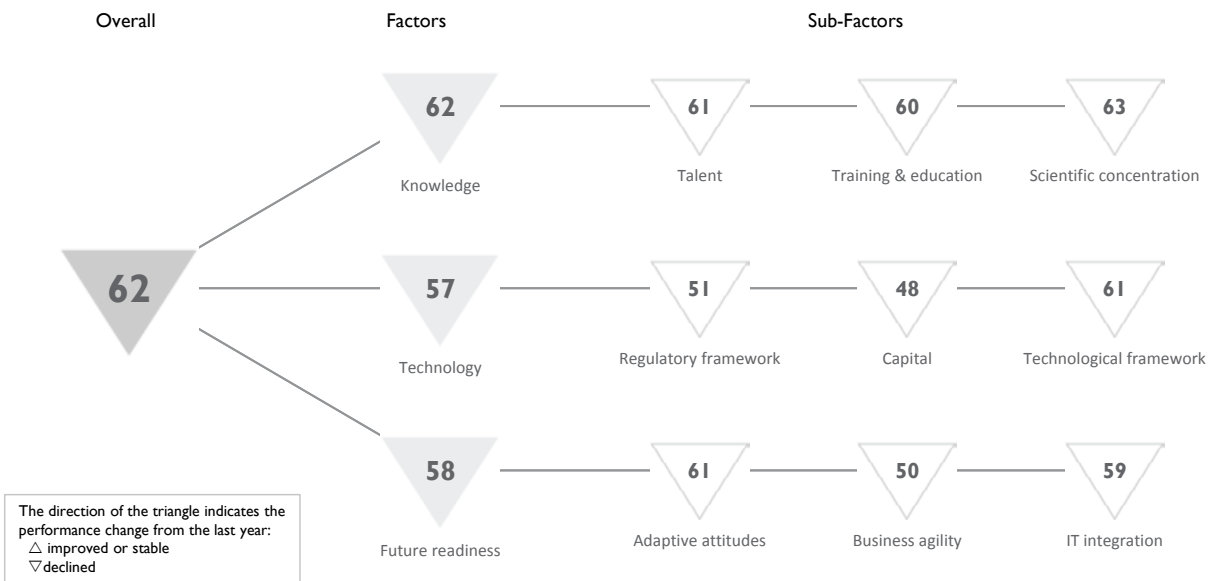
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	2	3	7	7	8
Business agility	26	26	27	28	20
IT integration	9	11	14	9	14

Adaptive attitudes		Rank	Business agility		Rank	IT integration		Rank
E-Participation	23		Opportunities and threats	32		E-Government	18	
Internet retailing	9		Innovative firms	26		Public-private partnerships	6	
Tablet possession	7		Agility of companies	12		Cyber security	27	
▷ Smartphone possession	3		Use of big data and analytics	11		Software piracy	11	
Attitudes toward globalization	17		Knowledge transfer	17				

PERU

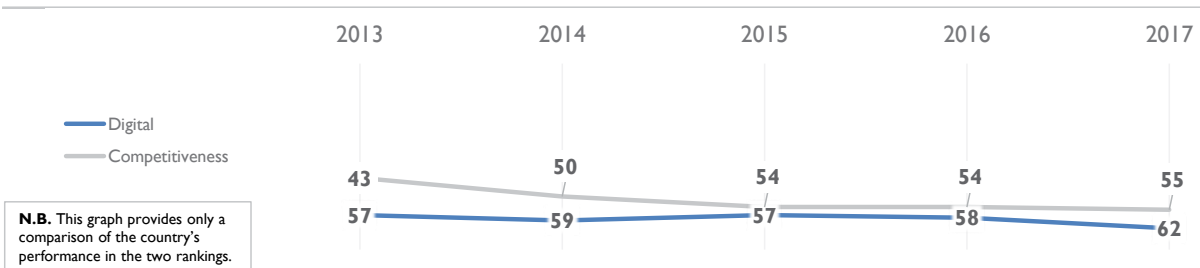
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

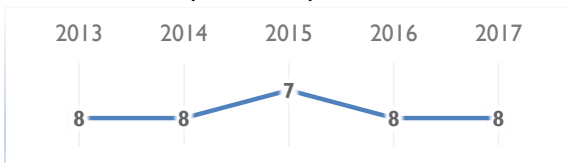
	2013	2014	2015	2016	2017
OVERALL	57	59	57	58	62
Knowledge	57	58	58	61	62
Technology	52	54	52	53	57
Future readiness	53	55	56	55	58

COMPETITIVENESS & DIGITAL RANKINGS

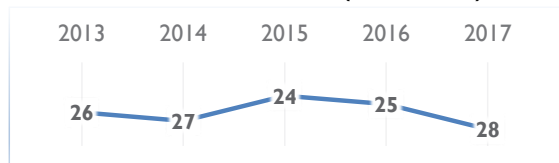


PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	57	55	58	60	61
Training & education	59	59	58	58	60
Scientific concentration				59	63

Talent	Rank
Educational assessment PISA - Math	53
International experience	36
► Foreign highly-skilled personnel	20
▷ Management of cities	62
▷ Digital/Technological skills	62
Net flow of international students	-

Training & education	Rank
▷ Employee training	61
Total public expenditure on education	48
Higher education achievement	-
Pupil-teacher ratio (tertiary education)	-
Graduates in Sciences	-
Women with degrees	-

Scientific concentration	Rank
Total expenditure on R&D (%)	-
Total R&D personnel per capita	-
Female researchers	-
R&D productivity by publication	-
Scientific and technical employment	-
High-tech patent grants	54

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	46	49	48	49	51
Capital	41	42	38	40	48
Technological framework	59	59	58	60	61

Regulatory framework	Rank
Starting a business	49
Enforcing contracts	42
► Immigration laws	18
Technological regulation	57
Scientific research legislation	57
Intellectual property rights	60

Capital	Rank
IT & media stock market capitalization	42
Funding for technological development	59
Banking and financial services	49
Investment risk	40
Venture capital	45
► Investment in Telecommunications	8

Technological framework	Rank
Communications technology	59
▷ Mobile Broadband subscribers	61
▷ Wireless broadband	60
Internet users	55
Internet bandwidth speed	58
High-tech exports (%)	56

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	46	50	50	52	61
Business agility	51	44	53	49	50
IT integration	57	59	55	56	59

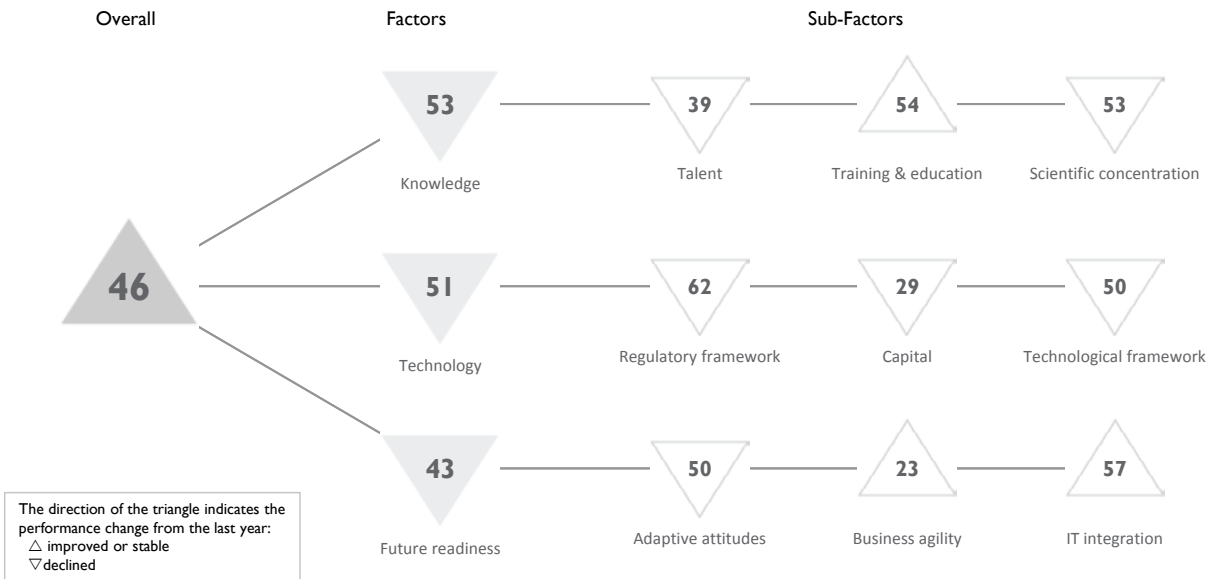
Adaptive attitudes	Rank
E-Participation	54
Internet retailing	55
Tablet possession	42
Smartphone possession	58
Attitudes toward globalization	36

Business agility	Rank
Opportunities and threats	47
Innovative firms	-
Agility of companies	42
Use of big data and analytics	55
Knowledge transfer	59

IT integration	Rank
E-Government	56
Public-private partnerships	55
Cyber security	60
Software piracy	52

PHILIPPINES

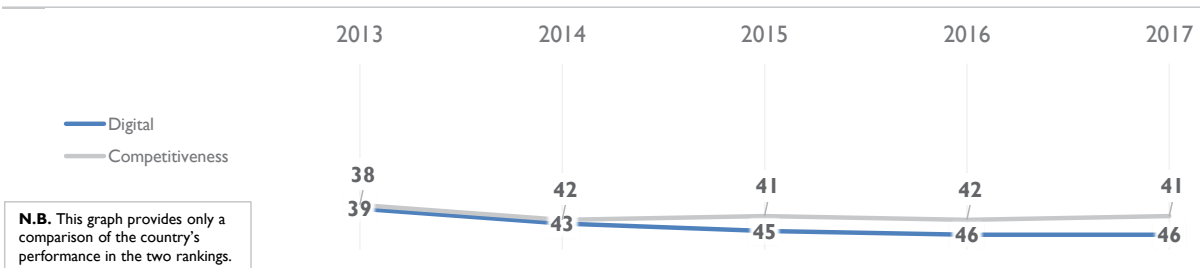
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

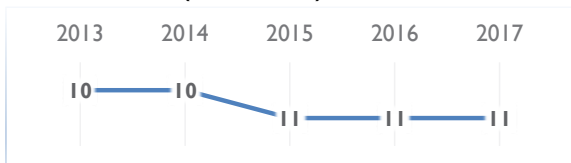
	2013	2014	2015	2016	2017
OVERALL	39	43	45	46	46
Knowledge	39	41	49	50	53
Technology	38	48	50	50	51
Future readiness	39	41	40	40	43

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



PHILIPPINES

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	25	32	32	32	39
Training & education	53	55	57	55	54
Scientific concentration	28	29	46	49	53

Talent	Rank
Educational assessment PISA - Math	-
International experience	23
Foreign highly-skilled personnel	30
Management of cities	50
Digital/Technological skills	40
Net flow of international students	-

Training & education	Rank
Employee training	29
▷ Total public expenditure on education	60
Higher education achievement	52
Pupil-teacher ratio (tertiary education)	-
Graduates in Sciences	-
Women with degrees	32

Scientific concentration	Rank
▷ Total expenditure on R&D (%)	59
Total R&D personnel per capita	55
► Female researchers	8
R&D productivity by publication	36
Scientific and technical employment	48
High-tech patent grants	23

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	55	56	58	59	62
Capital	27	39	33	28	29
Technological framework	37	41	47	48	50

Regulatory framework	Rank
▷ Starting a business	61
Enforcing contracts	58
Immigration laws	29
Technological regulation	54
Scientific research legislation	54
Intellectual property rights	53

Capital	Rank
IT & media stock market capitalization	33
Funding for technological development	50
► Banking and financial services	15
Investment risk	48
Venture capital	36
► Investment in Telecommunications	11

Technological framework	Rank
▷ Communications technology	61
Mobile Broadband subscribers	55
Wireless broadband	51
Internet users	58
▷ Internet bandwidth speed	62
► High-tech exports (%)	1

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	52	51	48	46	50
Business agility	24	21	23	23	23
IT integration	53	55	56	57	57

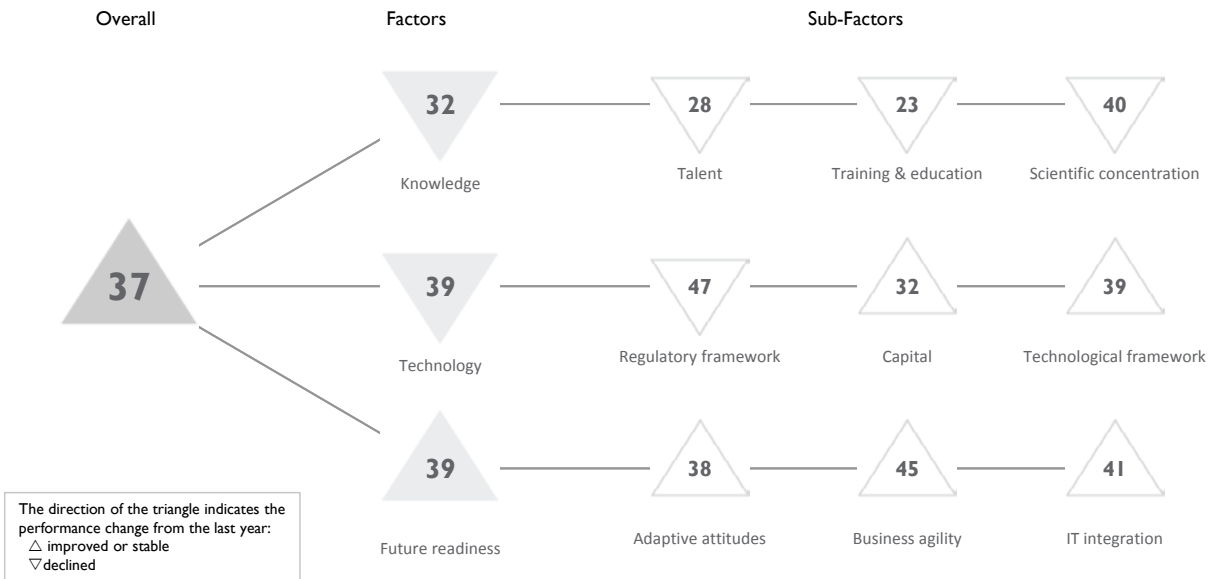
Adaptive attitudes	Rank
E-Participation	48
Internet retailing	57
Tablet possession	58
Smartphone possession	46
Attitudes toward globalization	15

Business agility	Rank
Opportunities and threats	21
► Innovative firms	9
Agility of companies	23
Use of big data and analytics	35
Knowledge transfer	50

IT integration	Rank
E-Government	52
Public-private partnerships	35
Cyber security	56
Software piracy	55

POLAND

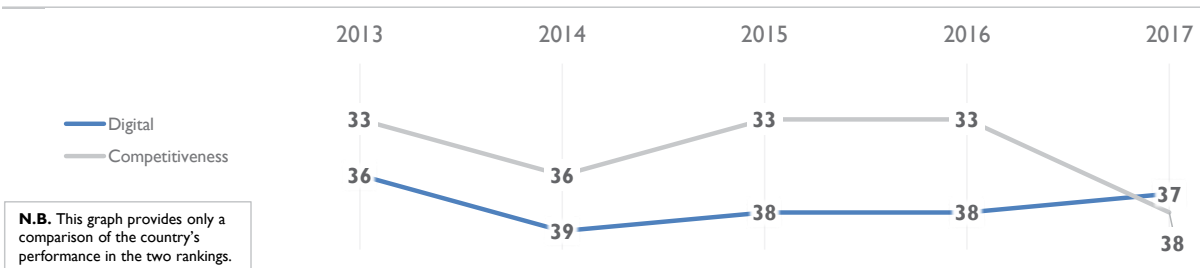
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

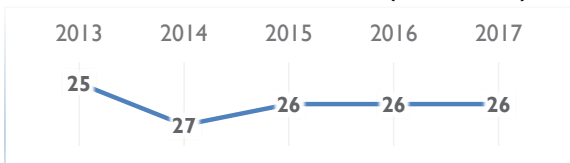
	2013	2014	2015	2016	2017
OVERALL	36	39	38	38	37
Knowledge	30	36	31	27	32
Technology	34	37	36	36	39
Future readiness	52	50	49	51	39

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	20	31	22	17	28
Training & education	40	33	34	22	23
Scientific concentration	42	43	41	39	40

Talent		Rank	Training & education		Rank	Scientific concentration		Rank
▶	Educational assessment PISA - Math	16		Employee training	28		Total expenditure on R&D (%)	37
	International experience	28		Total public expenditure on education	24		Total R&D personnel per capita	35
	Foreign highly-skilled personnel	41	▶	Higher education achievement	23	▶	Female researchers	26
	Management of cities	32		Pupil-teacher ratio (tertiary education)	37		R&D productivity by publication	13
	Digital/Technological skills	34		Graduates in Sciences	44		Scientific and technical employment	36
	Net flow of international students	30	▶	Women with degrees	2		High-tech patent grants	45

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	36	43	38	45	47
Capital	24	35	28	32	32
Technological framework	39	34	34	39	39

Regulatory framework		Rank	Capital		Rank	Technological framework		Rank
▷	Starting a business	51		IT & media stock market capitalization	35		Communications technology	37
	Enforcing contracts	40		Funding for technological development	38		Mobile Broadband subscribers	40
▷	Immigration laws	51		Banking and financial services	35		Wireless broadband	41
	Technological regulation	50		Investment risk	27		Internet users	37
	Scientific research legislation	48		Venture capital	25		Internet bandwidth speed	33
	Intellectual property rights	43		Investment in Telecommunications	33		High-tech exports (%)	41

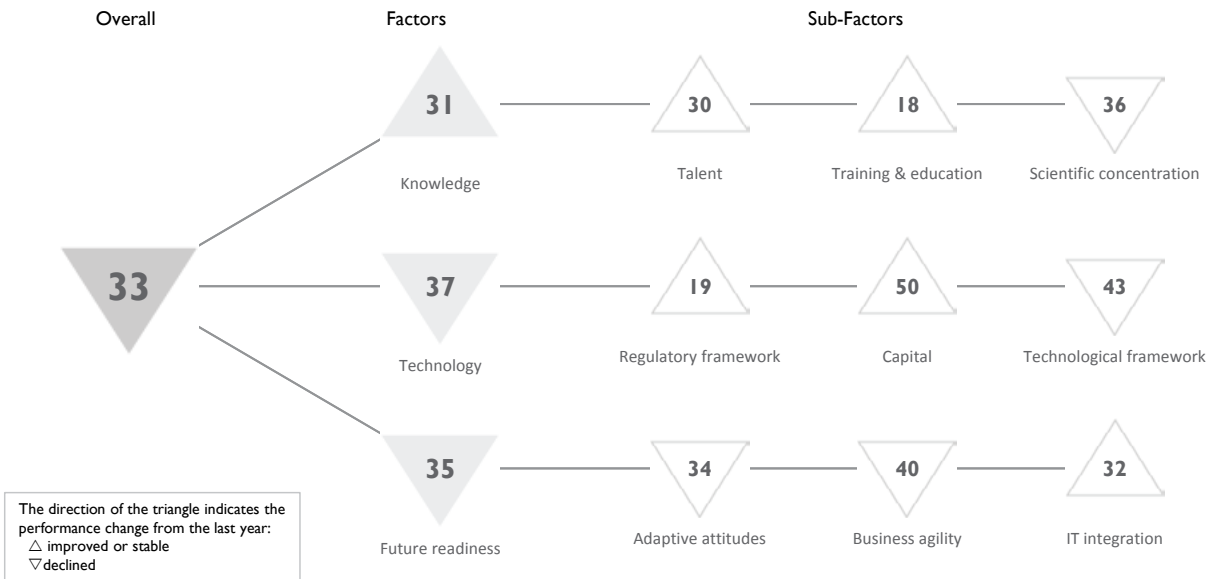
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	54	54	52	51	38
Business agility	57	52	55	55	45
IT integration	43	40	41	41	41

Adaptive attitudes		Rank	Business agility		Rank	IT integration		Rank
▶	E-Participation	14		Opportunities and threats	33		E-Government	31
	Internet retailing	26		Innovative firms	34	▷	Public-private partnerships	54
	Tablet possession	35		Agility of companies	35	▷	Cyber security	54
	Smartphone possession	49		Use of big data and analytics	40		Software piracy	37
▷	Attitudes toward globalization	58		Knowledge transfer	42			

PORTUGAL

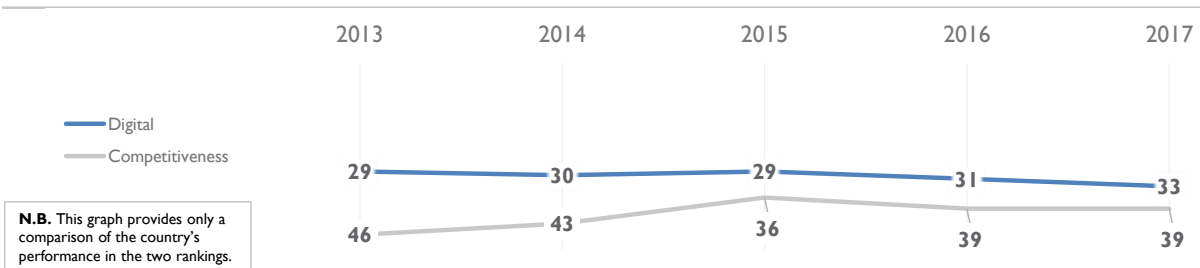
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

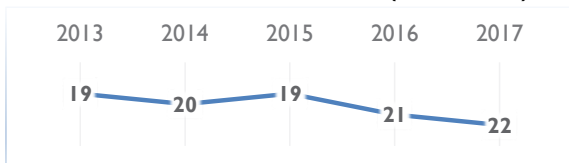
	2013	2014	2015	2016	2017
OVERALL	29	30	29	31	33
Knowledge	29	31	29	31	31
Technology	35	33	30	35	37
Future readiness	30	30	31	31	35

COMPETITIVENESS & DIGITAL RANKINGS

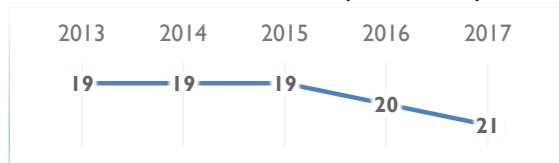


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	33	34	29	31	30
Training & education	22	21	20	21	18
Scientific concentration	38	37	37	35	36

Talent Rank

Educational assessment PISA - Math	27
▷ International experience	56
Foreign highly-skilled personnel	35
Management of cities	24
Digital/Technological skills	14
Net flow of international students	29

Training & education Rank

Employee training	54
► Total public expenditure on education	10
Higher education achievement	36
► Pupil-teacher ratio (tertiary education)	10
Graduates in Sciences	15
Women with degrees	23

Scientific concentration Rank

Total expenditure on R&D (%)	30
Total R&D personnel per capita	26
► Female researchers	14
R&D productivity by publication	31
Scientific and technical employment	31
High-tech patent grants	44

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	19	22	20	20	19
Capital	48	47	44	50	50
Technological framework	36	38	40	38	43

Regulatory framework Rank

Starting a business	22
Enforcing contracts	18
► Immigration laws	3
Technological regulation	30
Scientific research legislation	29
Intellectual property rights	32

Capital Rank

IT & media stock market capitalization	29
Funding for technological development	37
▷ Banking and financial services	55
Investment risk	45
Venture capital	52
Investment in Telecommunications	37

Technological framework Rank

► Communications technology	10
▷ Mobile Broadband subscribers	56
Wireless broadband	47
Internet users	15
Internet bandwidth speed	32
▷ High-tech exports (%)	57

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	28	30	33	31	34
Business agility	29	30	25	27	40
IT integration	30	29	30	32	32

Adaptive attitudes Rank

E-Participation	40
Internet retailing	33
Tablet possession	32
Smartphone possession	20
Attitudes toward globalization	26

Business agility Rank

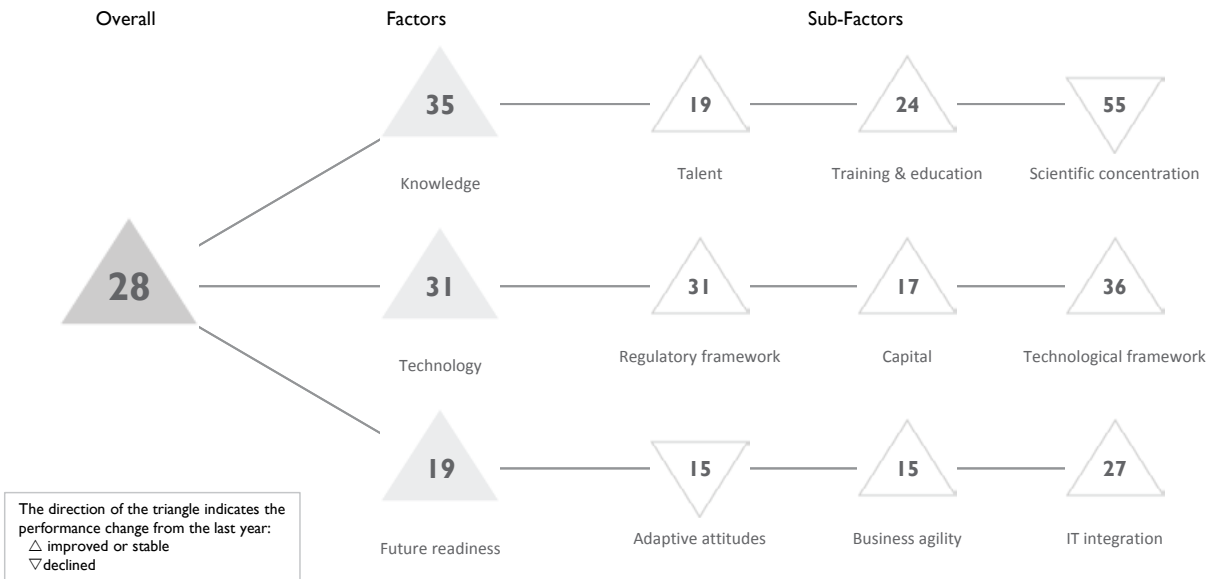
Opportunities and threats	50
Innovative firms	15
Agility of companies	43
▷ Use of big data and analytics	57
Knowledge transfer	30

IT integration Rank

E-Government	33
Public-private partnerships	44
Cyber security	41
Software piracy	28

QATAR

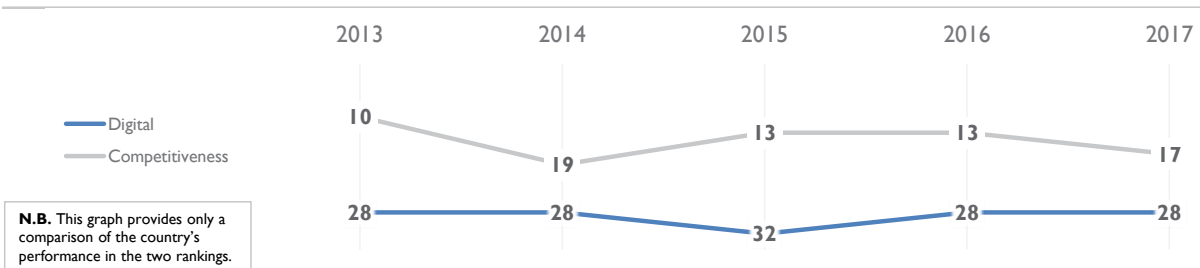
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	28	28	32	28	28
Knowledge	31	34	39	37	35
Technology	29	30	38	31	31
Future readiness	17	18	28	21	19

COMPETITIVENESS & DIGITAL RANKINGS

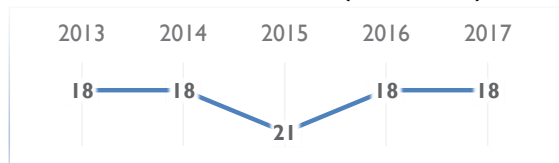


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	27	29	34	25	19
Training & education	27	28	24	27	24
Scientific concentration	48	48	53	54	55

Talent	Rank
Educational assessment PISA - Math	51
International experience	7
Foreign highly-skilled personnel	13
Management of cities	17
Digital/Technological skills	17
Net flow of international students	15

Training & education	Rank
Employee training	24
▷ Total public expenditure on education	54
▷ Higher education achievement	55
Pupil-teacher ratio (tertiary education)	19
► Graduates in Sciences	4
Women with degrees	10

Scientific concentration	Rank
Total expenditure on R&D (%)	51
Total R&D personnel per capita	49
Female researchers	46
▷ R&D productivity by publication	57
Scientific and technical employment	42
► High-tech patent grants	4

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	30	35	46	33	31
Capital	18	22	25	18	17
Technological framework	32	29	36	42	36

Regulatory framework	Rank
Starting a business	46
▷ Enforcing contracts	55
Immigration laws	26
Technological regulation	9
Scientific research legislation	17
Intellectual property rights	23

Capital	Rank
IT & media stock market capitalization	-
Funding for technological development	14
Banking and financial services	8
Investment risk	17
Venture capital	20
Investment in Telecommunications	44

Technological framework	Rank
Communications technology	17
Mobile Broadband subscribers	39
Wireless broadband	29
Internet users	39
Internet bandwidth speed	35
▷ High-tech exports (%)	59

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	4	6	10	12	15
Business agility	21	28	32	26	15
IT integration	29	30	37	28	27

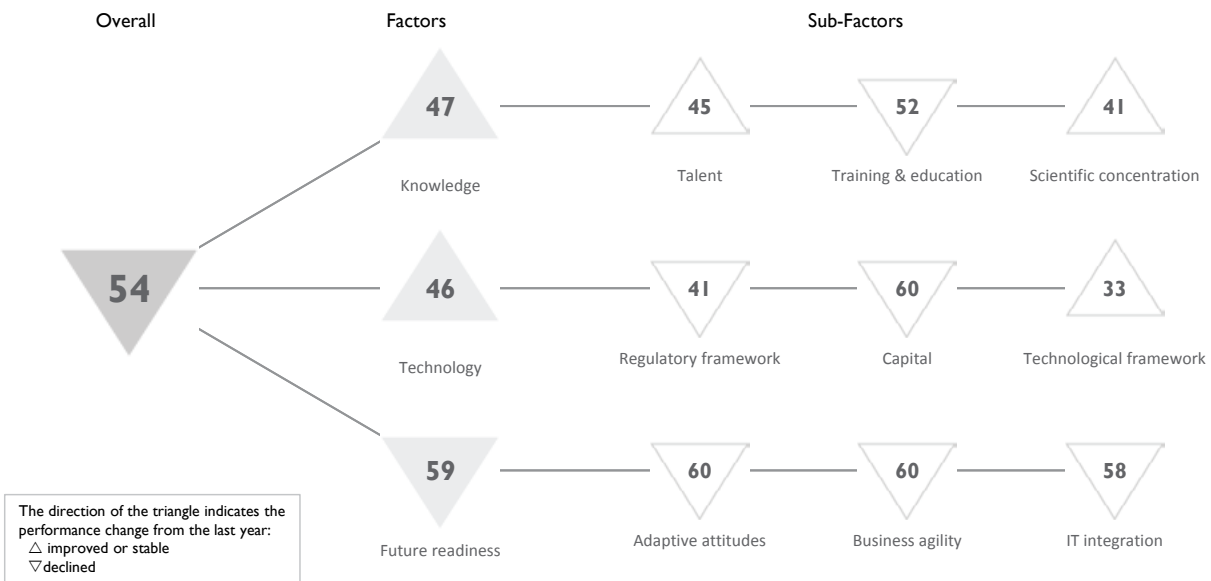
Adaptive attitudes	Rank
E-Participation	42
Internet retailing	-
► Tablet possession	2
Smartphone possession	10
Attitudes toward globalization	22

Business agility	Rank
Opportunities and threats	27
Innovative firms	-
Agility of companies	25
► Use of big data and analytics	2
Knowledge transfer	21

IT integration	Rank
E-Government	40
Public-private partnerships	10
► Cyber security	3
Software piracy	37

ROMANIA

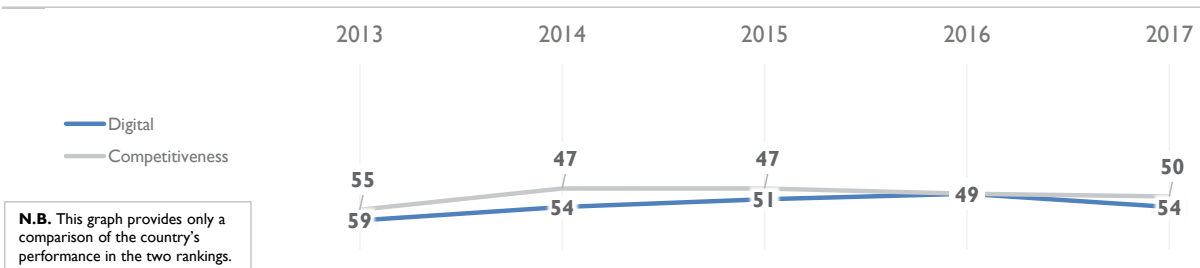
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

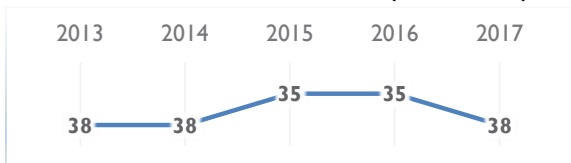
	2013	2014	2015	2016	2017
OVERALL	59	54	51	49	54
Knowledge	56	56	50	48	47
Technology	53	51	45	46	46
Future readiness	58	56	57	57	59

COMPETITIVENESS & DIGITAL RANKINGS

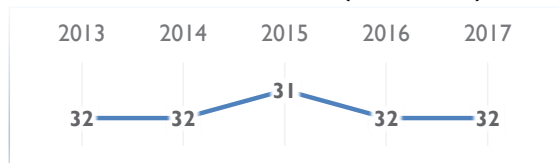


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	56	54	49	49	45
Training & education	52	50	48	45	52
Scientific concentration	46	44	43	42	41

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	42	Employee training	44	Total expenditure on R&D (%)	52
International experience	38	▷ Total public expenditure on education	57	Total R&D personnel per capita	43
Foreign highly-skilled personnel	47	Higher education achievement	50	▶ Female researchers	12
▷ Management of cities	56	Pupil-teacher ratio (tertiary education)	44	▶ R&D productivity by publication	17
Digital/Technological skills	26	▶ Graduates in Sciences	11	Scientific and technical employment	43
Net flow of international students	44	Women with degrees	27	High-tech patent grants	29

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	44	41	29	31	41
Capital	58	58	58	58	60
Technological framework	45	44	37	36	33

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	34	IT & media stock market capitalization	50	Communications technology	32
▶ Enforcing contracts	25	Funding for technological development	52	Mobile Broadband subscribers	25
Immigration laws	40	Banking and financial services	52	Wireless broadband	36
Technological regulation	52	Investment risk	51	Internet users	42
Scientific research legislation	55	Venture capital	51	▶ Internet bandwidth speed	16
Intellectual property rights	50	Investment in Telecommunications	45	High-tech exports (%)	46

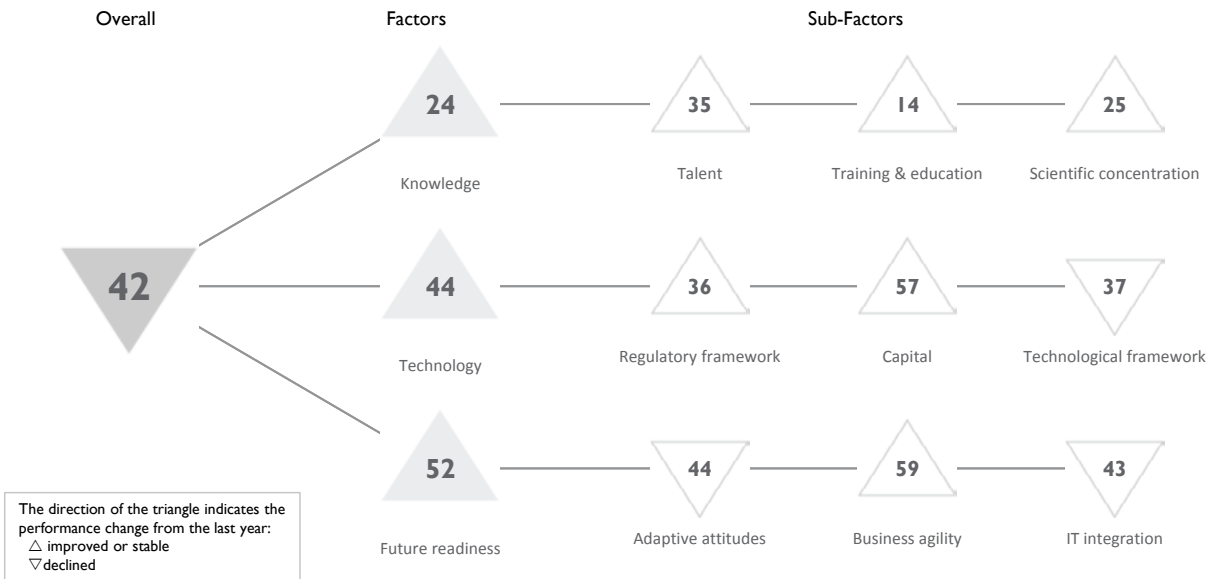
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	59	59	58	59	60
Business agility	58	57	59	56	60
IT integration	49	42	47	42	58

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	44	▷ Opportunities and threats	57	E-Government	53
Internet retailing	41	Innovative firms	44	▷ Public-private partnerships	60
Tablet possession	36	Agility of companies	52	Cyber security	32
▷ Smartphone possession	57	Use of big data and analytics	38	Software piracy	50
Attitudes toward globalization	54	Knowledge transfer	54		

RUSSIA

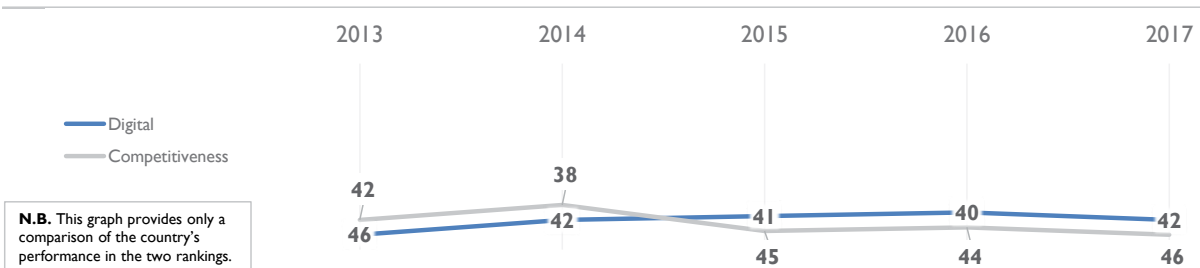
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

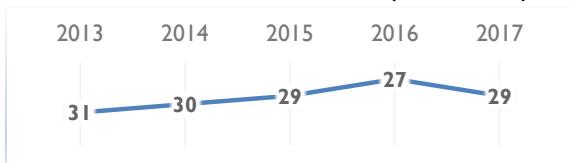
	2013	2014	2015	2016	2017
OVERALL	46	42	41	40	42
Knowledge	32	30	27	28	24
Technology	49	41	44	47	44
Future readiness	56	52	55	53	52

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	43	44	36	37	35
Training & education	33	29	19	17	14
Scientific concentration	21	24	23	26	25

Talent	Rank
Educational assessment PISA - Math	21
International experience	49
Foreign highly-skilled personnel	40
Management of cities	48
Digital/Technological skills	15
Net flow of international students	21

Training & education	Rank
Employee training	45
Total public expenditure on education	45
▶ Higher education achievement	7
▶ Pupil-teacher ratio (tertiary education)	15
Graduates in Sciences	18
▶ Women with degrees	15

Scientific concentration	Rank
Total expenditure on R&D (%)	35
Total R&D personnel per capita	24
Female researchers	19
▶ R&D productivity by publication	12
Scientific and technical employment	-
High-tech patent grants	38

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	41	36	36	36	36
Capital	54	52	56	57	57
Technological framework	46	43	41	35	37

Regulatory framework	Rank
Starting a business	18
▶ Enforcing contracts	12
Immigration laws	44
Technological regulation	56
Scientific research legislation	43
▷ Intellectual property rights	59

Capital	Rank
IT & media stock market capitalization	39
Funding for technological development	44
Banking and financial services	56
▷ Investment risk	57
▷ Venture capital	58
Investment in Telecommunications	36

Technological framework	Rank
Communications technology	35
Mobile Broadband subscribers	27
Wireless broadband	34
Internet users	44
Internet bandwidth speed	36
High-tech exports (%)	26

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	35	34	42	40	44
Business agility	60	60	61	61	59
IT integration	44	41	42	39	43

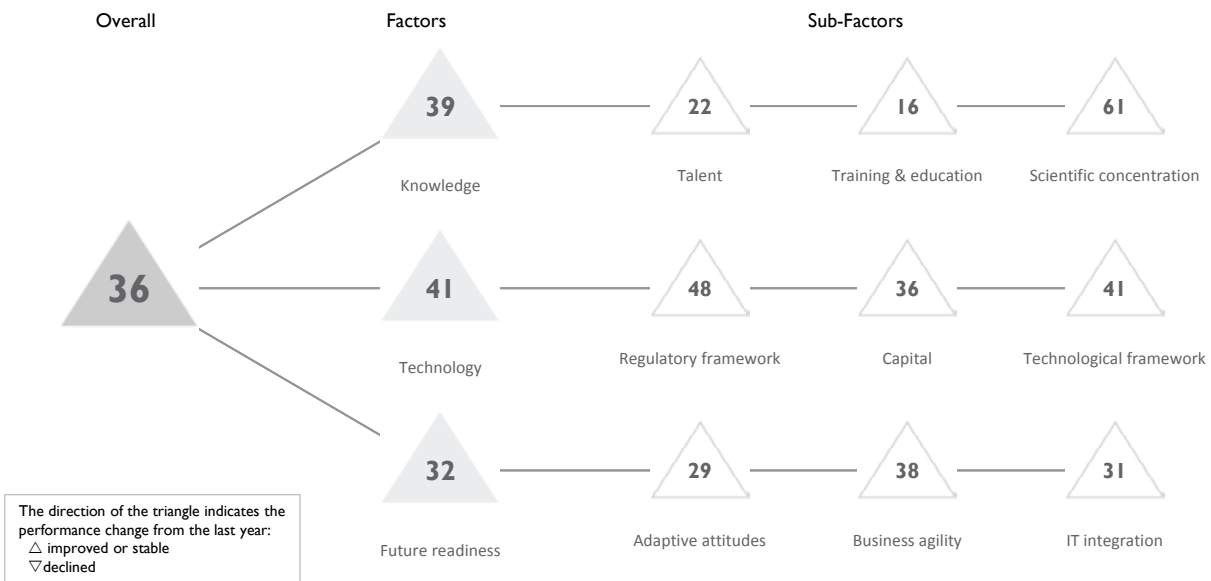
Adaptive attitudes	Rank
E-Participation	28
Internet retailing	38
Tablet possession	39
Smartphone possession	43
▷ Attitudes toward globalization	60

Business agility	Rank
Opportunities and threats	49
Innovative firms	45
▷ Agility of companies	59
Use of big data and analytics	46
Knowledge transfer	55

IT integration	Rank
E-Government	30
Public-private partnerships	46
Cyber security	34
Software piracy	54

SAUDI ARABIA

OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

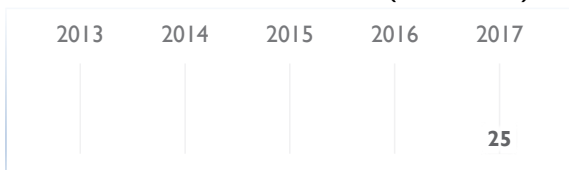
	2013	2014	2015	2016	2017
OVERALL					36
Knowledge					39
Technology					41
Future readiness					32

COMPETITIVENESS & DIGITAL RANKINGS

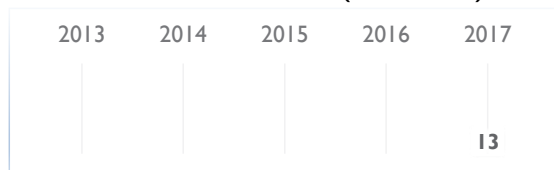


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



SAUDI ARABIA

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent					22
Training & education					16
Scientific concentration					61

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	-	Employee training	47	Total expenditure on R&D (%)	-
International experience	14	► Total public expenditure on education	1	Total R&D personnel per capita	-
Foreign highly-skilled personnel	15	Higher education achievement	49	Female researchers	49
Management of cities	30	Pupil-teacher ratio (tertiary education)	43	► R&D productivity by publication	7
Digital/Technological skills	41	► Graduates in Sciences	1	Scientific and technical employment	-
Net flow of international students	41	▷ Women with degrees	53	High-tech patent grants	43

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework					48
Capital					36
Technological framework					41

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
▷ Starting a business	57	IT & media stock market capitalization	-	Communications technology	38
▷ Enforcing contracts	50	Funding for technological development	31	Mobile Broadband subscribers	33
Immigration laws	41	Banking and financial services	31	► Wireless broadband	3
Technological regulation	31	Investment risk	31	Internet users	45
Scientific research legislation	32	Venture capital	39	▷ Internet bandwidth speed	55
Intellectual property rights	39	Investment in Telecommunications	38	▷ High-tech exports (%)	63

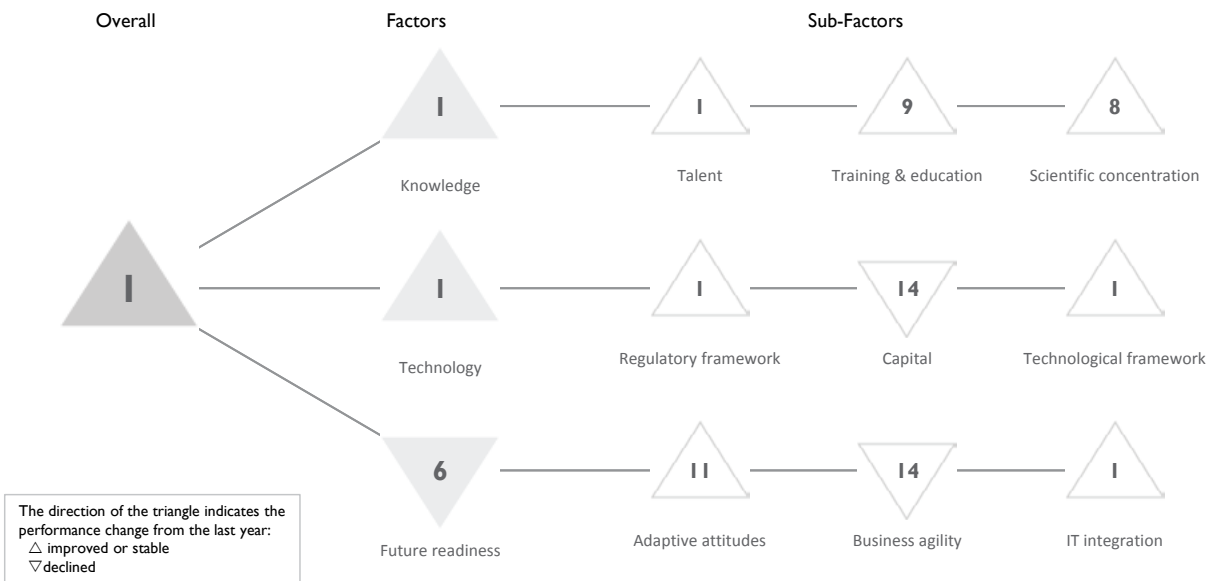
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes					29
Business agility					38
IT integration					31

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	34	Opportunities and threats	48	E-Government	37
Internet retailing	44	Innovative firms	-	Public-private partnerships	27
Tablet possession	14	Agility of companies	48	► Cyber security	13
Smartphone possession	28	Use of big data and analytics	18	Software piracy	39
Attitudes toward globalization	48	Knowledge transfer	28		

SINGAPORE

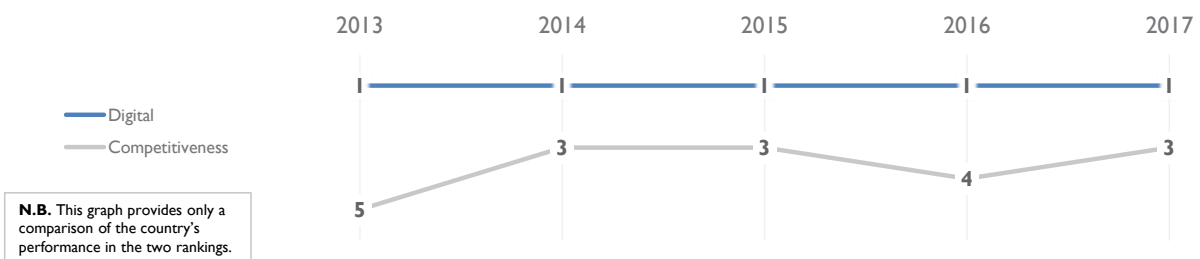
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

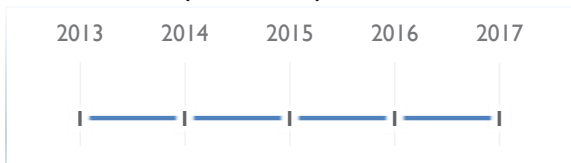
	2013	2014	2015	2016	2017
OVERALL	1	1	1	1	1
Knowledge	2	1	1	1	1
Technology	1	1	1	1	1
Future readiness	6	5	5	4	6

COMPETITIVENESS & DIGITAL RANKINGS

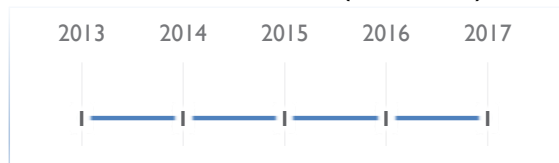


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS < 20 MILLION (34 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	1	1	1	1	1
Training & education	10	11	5	9	9
Scientific concentration	12	12	13	11	8

Talent	Rank
▶ Educational assessment PISA - Math	1
International experience	6
Foreign highly-skilled personnel	3
▶ Management of cities	1
Digital/Technological skills	12
Net flow of international students	6

Training & education	Rank
Employee training	25
▷ Total public expenditure on education	59
▶ Higher education achievement	1
Pupil-teacher ratio (tertiary education)	24
Graduates in Sciences	-
Women with degrees	-

Scientific concentration	Rank
Total expenditure on R&D (%)	13
Total R&D personnel per capita	10
▷ Female researchers	38
▷ R&D productivity by publication	42
Scientific and technical employment	-
High-tech patent grants	2

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	3	5	3	2	1
Capital	11	11	10	10	14
Technological framework	1	1	1	1	1

Regulatory framework	Rank
Starting a business	4
Enforcing contracts	2
▷ Immigration laws	42
▶ Technological regulation	1
Scientific research legislation	3
Intellectual property rights	8

Capital	Rank
IT & media stock market capitalization	21
Funding for technological development	2
Banking and financial services	3
Investment risk	3
Venture capital	5
▷ Investment in Telecommunications	59

Technological framework	Rank
Communications technology	11
Mobile Broadband subscribers	2
▶ Wireless broadband	1
Internet users	1
Internet bandwidth speed	8
High-tech exports (%)	2

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	8	9	12	11	11
Business agility	15	9	12	13	14
IT integration	7	5	1	1	1

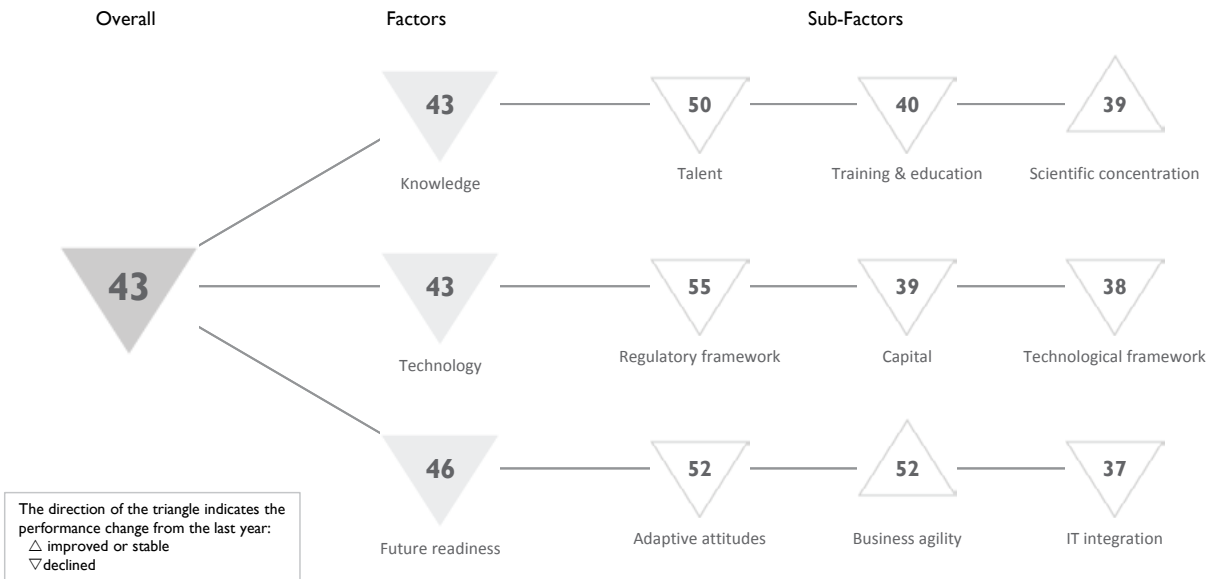
Adaptive attitudes	Rank
E-Participation	8
Internet retailing	25
Tablet possession	6
Smartphone possession	7
Attitudes toward globalization	5

Business agility	Rank
Opportunities and threats	16
Innovative firms	-
Agility of companies	14
Use of big data and analytics	13
Knowledge transfer	9

IT integration	Rank
E-Government	4
Public-private partnerships	3
Cyber security	6
Software piracy	18

SLOVAK REPUBLIC

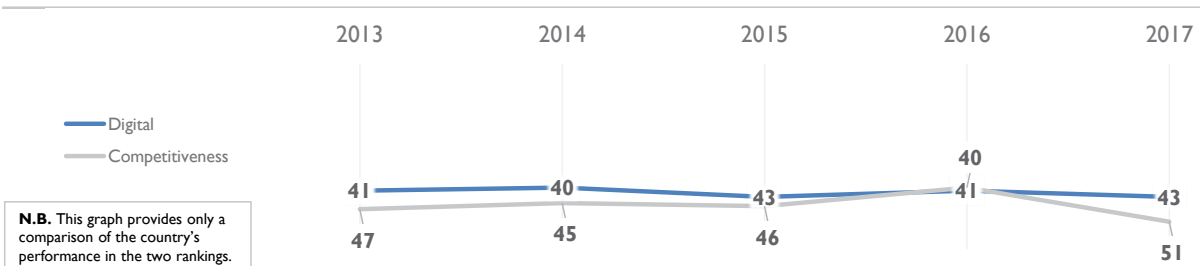
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

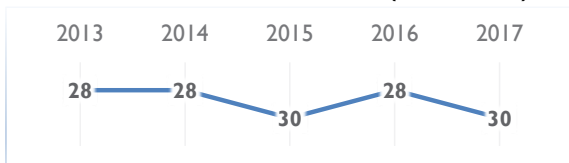
	2013	2014	2015	2016	2017
OVERALL	41	40	43	41	43
Knowledge	43	40	43	41	43
Technology	36	35	40	41	43
Future readiness	45	43	44	43	46

COMPETITIVENESS & DIGITAL RANKINGS

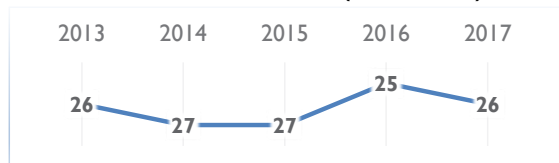


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



SLOVAK REPUBLIC

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	46	45	50	48	50
Training & education	43	38	40	35	40
Scientific concentration	43	46	45	44	39

Talent Rank

Educational assessment PISA - Math	35
International experience	43
Foreign highly-skilled personnel	50
Management of cities	37
Digital/Technological skills	49
▷ Net flow of international students	57

Training & education Rank

Employee training	48
Total public expenditure on education	38
Higher education achievement	41
Pupil-teacher ratio (tertiary education)	31
Graduates in Sciences	37
► Women with degrees	7

Scientific concentration Rank

Total expenditure on R&D (%)	34
Total R&D personnel per capita	33
► Female researchers	18
R&D productivity by publication	40
Scientific and technical employment	34
High-tech patent grants	30

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	42	44	52	52	55
Capital	37	38	41	34	39
Technological framework	33	31	33	33	38

Regulatory framework Rank

Starting a business	37
Enforcing contracts	46
▷ Immigration laws	63
▷ Technological regulation	59
Scientific research legislation	44
Intellectual property rights	42

Capital Rank

IT & media stock market capitalization	-
Funding for technological development	49
Banking and financial services	44
► Investment risk	26
Venture capital	40
► Investment in Telecommunications	28

Technological framework Rank

Communications technology	46
Mobile Broadband subscribers	48
Wireless broadband	33
Internet users	29
Internet bandwidth speed	30
High-tech exports (%)	36

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	50	47	39	39	52
Business agility	49	46	56	53	52
IT integration	38	37	38	34	37

Adaptive attitudes Rank

▷ E-Participation	54
Internet retailing	29
Tablet possession	44
Smartphone possession	42
▷ Attitudes toward globalization	55

Business agility Rank

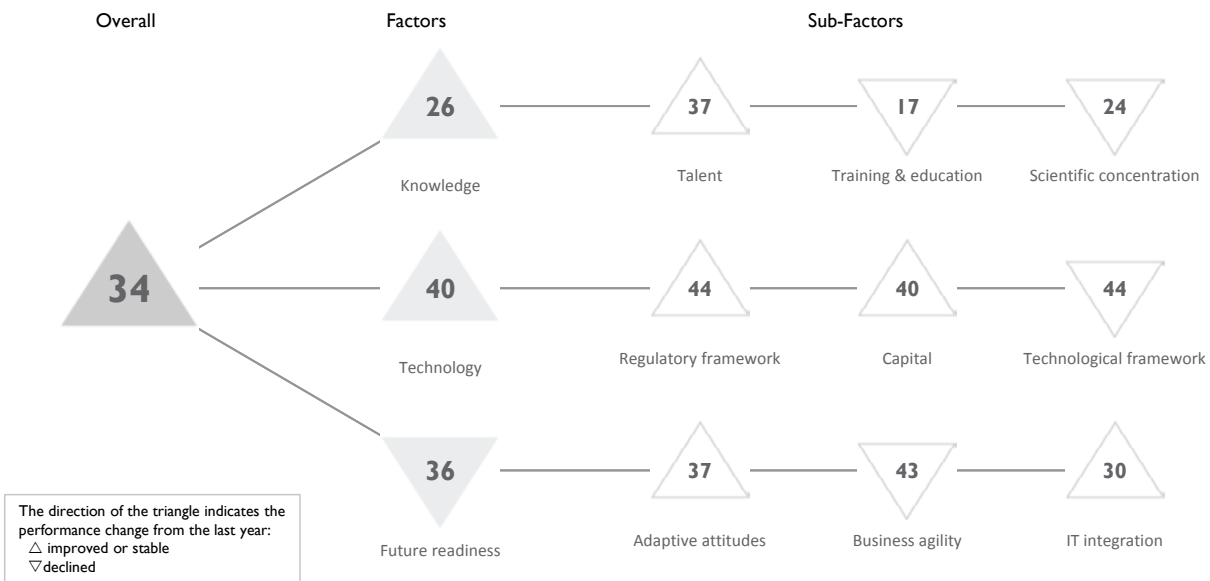
Opportunities and threats	54
Innovative firms	38
Agility of companies	51
Use of big data and analytics	30
Knowledge transfer	52

IT integration Rank

E-Government	50
Public-private partnerships	37
Cyber security	36
► Software piracy	25

SLOVENIA

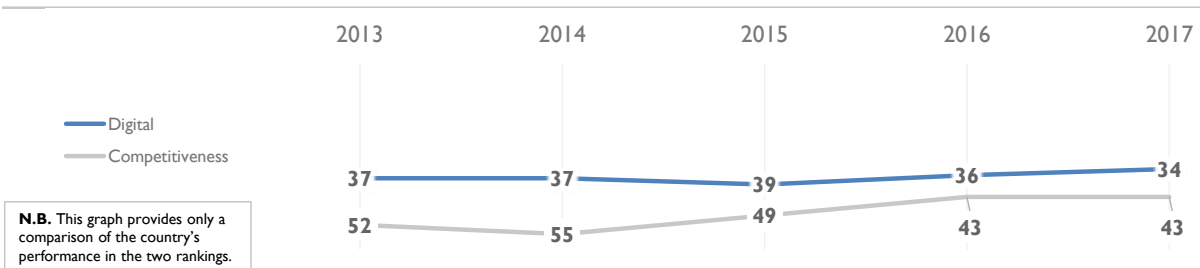
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

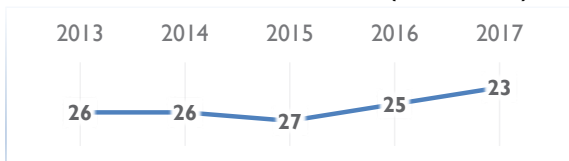
	2013	2014	2015	2016	2017
OVERALL	37	37	39	36	34
Knowledge	34	32	28	26	26
Technology	44	43	43	40	40
Future readiness	37	39	41	35	36

COMPETITIVENESS & DIGITAL RANKINGS

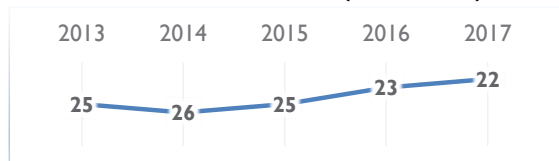


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	45	47	43	39	37
Training & education	29	30	18	16	17
Scientific concentration	26	22	20	20	24

Talent		Rank	Training & education		Rank	Scientific concentration		Rank
►	Educational assessment PISA - Math	13	Employee training	22	►	Total expenditure on R&D (%)	15	
	International experience	45	Total public expenditure on education	28		Total R&D personnel per capita	18	
▷	Foreign highly-skilled personnel	59	Higher education achievement	26		Female researchers	28	
	Management of cities	42	Pupil-teacher ratio (tertiary education)	25	▷	R&D productivity by publication	56	
	Digital/Technological skills	24	►	Graduates in Sciences	17		Scientific and technical employment	24
	Net flow of international students	33		Women with degrees	18	►	High-tech patent grants	8

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	45	46	49	44	44
Capital	49	48	46	41	40
Technological framework	38	35	42	41	44

Regulatory framework		Rank	Capital		Rank	Technological framework		Rank
	Starting a business	27	IT & media stock market capitalization	28		Communications technology	30	
▷	Enforcing contracts	54	Funding for technological development	41		Mobile Broadband subscribers	51	
	Immigration laws	46	Banking and financial services	48		Wireless broadband	49	
	Technological regulation	39	Investment risk	36		Internet users	34	
	Scientific research legislation	37	Venture capital	46		Internet bandwidth speed	27	
	Intellectual property rights	41	►	Investment in Telecommunications	17	▷	High-tech exports (%)	52

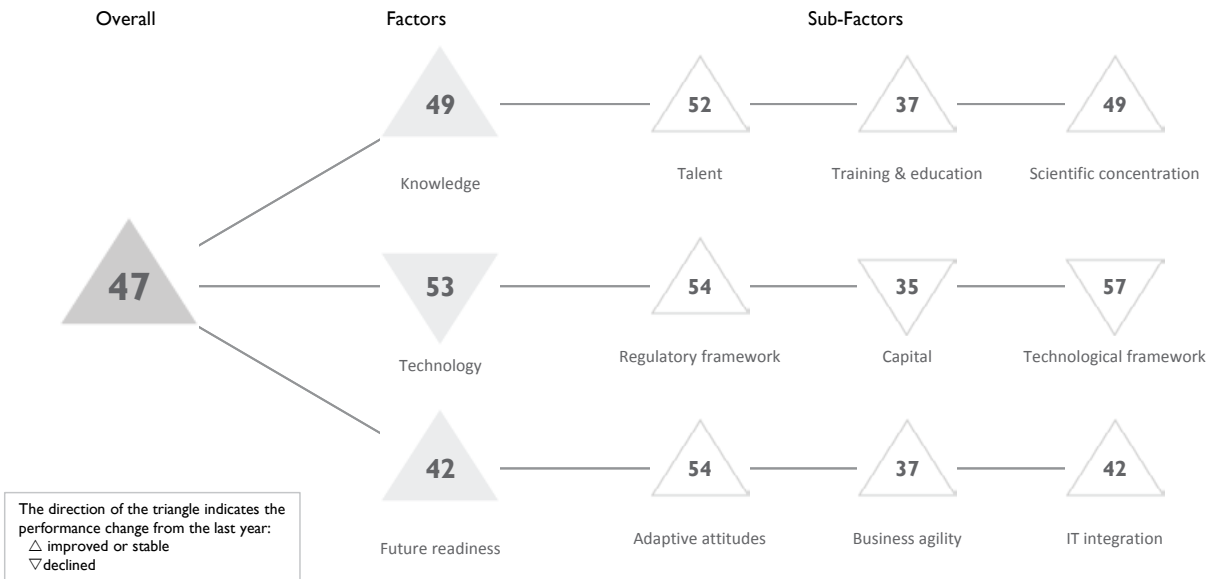
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	39	40	45	45	37
Business agility	47	51	49	37	43
IT integration	32	32	33	31	30

Adaptive attitudes		Rank	Business agility		Rank	IT integration		Rank
	E-Participation	32	Opportunities and threats	38		E-Government	21	
	Internet retailing	36	Innovative firms	-		Public-private partnerships	49	
	Tablet possession	31	Agility of companies	38		Cyber security	28	
	Smartphone possession	33	Use of big data and analytics	43		Software piracy	31	
▷	Attitudes toward globalization	53	Knowledge transfer	47				

SOUTH AFRICA

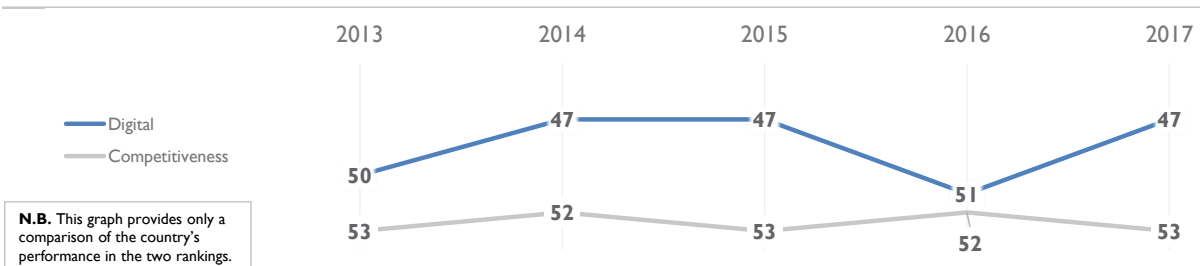
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

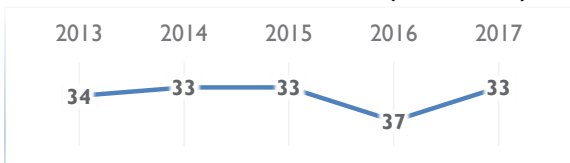
	2013	2014	2015	2016	2017
OVERALL	50	47	47	51	47
Knowledge	46	45	47	49	49
Technology	51	49	53	51	53
Future readiness	51	51	48	47	42

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



SOUTH AFRICA

► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	51	49	48	53	52
Training & education	35	34	36	38	37
Scientific concentration	51	51	51	50	49

Talent	Rank
Educational assessment PISA - Math	-
International experience	48
Foreign highly-skilled personnel	52
Management of cities	49
Digital/Technological skills	54
Net flow of international students	25

Training & education	Rank
Employee training	31
► Total public expenditure on education	4
▷ Higher education achievement	58
Pupil-teacher ratio (tertiary education)	-
Graduates in Sciences	45
► Women with degrees	16

Scientific concentration	Rank
Total expenditure on R&D (%)	45
Total R&D personnel per capita	53
► Female researchers	17
R&D productivity by publication	27
Scientific and technical employment	-
High-tech patent grants	55

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	40	45	53	54	54
Capital	39	32	45	33	35
Technological framework	60	52	55	56	57

Regulatory framework	Rank
Starting a business	56
Enforcing contracts	53
▷ Immigration laws	62
Technological regulation	41
Scientific research legislation	35
Intellectual property rights	25

Capital	Rank
► IT & media stock market capitalization	4
Funding for technological development	51
Banking and financial services	22
Investment risk	50
Venture capital	47
Investment in Telecommunications	35

Technological framework	Rank
Communications technology	57
▷ Mobile Broadband subscribers	57
Wireless broadband	43
▷ Internet users	59
Internet bandwidth speed	53
High-tech exports (%)	55

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	51	52	55	55	54
Business agility	53	50	36	38	37
IT integration	45	45	46	47	42

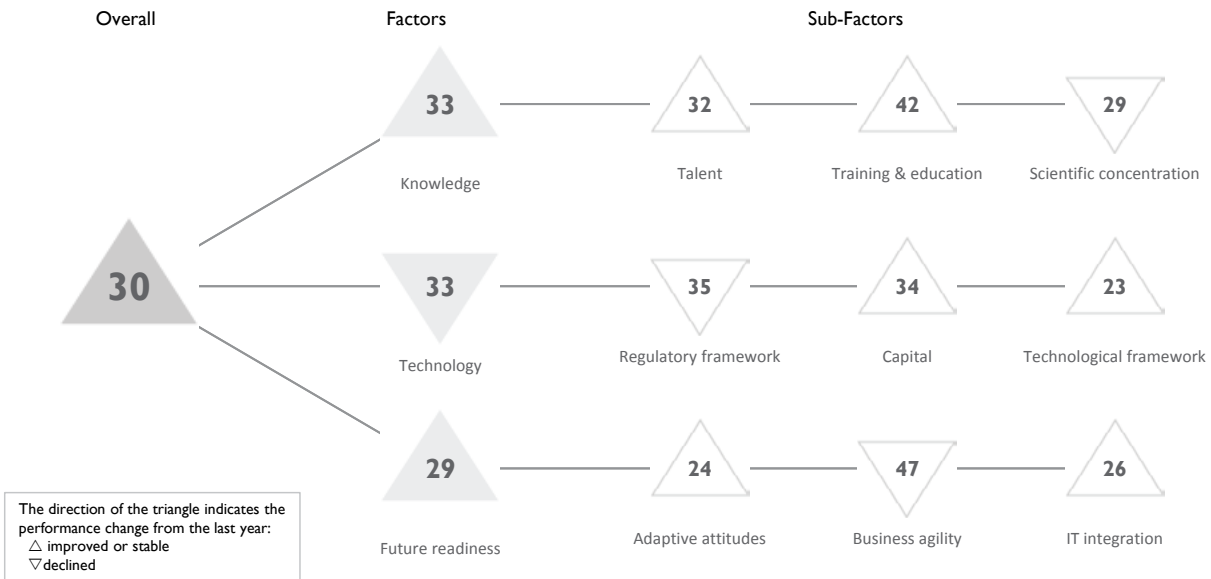
Adaptive attitudes	Rank
E-Participation	52
Internet retailing	56
▷ Tablet possession	57
Smartphone possession	38
Attitudes toward globalization	30

Business agility	Rank
Opportunities and threats	34
Innovative firms	-
Agility of companies	44
Use of big data and analytics	24
Knowledge transfer	40

IT integration	Rank
E-Government	54
Public-private partnerships	48
Cyber security	45
► Software piracy	20

SPAIN

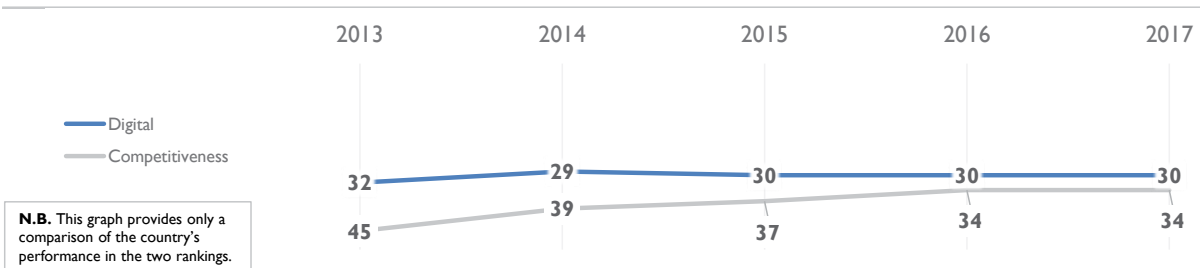
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	32	29	30	30	30
Knowledge	33	35	35	36	33
Technology	41	36	35	32	33
Future readiness	29	28	29	30	29

COMPETITIVENESS & DIGITAL RANKINGS

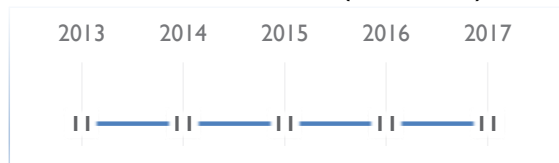


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	34	33	33	34	32
Training & education	36	42	41	43	42
Scientific concentration	25	28	26	28	29

Talent	Rank
Educational assessment PISA - Math	30
International experience	46
Foreign highly-skilled personnel	22
Management of cities	27
Digital/Technological skills	42
Net flow of international students	26

Training & education	Rank
▷ Employee training	58
Total public expenditure on education	39
Higher education achievement	25
Pupil-teacher ratio (tertiary education)	20
Graduates in Sciences	23
Women with degrees	36

Scientific concentration	Rank
Total expenditure on R&D (%)	32
Total R&D personnel per capita	28
Female researchers	21
► R&D productivity by publication	6
Scientific and technical employment	25
High-tech patent grants	40

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	43	38	33	34	35
Capital	47	49	48	38	34
Technological framework	35	27	27	27	23

Regulatory framework	Rank
Starting a business	44
Enforcing contracts	26
Immigration laws	17
Technological regulation	37
▷ Scientific research legislation	51
Intellectual property rights	34

Capital	Rank
IT & media stock market capitalization	25
Funding for technological development	40
Banking and financial services	45
Investment risk	41
Venture capital	34
Investment in Telecommunications	21

Technological framework	Rank
Communications technology	22
► Mobile Broadband subscribers	17
Wireless broadband	23
Internet users	32
Internet bandwidth speed	20
▷ High-tech exports (%)	49

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	24	25	26	26	24
Business agility	28	24	31	30	47
IT integration	28	28	26	26	26

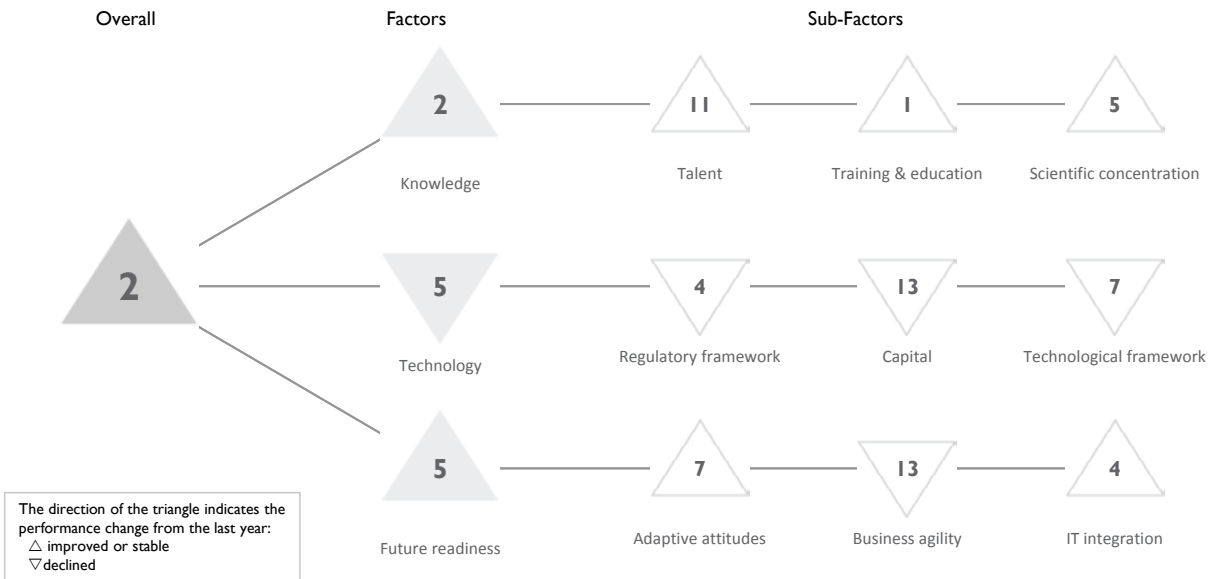
Adaptive attitudes	Rank
► E-Participation	7
Internet retailing	27
Tablet possession	28
► Smartphone possession	17
Attitudes toward globalization	32

Business agility	Rank
▷ Opportunities and threats	51
Innovative firms	23
Agility of companies	47
▷ Use of big data and analytics	58
Knowledge transfer	46

IT integration	Rank
► E-Government	17
Public-private partnerships	32
Cyber security	35
Software piracy	32

SWEDEN

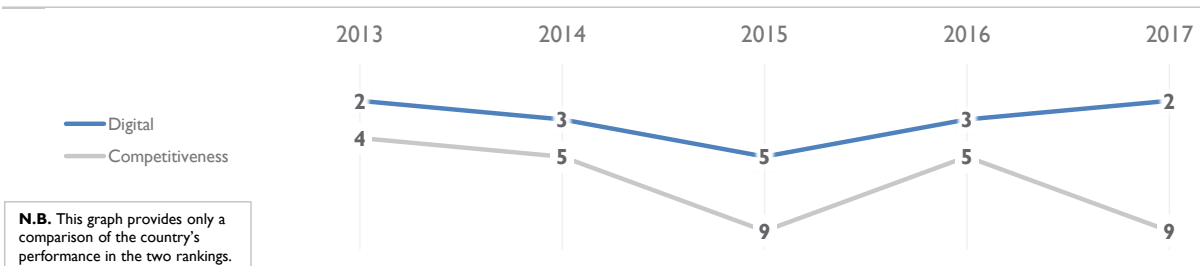
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

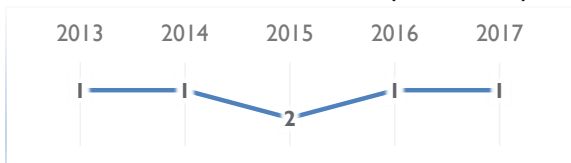
	2013	2014	2015	2016	2017
OVERALL	2	3	5	3	2
Knowledge	1	2	2	2	2
Technology	2	4	9	4	5
Future readiness	2	3	9	8	5

COMPETITIVENESS & DIGITAL RANKINGS

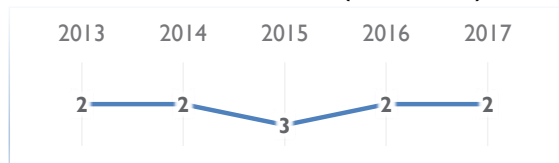


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	7	10	12	14	11
Training & education	4	3	2	1	1
Scientific concentration	5	4	5	5	5

Talent	Rank
Educational assessment PISA - Math	22
International experience	9
Foreign highly-skilled personnel	27
Management of cities	12
► Digital/Technological skills	3
Net flow of international students	22

Training & education	Rank
Employee training	12
► Total public expenditure on education	3
Higher education achievement	18
Pupil-teacher ratio (tertiary education)	23
Graduates in Sciences	20
Women with degrees	13

Scientific concentration	Rank
Total expenditure on R&D (%)	4
Total R&D personnel per capita	9
▷ Female researchers	32
▷ R&D productivity by publication	39
Scientific and technical employment	5
High-tech patent grants	13

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	2	6	5	3	4
Capital	10	13	14	11	13
Technological framework	4	5	5	5	7

Regulatory framework	Rank
Starting a business	9
Enforcing contracts	21
Immigration laws	11
► Technological regulation	2
Scientific research legislation	10
Intellectual property rights	7

Capital	Rank
IT & media stock market capitalization	14
Funding for technological development	6
Banking and financial services	16
Investment risk	6
► Venture capital	3
▷ Investment in Telecommunications	50

Technological framework	Rank
Communications technology	5
Mobile Broadband subscribers	15
Wireless broadband	5
Internet users	7
► Internet bandwidth speed	3
▷ High-tech exports (%)	24

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	6	7	11	10	7
Business agility	8	10	13	10	13
IT integration	1	6	12	11	4

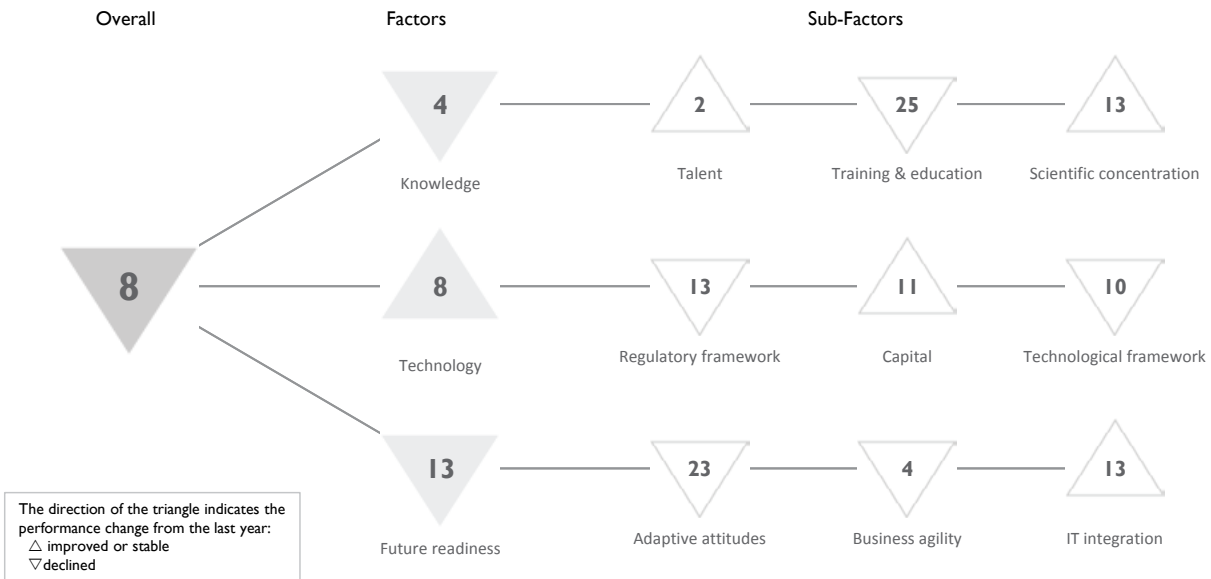
Adaptive attitudes	Rank
E-Participation	23
Internet retailing	8
Tablet possession	11
Smartphone possession	6
Attitudes toward globalization	4

Business agility	Rank
Opportunities and threats	22
Innovative firms	12
Agility of companies	15
Use of big data and analytics	16
Knowledge transfer	14

IT integration	Rank
E-Government	6
Public-private partnerships	12
Cyber security	18
Software piracy	6

SWITZERLAND

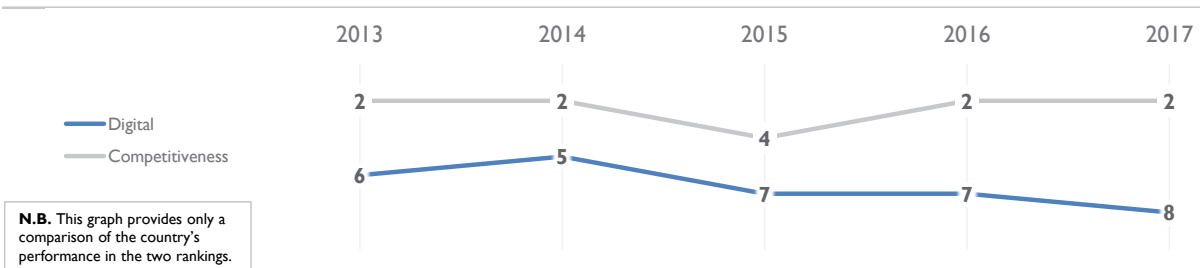
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

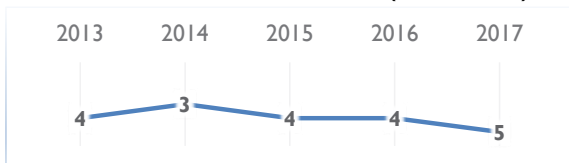
	2013	2014	2015	2016	2017
OVERALL	6	5	7	7	8
Knowledge	6	6	5	3	4
Technology	11	9	11	9	8
Future readiness	9	7	10	10	13

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



SWITZERLAND

- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	2	2	2	2	2
Training & education	15	16	21	18	25
Scientific concentration	18	14	12	13	13

Talent	Rank
Educational assessment PISA - Math	7
International experience	2
▶ Foreign highly-skilled personnel	1
Management of cities	5
Digital/Technological skills	11
Net flow of international students	7

Training & education	Rank
Employee training	3
Total public expenditure on education	27
Higher education achievement	14
Pupil-teacher ratio (tertiary education)	6
Graduates in Sciences	29
▷ Women with degrees	57

Scientific concentration	Rank
Total expenditure on R&D (%)	7
Total R&D personnel per capita	5
Female researchers	33
R&D productivity by publication	34
Scientific and technical employment	6
▷ High-tech patent grants	36

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	6	7	14	10	13
Capital	14	7	13	12	11
Technological framework	16	14	12	9	10

Regulatory framework	Rank
Starting a business	38
Enforcing contracts	32
Immigration laws	34
Technological regulation	5
▶ Scientific research legislation	1
▶ Intellectual property rights	1

Capital	Rank
▷ IT & media stock market capitalization	43
Funding for technological development	4
Banking and financial services	11
▶ Investment risk	2
Venture capital	13
Investment in Telecommunications	18

Technological framework	Rank
Communications technology	6
Mobile Broadband subscribers	24
Wireless broadband	14
Internet users	27
Internet bandwidth speed	5
High-tech exports (%)	8

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	19	19	24	21	23
Business agility	3	2	2	3	4
IT integration	8	7	13	14	13

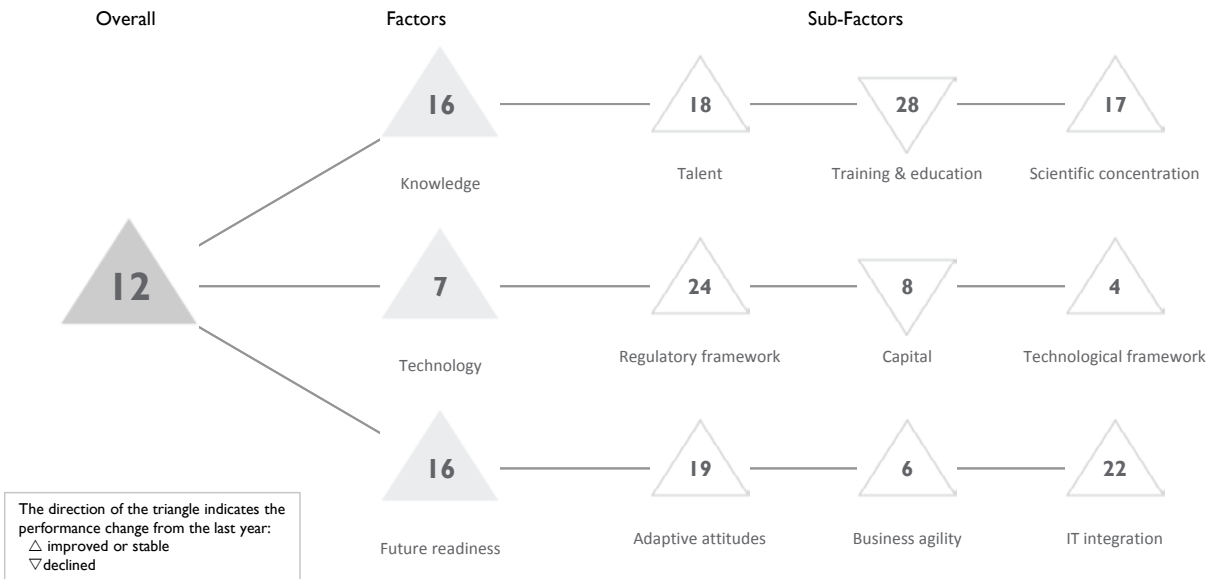
Adaptive attitudes	Rank
▷ E-Participation	51
Internet retailing	7
Tablet possession	7
▷ Smartphone possession	40
Attitudes toward globalization	24

Business agility	Rank
Opportunities and threats	7
Innovative firms	-
Agility of companies	5
Use of big data and analytics	25
▶ Knowledge transfer	1

IT integration	Rank
E-Government	27
Public-private partnerships	5
Cyber security	8
Software piracy	11

TAIWAN

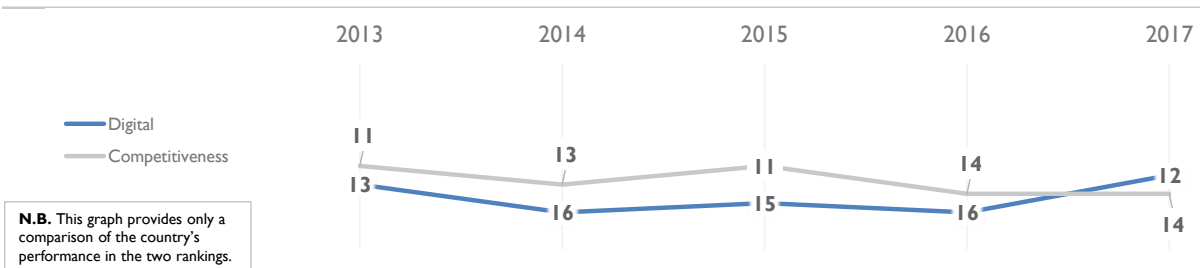
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	13	16	15	16	12
Knowledge	21	22	19	19	16
Technology	8	10	4	8	7
Future readiness	18	20	20	22	16

COMPETITIVENESS & DIGITAL RANKINGS

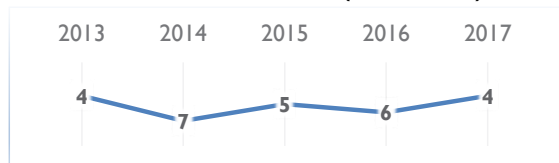


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	17	17	19	19	18
Training & education	23	23	22	23	28
Scientific concentration	20	20	19	19	17

Talent	Rank
Educational assessment PISA - Math	3
International experience	31
Foreign highly-skilled personnel	44
Management of cities	20
Digital/Technological skills	30
Net flow of international students	14

Training & education	Rank
Employee training	10
▷ Total public expenditure on education	46
► Higher education achievement	3
▷ Pupil-teacher ratio (tertiary education)	46
Graduates in Sciences	8
▷ Women with degrees	52

Scientific concentration	Rank
Total expenditure on R&D (%)	6
► Total R&D personnel per capita	2
▷ Female researchers	45
R&D productivity by publication	30
Scientific and technical employment	38
High-tech patent grants	14

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	23	26	22	25	24
Capital	4	5	6	6	8
Technological framework	5	4	4	6	4

Regulatory framework	Rank
Starting a business	12
Enforcing contracts	14
▷ Immigration laws	47
Technological regulation	24
Scientific research legislation	25
Intellectual property rights	28

Capital	Rank
► IT & media stock market capitalization	2
Funding for technological development	23
Banking and financial services	17
Investment risk	18
Venture capital	18
Investment in Telecommunications	29

Technological framework	Rank
Communications technology	28
► Mobile Broadband subscribers	3
Wireless broadband	19
Internet users	22
Internet bandwidth speed	18
► High-tech exports (%)	3

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	18	20	19	19	19
Business agility	17	20	19	24	6
IT integration	20	22	23	24	22

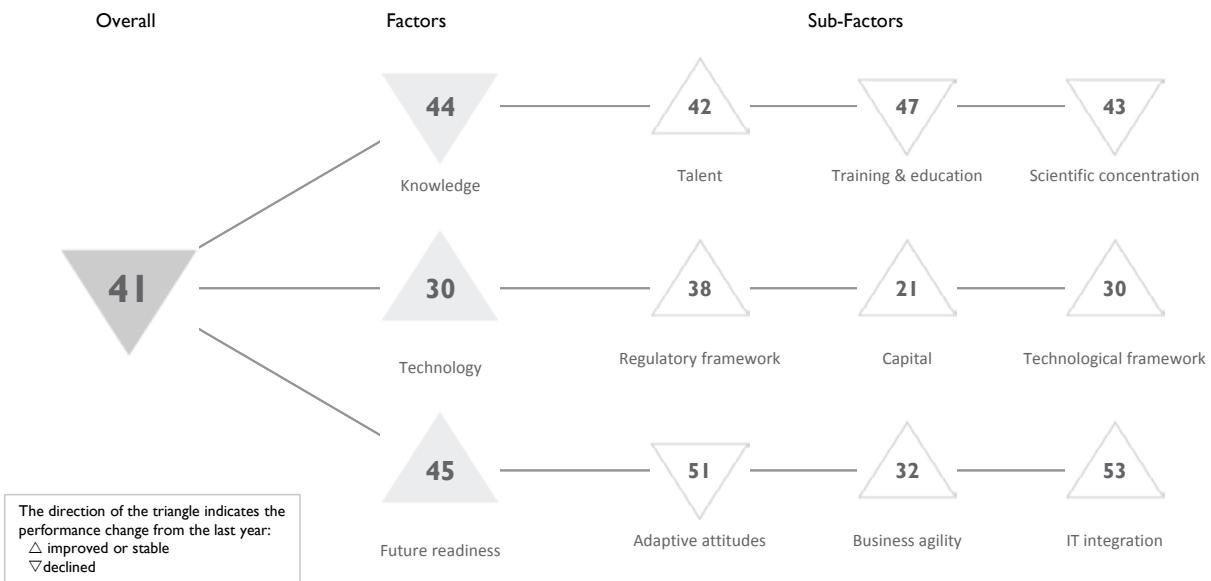
Adaptive attitudes	Rank
E-Participation	-
Internet retailing	18
Tablet possession	25
Smartphone possession	5
Attitudes toward globalization	10

Business agility	Rank
Opportunities and threats	4
Innovative firms	-
Agility of companies	3
Use of big data and analytics	7
Knowledge transfer	20

IT integration	Rank
E-Government	-
Public-private partnerships	18
Cyber security	11
Software piracy	25

THAILAND

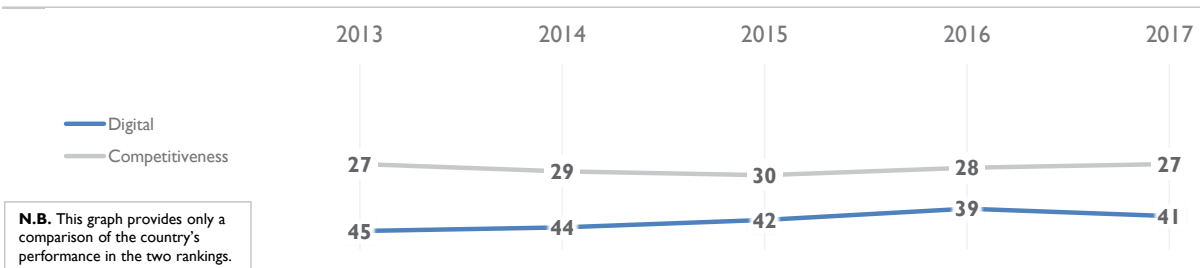
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

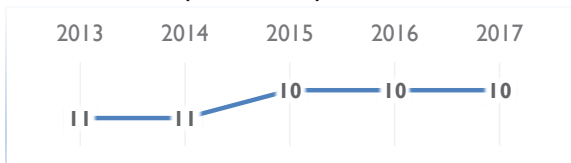
	2013	2014	2015	2016	2017
OVERALL	45	44	42	39	41
Knowledge	54	50	48	42	44
Technology	37	38	33	30	30
Future readiness	48	45	50	48	45

COMPETITIVENESS & DIGITAL RANKINGS

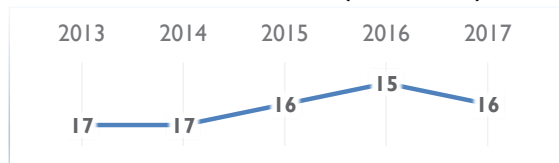


PEER GROUPS RANKINGS

ASIA - PACIFIC (14 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	38	40	42	42	42
Training & education	56	52	54	44	47
Scientific concentration	49	47	44	41	43

Talent Rank

Educational assessment PISA - Math	48
International experience	22
Foreign highly-skilled personnel	24
Management of cities	38
▷ Digital/Technological skills	50
Net flow of international students	38

Training & education Rank

Employee training	18
Total public expenditure on education	43
Higher education achievement	37
Pupil-teacher ratio (tertiary education)	47
▶ Graduates in Sciences	13
Women with degrees	44

Scientific concentration Rank

Total expenditure on R&D (%)	47
Total R&D personnel per capita	47
▶ Female researchers	2
R&D productivity by publication	21
Scientific and technical employment	47
High-tech patent grants	31

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	38	39	42	43	38
Capital	21	29	17	21	21
Technological framework	48	48	38	32	30

Regulatory framework Rank

Starting a business	40
Enforcing contracts	38
Immigration laws	24
Technological regulation	36
Scientific research legislation	38
Intellectual property rights	47

Capital Rank

IT & media stock market capitalization	17
Funding for technological development	33
▶ Banking and financial services	10
Investment risk	49
Venture capital	29
Investment in Telecommunications	16

Technological framework Rank

Communications technology	36
▶ Mobile Broadband subscribers	6
Wireless broadband	31
▷ Internet users	53
Internet bandwidth speed	29
▶ High-tech exports (%)	11

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	47	48	47	47	51
Business agility	36	37	40	34	32
IT integration	55	51	57	55	53

Adaptive attitudes Rank

E-Participation	48
Internet retailing	48
▷ Tablet possession	52
Smartphone possession	49
Attitudes toward globalization	18

Business agility Rank

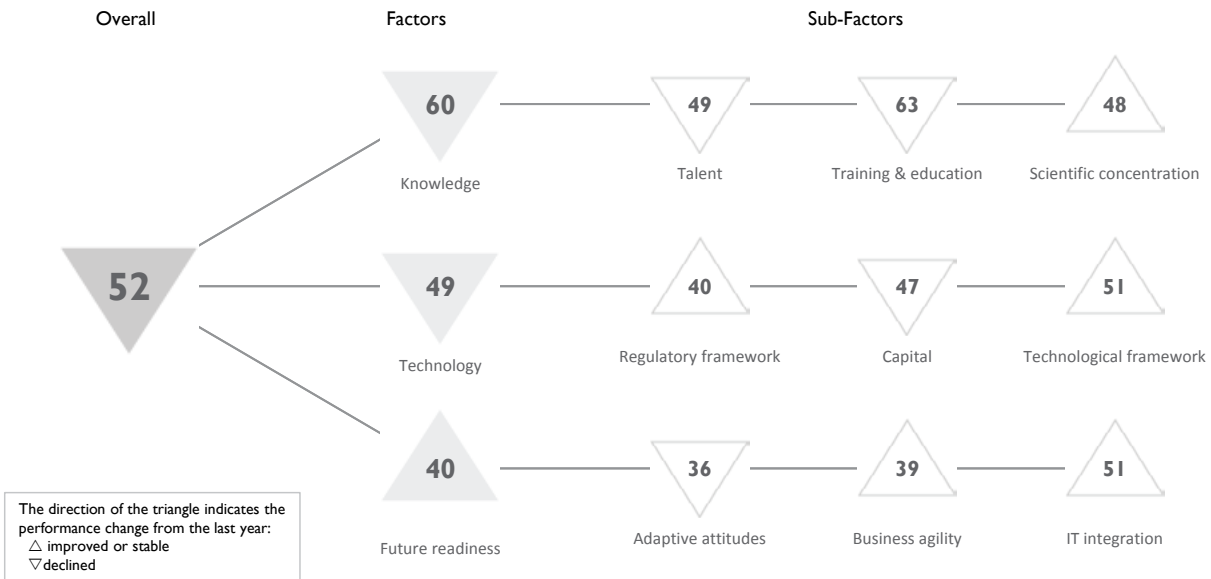
Opportunities and threats	26
Innovative firms	-
Agility of companies	36
Use of big data and analytics	33
Knowledge transfer	33

IT integration Rank

▷ E-Government	55
Public-private partnerships	23
Cyber security	38
▷ Software piracy	56

TURKEY

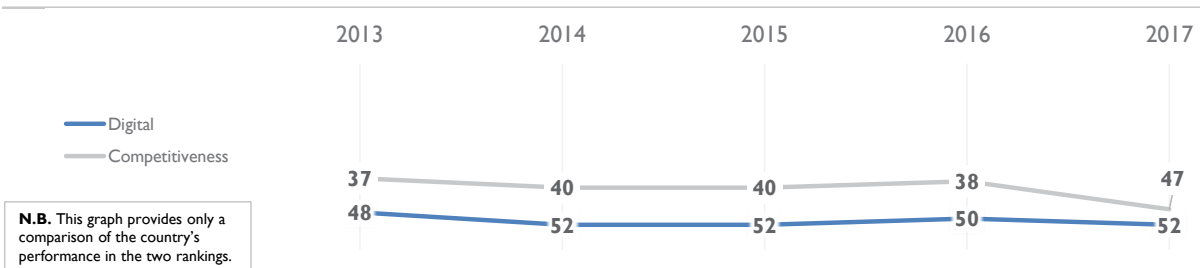
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	48	52	52	50	52
Knowledge	59	59	59	58	60
Technology	42	47	48	48	49
Future readiness	41	44	42	42	40

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	37	37	41	36	49
Training & education	60	60	61	61	63
Scientific concentration	52	53	52	52	48

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	47	Employee training	53	Total expenditure on R&D (%)	42
International experience	42	Total public expenditure on education	53	Total R&D personnel per capita	45
▷ Foreign highly-skilled personnel	57	Higher education achievement	45	Female researchers	27
Management of cities	41	Pupil-teacher ratio (tertiary education)	53	► R&D productivity by publication	8
Digital/Technological skills	39	Graduates in Sciences	40	Scientific and technical employment	40
Net flow of international students	31	▷ Women with degrees	54	▷ High-tech patent grants	58

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	37	42	44	40	40
Capital	38	36	36	46	47
Technological framework	50	50	50	51	51

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	41	► IT & media stock market capitalization	23	Communications technology	34
Enforcing contracts	30	Funding for technological development	36	Mobile Broadband subscribers	43
Immigration laws	39	Banking and financial services	26	Wireless broadband	52
Technological regulation	40	Investment risk	47	Internet users	51
Scientific research legislation	45	Venture capital	50	Internet bandwidth speed	47
Intellectual property rights	54	▷ Investment in Telecommunications	57	▷ High-tech exports (%)	60

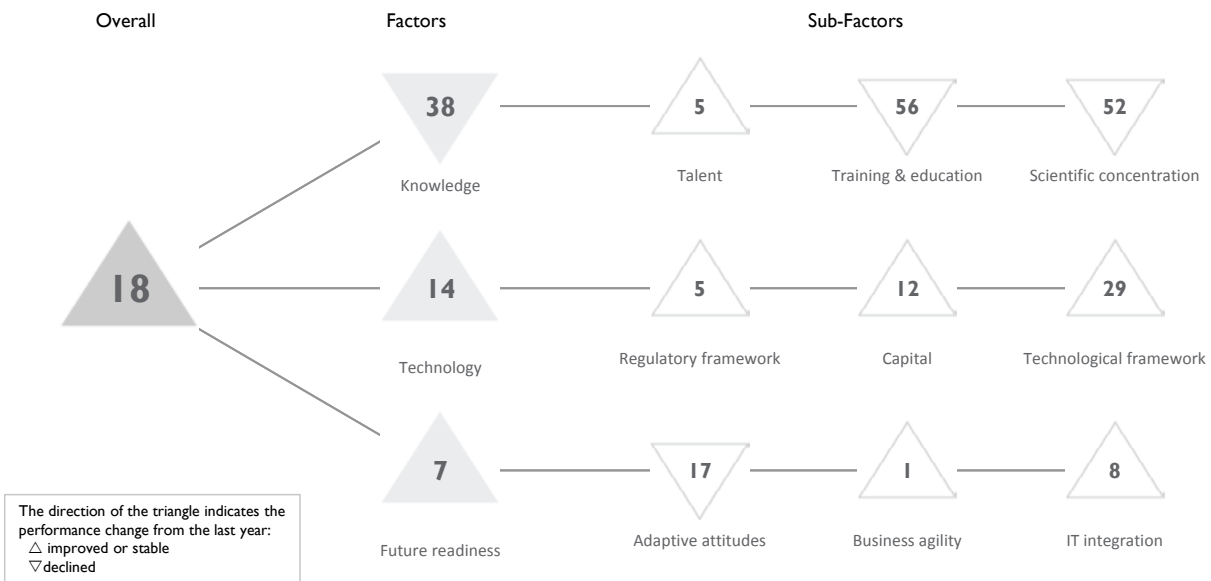
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	36	37	37	35	36
Business agility	38	40	44	41	39
IT integration	51	53	50	52	51

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	44	► Opportunities and threats	10	E-Government	51
Internet retailing	39	Innovative firms	30	Public-private partnerships	31
Tablet possession	24	► Agility of companies	17	Cyber security	53
► Smartphone possession	19	Use of big data and analytics	52	Software piracy	48
Attitudes toward globalization	41	Knowledge transfer	53		

UAE

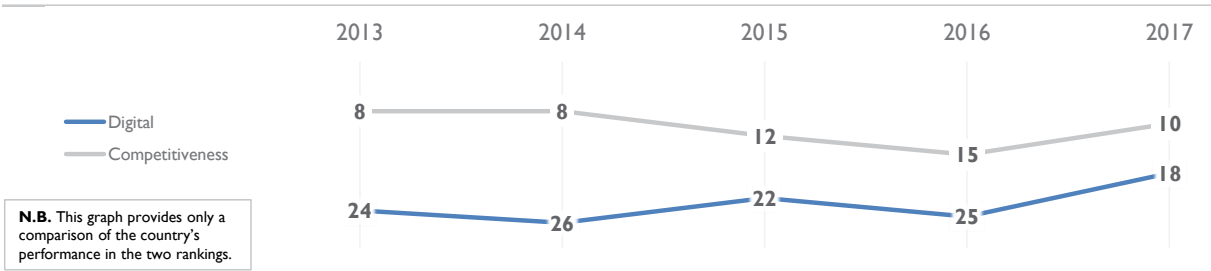
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

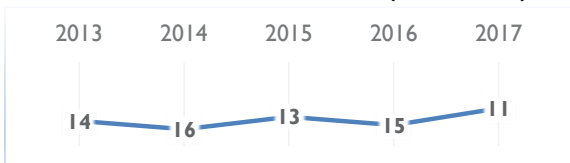
	2013	2014	2015	2016	2017
OVERALL	24	26	22	25	18
Knowledge	38	37	38	35	38
Technology	20	25	10	20	14
Future readiness	14	15	18	17	7

COMPETITIVENESS & DIGITAL RANKINGS

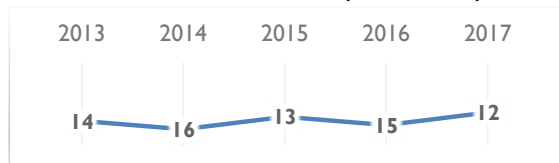


PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS < 20 MILLION (34 countries)



- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	4	6	6	5	5
Training & education	48	47	53	53	56
Scientific concentration	56	55	54	51	52

Talent		Rank	Training & education		Rank	Scientific concentration		Rank
▷	Educational assessment PISA - Math	45		Employee training	11		Total expenditure on R&D (%)	41
	International experience	3	▷	Total public expenditure on education	62		Total R&D personnel per capita	41
▶	Foreign highly-skilled personnel	2	▷	Higher education achievement	47	▷	Female researchers	-
	Management of cities	3		Pupil-teacher ratio (tertiary education)	36		R&D productivity by publication	49
	Digital/Technological skills	7		Graduates in Sciences	31		Scientific and technical employment	-
	Net flow of international students	4	▷	Women with degrees	48		High-tech patent grants	24

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	21	25	19	16	5
Capital	6	16	4	14	12
Technological framework	30	28	19	31	29

Regulatory framework		Rank	Capital		Rank	Technological framework		Rank
	Starting a business	29		IT & media stock market capitalization	-		Communications technology	21
	Enforcing contracts	24		Funding for technological development	8		Mobile Broadband subscribers	28
▶	Immigration laws	1		Banking and financial services	6		Wireless broadband	11
	Technological regulation	3		Investment risk	25		Internet users	36
	Scientific research legislation	12		Venture capital	6		Internet bandwidth speed	39
	Intellectual property rights	21		Investment in Telecommunications	27		High-tech exports (%)	43

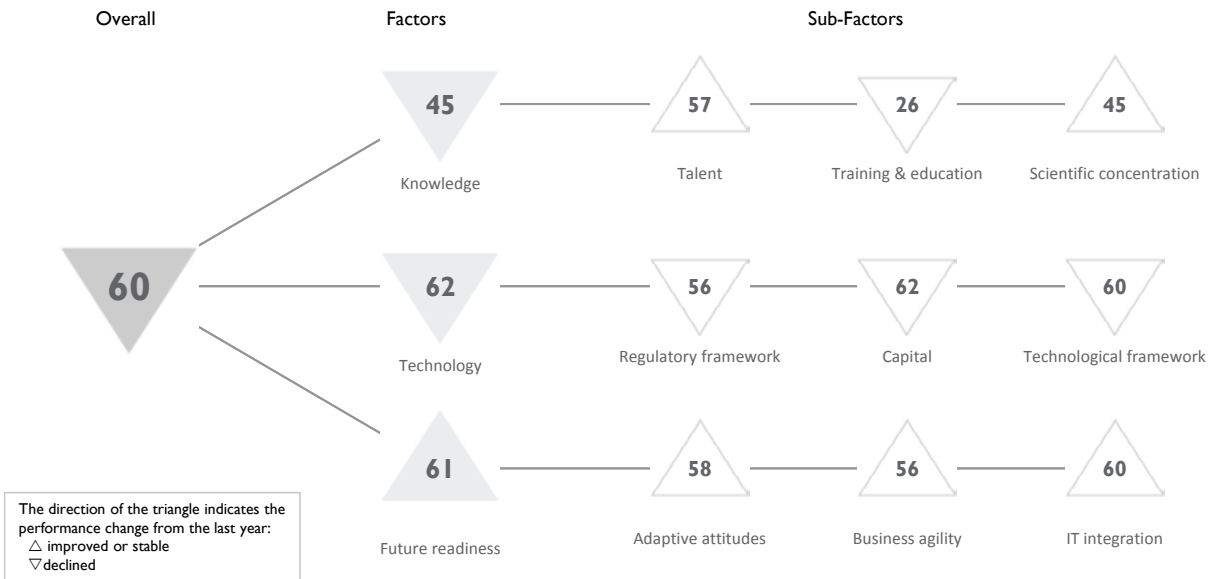
FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	12	14	15	14	17
Business agility	18	17	24	18	1
IT integration	14	15	21	18	8

Adaptive attitudes		Rank	Business agility		Rank	IT integration		Rank
	E-Participation	28		Opportunities and threats	2		E-Government	28
	Internet retailing	32		Innovative firms	-	▶	Public-private partnerships	1
	Tablet possession	9		Agility of companies	4	▶	Cyber security	1
	Smartphone possession	11	▶	Use of big data and analytics	1		Software piracy	22
	Attitudes toward globalization	2		Knowledge transfer	10			

UKRAINE

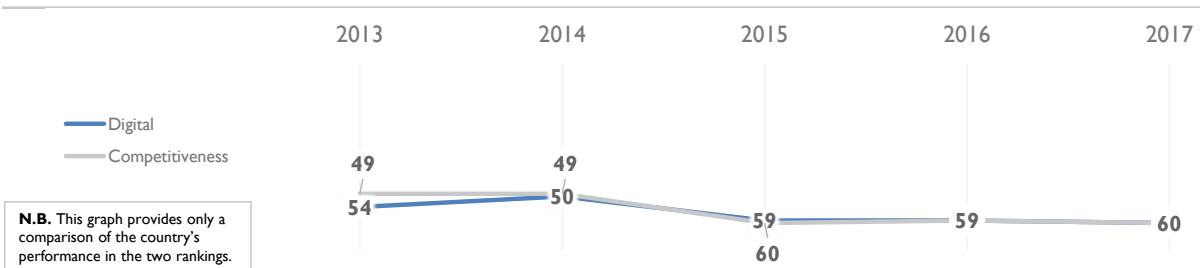
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

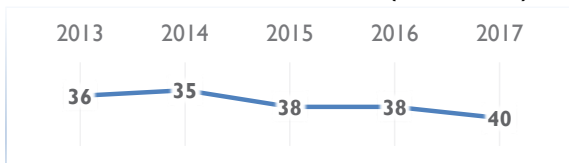
	2013	2014	2015	2016	2017
OVERALL	54	50	59	59	60
Knowledge	35	29	40	44	45
Technology	58	58	60	60	62
Future readiness	57	58	61	61	61

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	52	46	55	58	57
Training & education	8	4	15	20	26
Scientific concentration	40	42	39	45	45

Talent	Rank
Educational assessment PISA - Math	-
International experience	60
Foreign highly-skilled personnel	60
Management of cities	59
Digital/Technological skills	47
Net flow of international students	28

Training & education	Rank
Employee training	50
► Total public expenditure on education	13
Higher education achievement	-
► Pupil-teacher ratio (tertiary education)	14
► Graduates in Sciences	14
Women with degrees	45

Scientific concentration	Rank
Total expenditure on R&D (%)	46
Total R&D personnel per capita	39
► Female researchers	13
R&D productivity by publication	32
Scientific and technical employment	39
High-tech patent grants	34

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	54	47	55	55	56
Capital	57	56	60	60	62
Technological framework	56	58	60	58	60

Regulatory framework	Rank
► Starting a business	13
Enforcing contracts	45
Immigration laws	35
▷ Technological regulation	62
Scientific research legislation	61
Intellectual property rights	61

Capital	Rank
IT & media stock market capitalization	-
▷ Funding for technological development	62
Banking and financial services	61
▷ Investment risk	62
Venture capital	60
Investment in Telecommunications	54

Technological framework	Rank
Communications technology	58
▷ Mobile Broadband subscribers	63
▷ Wireless broadband	62
Internet users	50
Internet bandwidth speed	33
High-tech exports (%)	48

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	57	58	60	60	58
Business agility	48	42	58	59	56
IT integration	59	58	61	60	60

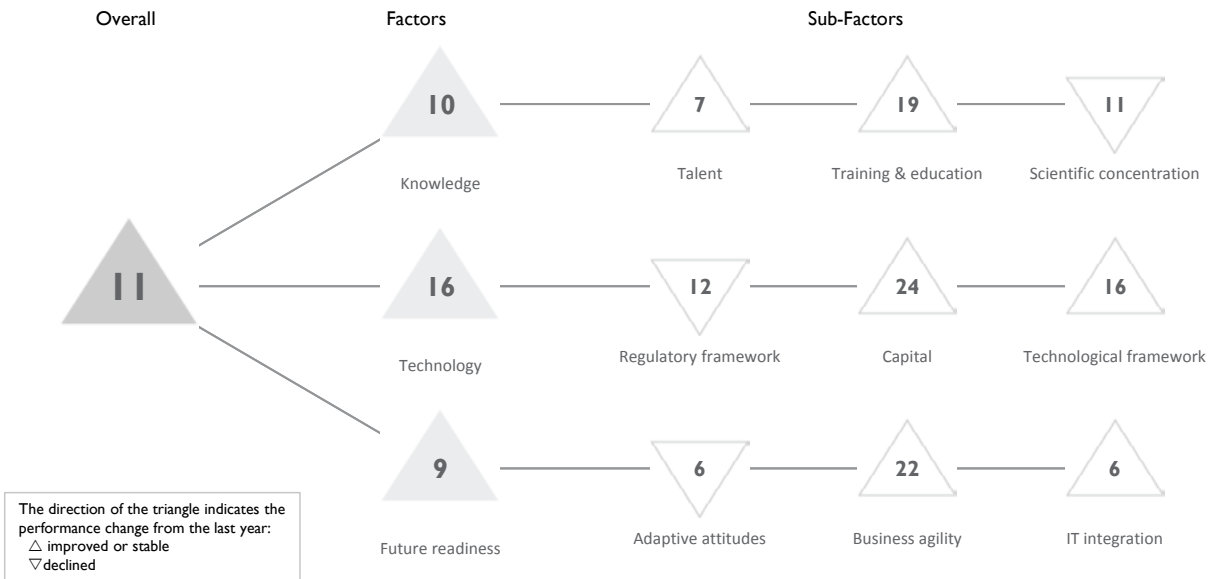
Adaptive attitudes	Rank
E-Participation	28
Internet retailing	47
Tablet possession	55
Smartphone possession	55
Attitudes toward globalization	51

Business agility	Rank
Opportunities and threats	45
Innovative firms	40
Agility of companies	49
Use of big data and analytics	47
Knowledge transfer	58

IT integration	Rank
E-Government	47
Public-private partnerships	53
Cyber security	61
Software piracy	60

UNITED KINGDOM

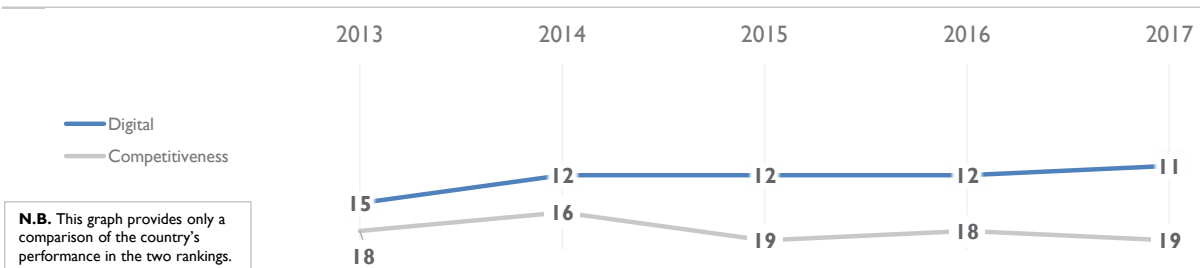
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

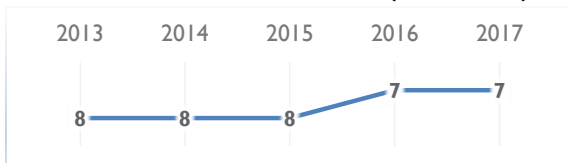
	2013	2014	2015	2016	2017
OVERALL	15	12	12	12	11
Knowledge	10	13	12	11	10
Technology	18	17	18	18	16
Future readiness	16	14	11	11	9

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (40 countries)



POPULATIONS > 20 MILLION (29 countries)



UNITED KINGDOM

- ▶ Overall top strengths
- ▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	8	7	7	7	7
Training & education	28	32	23	19	19
Scientific concentration	11	11	11	10	11

Talent Rank

Educational assessment PISA - Math	25
International experience	12
Foreign highly-skilled personnel	12
Management of cities	14
Digital/Technological skills	29
▶ Net flow of international students	3

Training & education Rank

Employee training	35
Total public expenditure on education	14
Higher education achievement	13
Pupil-teacher ratio (tertiary education)	33
Graduates in Sciences	18
Women with degrees	33

Scientific concentration Rank

Total expenditure on R&D (%)	22
Total R&D personnel per capita	20
Female researchers	23
R&D productivity by publication	4
Scientific and technical employment	8
High-tech patent grants	19

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	20	17	10	11	12
Capital	32	24	22	25	24
Technological framework	12	13	15	16	16

Regulatory framework Rank

Starting a business	10
Enforcing contracts	28
Immigration laws	25
Technological regulation	17
Scientific research legislation	6
Intellectual property rights	9

Capital Rank

IT & media stock market capitalization	24
Funding for technological development	17
Banking and financial services	24
Investment risk	20
▶ Venture capital	2
▷ Investment in Telecommunications	60

Technological framework Rank

▷ Communications technology	42
Mobile Broadband subscribers	18
Wireless broadband	21
Internet users	23
Internet bandwidth speed	15
High-tech exports (%)	12

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	11	12	5	4	6
Business agility	27	23	22	25	22
IT integration	12	10	16	13	6

Adaptive attitudes Rank

▶ E-Participation	1
▶ Internet retailing	1
Tablet possession	20
▷ Smartphone possession	45
▷ Attitudes toward globalization	38

Business agility Rank

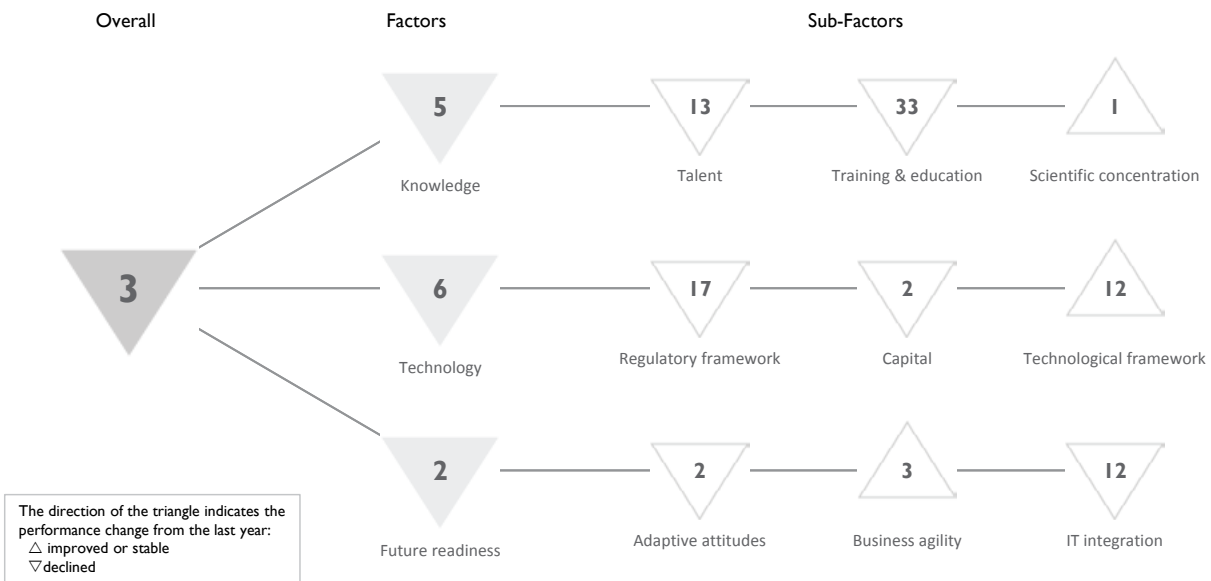
Opportunities and threats	30
Innovative firms	25
Agility of companies	33
Use of big data and analytics	28
Knowledge transfer	7

IT integration Rank

▶ E-Government	1
Public-private partnerships	19
▷ Cyber security	39
Software piracy	8

USA

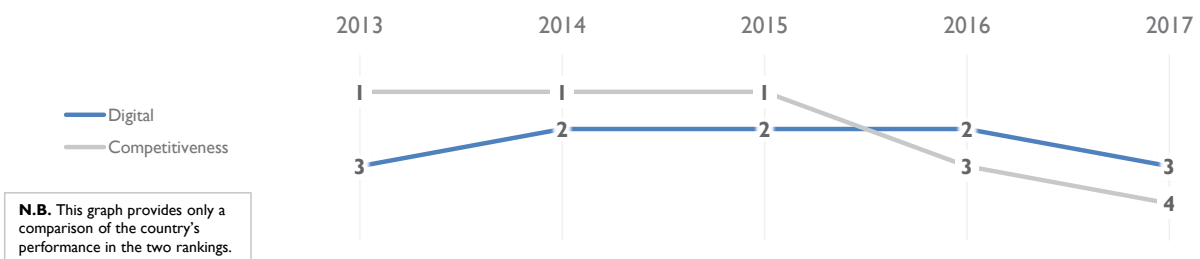
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

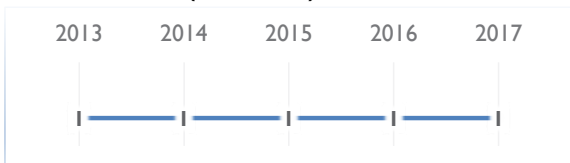
	2013	2014	2015	2016	2017
OVERALL	3	2	2	2	3
Knowledge	3	4	6	4	5
Technology	4	5	6	5	6
Future readiness	1	1	3	1	2

COMPETITIVENESS & DIGITAL RANKINGS

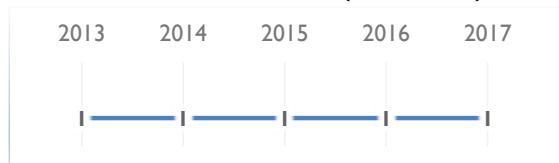


PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	12	13	14	11	13
Training & education	25	26	32	30	33
Scientific concentration	1	1	1	1	1

Talent	Rank
Educational assessment PISA - Math	37
International experience	27
Foreign highly-skilled personnel	4
Management of cities	22
Digital/Technological skills	8
Net flow of international students	16

Training & education	Rank
▷ Employee training	41
Total public expenditure on education	12
Higher education achievement	17
Pupil-teacher ratio (tertiary education)	17
▷ Graduates in Sciences	52
Women with degrees	29

Scientific concentration	Rank
Total expenditure on R&D (%)	11
Total R&D personnel per capita	-
Female researchers	-
▶ R&D productivity by publication	2
Scientific and technical employment	19
High-tech patent grants	7

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	17	19	16	12	17
Capital	2	2	2	1	2
Technological framework	8	11	11	12	12

Regulatory framework	Rank
Starting a business	28
Enforcing contracts	19
▷ Immigration laws	56
Technological regulation	10
Scientific research legislation	2
Intellectual property rights	6

Capital	Rank
IT & media stock market capitalization	6
▶ Funding for technological development	1
Banking and financial services	9
Investment risk	16
▶ Venture capital	1
Investment in Telecommunications	19

Technological framework	Rank
Communications technology	14
Mobile Broadband subscribers	23
Wireless broadband	12
Internet users	2
Internet bandwidth speed	13
High-tech exports (%)	17

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	1	1	1	1	2
Business agility	5	5	9	4	3
IT integration	5	4	11	4	12

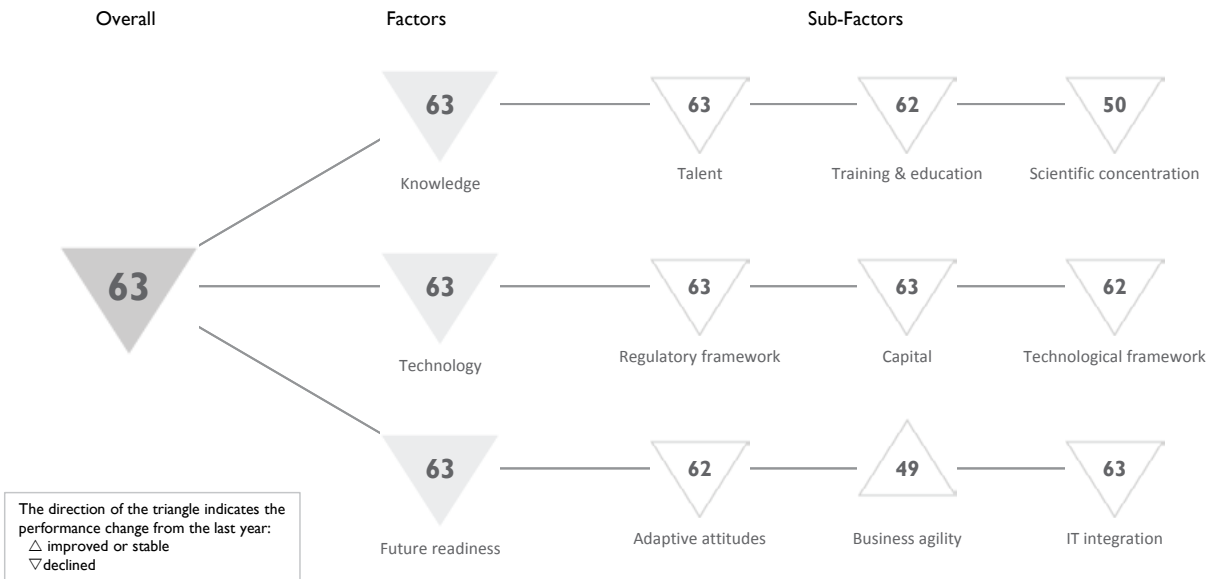
Adaptive attitudes	Rank
E-Participation	12
Internet retailing	3
▶ Tablet possession	1
Smartphone possession	14
▷ Attitudes toward globalization	50

Business agility	Rank
Opportunities and threats	20
Innovative firms	-
Agility of companies	7
Use of big data and analytics	6
Knowledge transfer	2

IT integration	Rank
E-Government	12
Public-private partnerships	17
▷ Cyber security	42
▶ Software piracy	1

VENEZUELA

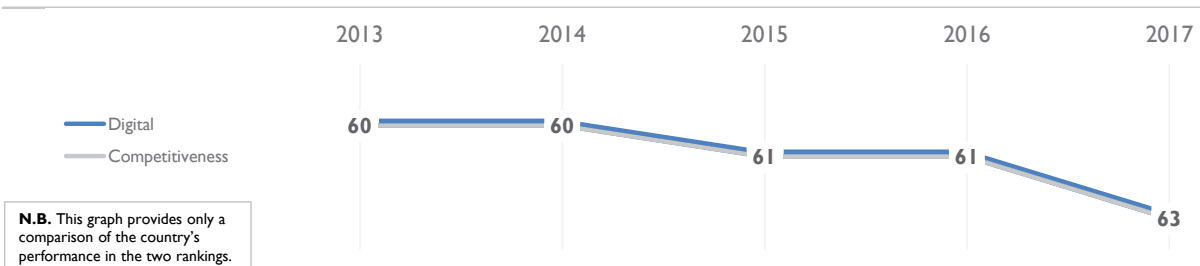
OVERALL PERFORMANCE (63 countries)



OVERALL & FACTORS - 5 years

	2013	2014	2015	2016	2017
OVERALL	60	60	61	61	63
Knowledge	51	48	54	57	63
Technology	60	60	61	61	63
Future readiness	59	60	60	59	63

COMPETITIVENESS & DIGITAL RANKINGS

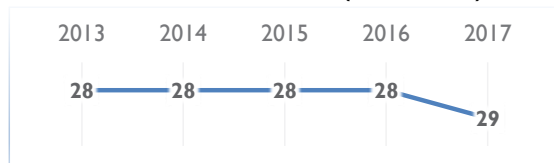


PEER GROUPS RANKINGS

THE AMERICAS (9 countries)



POPULATIONS > 20 MILLION (29 countries)



► Overall top strengths

▷ Overall top weaknesses

KNOWLEDGE

Subfactors	2013	2014	2015	2016	2017
Talent	60	60	61	61	63
Training & education	44	41	44	39	62
Scientific concentration	36	32	33	47	50

Talent	Rank
Educational assessment PISA - Math	-
International experience	59
Foreign highly-skilled personnel	63
▷ Management of cities	63
Digital/Technological skills	63
Net flow of international students	-

Training & education	Rank
Employee training	60
Total public expenditure on education	-
Higher education achievement	-
Pupil-teacher ratio (tertiary education)	-
Graduates in Sciences	-
Women with degrees	-

Scientific concentration	Rank
Total expenditure on R&D (%)	-
Total R&D personnel per capita	-
► Female researchers	1
R&D productivity by publication	60
Scientific and technical employment	-
High-tech patent grants	59

TECHNOLOGY

Subfactors	2013	2014	2015	2016	2017
Regulatory framework	60	60	61	61	63
Capital	60	60	61	61	63
Technological framework	52	55	57	59	62

Regulatory framework	Rank
▷ Starting a business	63
Enforcing contracts	59
Immigration laws	61
Technological regulation	63
Scientific research legislation	63
Intellectual property rights	63

Capital	Rank
IT & media stock market capitalization	49
Funding for technological development	63
Banking and financial services	58
▷ Investment risk	63
Venture capital	62
▷ Investment in Telecommunications	63

Technological framework	Rank
▷ Communications technology	63
Mobile Broadband subscribers	54
Wireless broadband	56
Internet users	48
Internet bandwidth speed	63
High-tech exports (%)	62

FUTURE READINESS

Subfactors	2013	2014	2015	2016	2017
Adaptive attitudes	58	55	57	56	62
Business agility	55	55	52	52	49
IT integration	60	60	60	61	63

Adaptive attitudes	Rank
E-Participation	60
Internet retailing	51
Tablet possession	60
Smartphone possession	51
Attitudes toward globalization	57

Business agility	Rank
► Opportunities and threats	23
Innovative firms	-
Agility of companies	54
► Use of big data and analytics	32
Knowledge transfer	61

IT integration	Rank
E-Government	58
Public-private partnerships	63
Cyber security	63
Software piracy	62

Appendices and Sources

The statistical tables are provided only in PDF format on the USB key drive available on the cover of the **IMD World Competitiveness Yearbook 2017**. **Visit our eShop**

Factor I : Knowledge

1.1 Talent

1.1.1 Educational assessment PISA - Math	PISA survey of 15-year olds	289
1.1.2 International experience	International experience of senior managers is generally significant	289
1.1.3 Foreign highly-skilled personnel	Foreign highly-skilled personnel are attracted to your country's business environment	290
1.1.4 Management of cities	Management of cities supports business development	290
1.1.5 Digital/Technological skills	Digital/Technological skills are readily available	291
1.1.6 Net flow of international students	Tertiary-level international students inbound minus students outbound (per 1000 people)	291

1.2 Training & education

1.2.1 Employee training	Employee training is a high priority in companies	292
1.2.2 Total public expenditure on education	Percentage of GDP	292
1.2.3 Higher education achievement	Percentage of population that has attained at least tertiary education for persons 25-34	293
1.2.4 Pupil-teacher ratio (tertiary education)	Number of pupils per teacher	293
1.2.5 Graduates in Sciences	% of graduates in ICT, Engineering, Math & Natural Sciences	294
1.2.6 Women with degrees	Percentage of female graduates in tertiary education	294

1.3 Scientific concentration

1.3.1 Total expenditure on R&D (%)	Percentage of GDP	295
1.3.2 Total R&D personnel per capita	Full-time work equivalent (FTE) per 1000 people	295
1.3.3 Female researchers	% of total (headcount FT&PT)	296
1.3.4 R&D productivity by publication	No. of scientific articles over R&D expenditure (as % GDP)	296
1.3.5 Scientific and technical employment	% of total employment	297
1.3.6 High-tech patent grants	% of all patents granted by applicant's origin (average 2013-2015)	297

Factor II : Technology

2.1 Regulatory framework

2.1.1 Starting a business	Distance to Frontier	289
2.1.2 Enforcing contracts	Distance to Frontier	289
2.1.3 Immigration laws	Immigration laws do not prevent your company from employing foreign labor	290
2.1.4 Technological regulation	Technological regulation supports business development and innovation	290
2.1.5 Scientific research legislation	Laws relating to scientific research do encourage innovation	291
2.1.6 Intellectual property rights	Intellectual property rights are adequately enforced	291

2.2 Capital

2.2.1 IT & media stock market capitalization	% of total stock market capitalization	292
2.2.2 Funding for technological development	Funding for technological development is readily available	292
2.2.3 Banking and financial services	Banking and financial services do support business activities efficiently	293
2.2.4 Investment risk	Eurozone country risk overall (scale from 0-100)	293
2.2.5 Venture capital	Venture capital is easily available for business	294
2.2.6 Investment in Telecommunications	Percentage of GDP	294

2.3 Technological framework

2.3.1 Communications technology	Communications technology (voice and data) meets business requirements	295
2.3.2 Mobile Broadband subscribers	3G & 4G market, % of mobile market	295
2.3.3 Wireless broadband	Penetration rate (per 100 people)	296
2.3.4 Internet users	Number of internet users per 1000 people/ Source: Computer Industry Almanac	296
2.3.5 Internet bandwidth speed	Average speed	297
2.3.6 High-tech exports (%)	Percentage of manufactured exports	297

Factor III : Future Readiness

3.1 Adaptive attitudes

3.1.1 E-Participation	Use of online services that facilitate public's interaction with government	289
3.1.2 Internet retailing	US\$ Per '000 People	289
3.1.3 Tablet possession	% households	290
3.1.4 Smartphone possession	% households	290
3.1.5 Attitudes toward globalization	Attitudes toward globalization are generally positive in your society	291

3.2 Business agility

3.2.1 Opportunities and threats	Companies are very good at responding quickly to opportunities and threats	291
3.2.2 Innovative firms	Percentage of all medium manufacturing firms	292
3.2.3 Agility of companies	Companies are agile	292
3.2.4 Use of big data and analytics	Companies are very good at using big data and analytics to support decision-making	293
3.2.5 Knowledge transfer	Knowledge transfer is highly developed between companies and universities	293

3.3 IT integration

3.3.1 E-Government	Provision of online government services to promote access and inclusion of citizens	294
3.3.2 Public-private partnerships	Public and private sector ventures are supporting technological development	294
3.3.3 Cyber security	Cyber security is being adequately addressed by corporations	295
3.3.4 Software piracy	% of unlicensed software installation	295

Notes and Sources by Criteria

Standard notes used in the data tables

When statistical data is not available or is too out-dated to be relevant for a particular economy, the name appears at the bottom of the statistical table and a dash is shown. When the data is older than the reference year, the year of the data is shown next to the criterion value.

Exchange Rate	As most data are expressed in U.S. dollars, you will find the exchange rates used at the beginning of the Statistical Tables. The sources for the Exchange Rates are International Financial Statistics Online March 2017 (IMF) and national sources.
Per capita	For all information presented “per capita” the sources for the population are Passport GMID (Euromonitor) and national sources.
% of GDP	For all information presented as a “percentage of GDP” the sources for GDP are the OECD Main Economic Indicators April 2017 and national sources.

Factor 1: Knowledge 1.1 Talent

1.1.1 Educational assessment PISA - Math
PISA 2015 (OECD)
<http://www.oecd.org/pisa/>

The OECD's Programme for International Student Assessment (PISA) is a regular survey of 15-year olds which assesses aspects of their preparedness for adult life. Mathematical literacy: an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned and reflective citizen. Scientific literacy: an individual's scientific knowledge and use of that knowledge to identify questions, to acquire new knowledge, to explain scientific phenomena, and to draw evidence based conclusions about science-related issues, understanding of the characteristic features of science as a form of human knowledge and enquiry, awareness of how science and technology shape our material, intellectual, and cultural environments, and willingness to engage in science-related issues, and with the ideas of science, as a reflective citizen.

1.1.6 Net flow of international students
Global Education Digest 2015 - Comparing Education Statistics Across the World (UNESCO)
<http://www.uis.unesco.org/publications/GED2012>
UNESCO <http://stats.uis.unesco.org>

Net flow of internationally mobile students (inbound from abroad studying in a given country minus outbound from a given country), both sexes, in tertiary education. Data can refer to the school or financial year prior or after the reference year.

1.2 Training & education

1.2.2 Total public expenditure on education
UNESCO <http://stats.uis.unesco.org>
Eurostat April 2017
National sources

Philippines: 2013 figure is based on the Department of Education's budget; 2015 figure includes allocations made by Commission of Higher Education and Department of Science and Technology. Jordan and Chile: Budgetary central government.

1.2.3 Higher education achievement
OECD Education at a Glance 2016
National sources

Percentage of the population aged 25-34 that has attained tertiary-type B and tertiary-type A and advance research programs. Tertiary-type A education covers more theoretical programs that give access to advanced research programs and to professions with high general skills requirements. Tertiary-type B education covers more practical or occupationally specific programs that provide participants with a qualification of immediate relevance to the labor market. New-Zealand and Slovenia: break in series. Singapore: proportion of resident non-students aged 25-34 years with polytechnic, professional qualification or other diploma, or university qualification. Japan: Data for short-cycle tertiary education and total tertiary education include post-secondary non-tertiary programmes (less than 5% of the adults are under this group).

1.2.4 Pupil-teacher ratio (tertiary education)
UNESCO <http://stats.uis.unesco.org>
OECD Education at a Glance 2016
National sources

Average number of pupils per teacher at a given level of education, based on headcounts of both pupils and teachers. Tertiary education (ISCED levels 5 to 8). Tertiary education builds on secondary education, providing learning activities in specialised fields of education. It aims at learning at a high level of complexity and specialisation. Tertiary education includes what is commonly understood as academic education but also includes advanced vocational or professional education.

1.2.5 Graduates in Sciences
OECD Education at a Glance
UNESCO

Share of graduates in Natural Sciences; Mathematics and Statistics; Computing, Information and Communication technologies. In tertiary education (ISCED2011 levels 5 to 8), both sexes (%)

1.2.6 Women with degrees
UNESCO

Percentage of graduates (a person who, during the reference school or academic year, has successfully completed an education programme) from tertiary ISCED 5, 6, 7 and 8 programmes who are female. Israel: ISCED levels 6 and 7 only up to 2012, av. of levels 6-8 in 2014. Russia: ISCED levels 6 and 7 only.

1.3 Scientific concentration

1.3.1 Total expenditure on R&D (%)
OECD Main Science and Technology Indicators 2/2016
UNESCO <http://stats.uis.unesco.org>
National sources

National estimates, projections or provisional data for the most recent year. Chile, Denmark, France, Japan, Korea, Netherlands, Portugal, Slovenia, Spain and Sweden: break in series. Hungary (up to 2003), Israel: defense excluded (all or mostly). Indonesia: Estimate based on target GERD by the Ministry of Science and Technology. Sweden: underestimated or based on underestimated data. USA: excludes most or all capital expenditure.

1.3.2 Total R&D personnel per capita
OECD Main Science and Technology Indicators 2/2016
UNESCO <http://stats.uis.unesco.org>
National sources

National estimates, projections or provisional data for most recent year. Czech Republic, Colombia, Denmark, Finland, Korea, Mexico, Netherlands, Hungary, Japan, Portugal, Slovenia, Sweden and Taiwan: break in series. United Kingdom: underestimated or based on underestimated data. Jordan, Philippines: based on headcount, not FTE.

1.3.3 Female researchers
UNESCO

Female researchers (headcount) who are mainly or partially employed in R&D. This includes staff employed both full-time and part-time. Expressed as a percentage of the total workforce (male + female)

1.3.4 R&D productivity by publication
NSF Science & Engineering Indicators 2016
Courtesy: National Science Foundation
National sources

The indicator is calculated as a ratio between the number of scientific articles by author's origin and the total expenditure in R&D as % GDP, which clearly include the input costs to produce research (e.g. researchers' salaries, equipment etc.). The result gives therefore the number of scientific articles published every year for a one percent (of GDP) expenditure in R&D activities. This measure can be consider as a proxy to assess the efficiency (or productivity) in producing high-level scientific research at country level.

1.3.5 Scientific and technical employment
Business Monitor International
Eurostat

Scientific and technical employment as a % of total employment. Defined as formal employment within the 'scientific and technical' sector. For more information, refer to NACE2 category M (or equivalent).

1.3.6 High-tech patent grants
WIPO Statistics Database
<http://www.wipo.int/ipstats/en/statistics/patents/>
TIPO for Taiwan

High-Tech patent grants as a percentage of total patent grants (Direct and PCT national phase entries) by applicant's origin. Three year average to reduce volatility. Counts are based on the grant date. Country of origin refers to the country of residency of the first-named applicant in the application. Taiwan: data compiled by TIPO using data supplied by international patent offices (USPTO, JPO, EPO, KIPO, SIPO).

Factor 2: Technology
2.1 Regulatory framework

2.1.1 Starting a business
Doing Business 2017 - World Bank

The distance to frontier score aids in assessing the absolute level of regulatory performance and how it improves over time. This measure shows the distance of each economy to the frontier, which represents the best performance observed on each of the indicators across all economies in the Doing Business sample since 2005. This allows users both to see the gap between a particular economy's performance and the best performance at any point in time and to assess the absolute change in the economy's regulatory environment over time as measured by Doing Business. An economy's distance to frontier is reflected on a scale from 0 to 100, where 0 represents the lowest performance and 100 represents the frontier. For example, a score of 75 in DB 2016 means an economy was 25 percentage points away from the frontier constructed from the best performances across all economies and across time. A score of 80 in DB 2017 would indicate the economy is improving. In this way the distance to frontier measure complements the annual ease of doing business ranking, which compares economies with one another at a point in time.

2.1.2 Enforcing contracts
Doing Business 2017 - World Bank

The distance to frontier score aids in assessing the absolute level of regulatory performance and how it improves over time. This measure shows the distance of each economy to the frontier, which represents the best performance observed on each of the indicators across all economies in the Doing Business sample since 2005. This allows users both to see the gap between a particular economy's performance and the best performance at any point in time and to assess the absolute change in the economy's regulatory environment over time as measured by Doing Business. An economy's distance to frontier is reflected on a scale from 0 to 100, where 0 represents the lowest performance and 100 represents the frontier. For example, a score of 75 in DB 2016 means an economy was 25 percentage points away from the frontier constructed from the best performances across all economies and across time. A score of 80 in DB 2017 would indicate the economy is improving. In this way the distance to frontier measure complements the annual ease of doing business ranking, which compares economies with one another at a point in time.

2.2 Capital

2.2.4 Investment risk
Euromoney Country Risk Rankings September 2015
www.euromoneycountryrisk.com

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2.2.6 Investment in Telecommunications
Passport GMID
Source: © Euromonitor International 2017
National sources

Investment refers to as the annual capital expenditure; this is the gross annual investment in telecom (including fixed, mobile and other services) for acquiring property and network. The term investment means the expenditure associated with acquiring the ownership of property (including intellectual and non-tangible property such as computer software) and plant. This includes expenditure on initial installations and on additions to existing installations where the usage is expected to be over an extended period of time. Note that this applies to telecom services that are available to the public, and exclude investment in telecom software or equipment for private use.

2.3 Technological framework

2.3.2 Mobile Broadband subscribers Business Monitor International

Total active mobile 3G and 4G subscriptions, excluding broadband connections on dedicated data SIM cards or USB dongles. Data given as a percentage of the total mobile market.

2.3.3 Wireless broadband Passport GMID Source: © Euromonitor International 2017

The penetration rates of wireless broadband is calculated by dividing the number of Wireless Broadband subscribers by the total population and multiplying by 100. Wireless-broadband subscriptions refer to the sum of satellite broadband, terrestrial fixed wireless broadband and active mobile-broadband subscriptions to the public Internet. The indicator refers to total active wireless-broadband Internet subscriptions using satellite, terrestrial fixed wireless or terrestrial mobile connections. Broadband subscriptions are those with an advertised download speed of at least 256 kbit/s. In the case of mobile-broadband, only active subscriptions are included (those with at least one access to the Internet in the last three months or with a dedicated data plan). The service can be standalone with a data card, or an add-on service to a voice plan. The indicator does not cover fixed (wired)-broadband or Wi-Fi subscriptions. Both residential and business subscriptions should be included.

2.3.4 Internet users Computer Industry Almanac Inc. April 2017 <http://www.c-i-a.com> National sources

2.3.5 Internet bandwidth speed © Akamai 2017 State of the Internet Report 4/2016

Average connection speed in Mbps: data transfer rates for Internet access by end-users for documents stored on Akamai networks.

2.3.6 High-tech exports (%) The World Bank (Development Data Group) <http://databank.worldbank.org> National sources

High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

Factor 3: Future readiness 3.1 Adaptive attitudes

3.1.1 E-Participation UN E-Government Knowledge Database

The e-participation index (EPI) measures the use of online services to facilitate provision of information by governments to citizens (e-information sharing), interaction with stakeholders (e-consultation), and engagement in decision-making processes (e-decision making).

3.1.2 Internet retailing Passport GMID Source: © Euromonitor International 2017

Retail Value excluding sales tax

3.1.3 Tablet possession Passport GMID Source: © Euromonitor International 2017

Percentage of households having at least one item. Portable, usually battery-powered, and very thin personal computer contained with a touchscreen panel.

3.1.4 Smartphone possession Passport GMID Source: © Euromonitor International 2017

Percentage of households having at least one item. A smartphone is a cellular telephone with an integrated computer and other features not originally associated with telephones, such as an operating system, Web browsing, music and movie player, camera and camcorder, GPS navigation, voice dictation for messaging, the ability to run software applications, etc.

3.2 Business agility

3.2.2 Innovative firms UNESCO

Medium firms (50-250 employees) that implemented an innovation, as calculated by the UIS Questionnaire on Innovation Statistics. The indicator is presented as a percentage.

3.3 IT integration

3.3.1 E-Government UN E-Government Knowledge Database

The E-Government Development Index presents the state of E-Government Development of the United Nations Member States. Along with an assessment of the website development patterns in a country, the E-Government Development index incorporates the access characteristics, such as the infrastructure and educational levels, to reflect how a country is using information technologies to promote access and inclusion of its people. The EGDI is a composite measure of three important dimensions of e-government, namely: provision of online services, telecommunication connectivity and human capacity.

3.3.4 Software piracy BSA Global Software Survey

The BSA Global Software Survey calculates unlicensed installations of software that runs on PCs — including desktops, laptops, and ultra-portables, such as netbooks. A key component of the BSA Global Software Survey is a global survey of more than 20,000 home and enterprise PC users, conducted by IDC. In addition, a parallel survey was carried out among 2,200 IT managers in 22 countries. Please consult the original report for a more detailed explanation of the methodology.

Index to Criteria

The first number indicates the Competitiveness Factor, the second number indicates the sub-factor and the third number indicates the criterion number.

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