



IMD World Digital Competitiveness Ranking 2025

Reconfiguring digital strategies
amid trade fragmentation

IMD / World Competitiveness
Center

Preface

The IMD World Competitiveness Center has long played a role in improving nations' abilities to generate sustainable value and improve the quality of life for its citizens, through in-depth data and analysis.

In 2017, we bolstered our ability to do this by creating a digital ranking. That year, blockchain technology was sparking great interest, and voice assistants like Alexa, Siri, and Google Assistant were starting to bring AI technology into the home and workplace. Fast forward eight years, and the digital economy now accounts for 15% of world GDP, with AI integrated at scale into healthcare, finance, education, and manufacturing.

The digital economy might not seem dependent on traditional trade flows due to its intangibility. But this year's ranking finds that trade wars are affecting it – and in turn dictating digital competitiveness at both national and firm levels. In addition, the 2025 ranking takes a microscopic lens to industry trends in today's digital geopolitical sphere, using data from the IMD Executive Opinion Survey. Readers can therefore not only understand their country's mechanisms, but those of their sector on a global level.

Global trade fragmentation is affecting the digital competitiveness of nations in three main ways: firstly, it's creating winners and losers in digital infrastructure (the winners have been investing more in recent years than others, building a better framework, say, for telecoms, internet, or the application of technologies, enabling domestic reliance).

Secondly, while talent remains mobile, people are not entering certain countries in the same numbers due to geopolitical instability. This affects digital competitiveness when domestic policies and regional instability combust into a situation where more talent is leaving the country than entering it. Several of the economies we assess are victims of this and have fallen in our rankings, as my colleagues' analysis will expose.

Thirdly, in a fragmented world, regulatory advantages are becoming a key determinant of digital competitiveness. Regulatory clarification and safety enable companies and governments to incorporate the technology available as efficiently and effectively as possible. We have the EU, the US, and Southeast Asia recognizing this with certain regulatory improvements.

This year, we've added data on AI-related patent publications (from the WIPO Statistics Database) and on annual private investment in artificial intelligence (from Quid, via the Stanford AI Index Report). Namibia, Kenya, and Oman are welcome newcomers.

Our thanks go to our partner institutes for their continued commitment to facilitating this publication, and especially their support in disseminating our survey and supporting our statistical data collection, enabling us to ensure accuracy and local relevance.



Arturo Bris
Director
IMD World Competitiveness Center

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The IMD World Competitiveness Center

For more than thirty-five 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 73 Partner Institutes in 60 countries to provide the government, business and academic communities with the following services:

Competitiveness Special Reports	IMD World Digital Competitiveness Ranking
Competitiveness Prognostic Reports	IMD World Talent Ranking
Workshops/Mega Dives on competitiveness	Hinrich-IMD Sustainable Trade Index
IMD World Competitiveness Yearbook	Smart City Index

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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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Partner Institutes

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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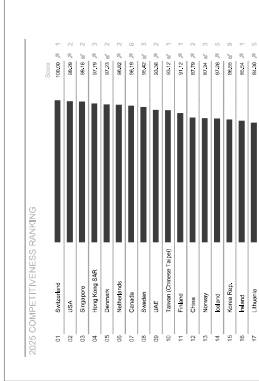
South Africa Productivity SA www.productivitysa.co.za Amelia Naidoo, Acting Chief Executive Officer Sebolelo Juliet Mashabela, Acting Chief Economist	United Arab Emirates Federal Competitiveness and Statistics Centre (FCSC) http://fcsc.gov.ae/
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User guide

User Guide for the IMD World Digital Competitiveness Ranking

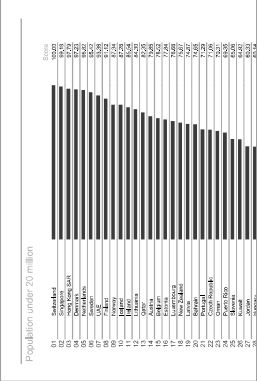
Overall and Breakdown: Digital Rankings

The IMD World Digital Competitiveness Ranking



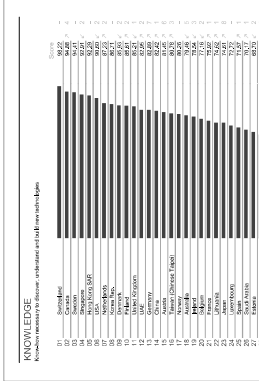
The IMD World Digital Competitiveness Ranking presents the 2025 overall rankings for the 69 economies covered by the WCI. The rankings are calculated on the basis of the 61 ranked criteria: 40 hard and 21 survey data. The countries are ranked from the most to the least digital competitive. The final column shows the improvement or decline from the previous year. The index value or “score” is also indicated for each country.

Selected breakdowns of the IMD World Digital Competitiveness Ranking



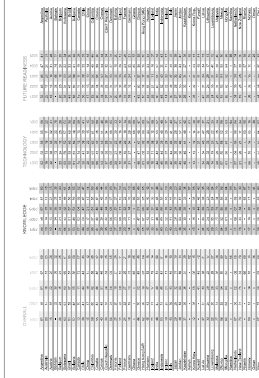
In addition to global digital rankings, other rankings are provided to show comparisons based on different perspectives. These digital rankings include countries split by population size (populations above and below 20 million), by GDP per capita to reflect different peer groups (above and below \$20,000)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

Digital Competitiveness Factor Rankings



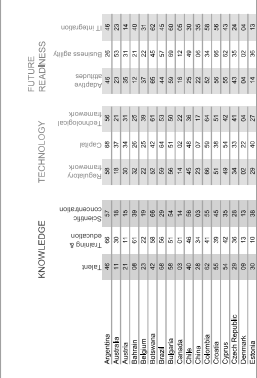
The global rankings for each of the Digital Competitiveness Factors are then shown as individual ranking tables. Again, the economies are ranked from the most to the least digital competitive and the previous year’s rankings (2024) are shown in brackets. Similar to the Overall Digital Ranking, the values 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.

Digital Sub-factor Rankings



A summary of the rankings for all nine sub-factors is presented for the 69 economies for 2025. 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.

Digital Competitiveness Country Profiles

Each two-page profile analyses the performance of one of the 69 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.

Page 1: Digital Competitiveness – Overall and factors trends

This page shows the overall, factor and sub-factor ranking performances of the country in 2025, their 5-year trends and a comparison between competitiveness and digital competitiveness rankings. The following indicators are presented:

1. Overall Performance

Overall, factors and sub-factors digital ranking performances of the country in 2025. The direction of the triangles indicates whether there has been an improvement or a decline with respect to the previous year.

2. Overall & Factors – 5 years

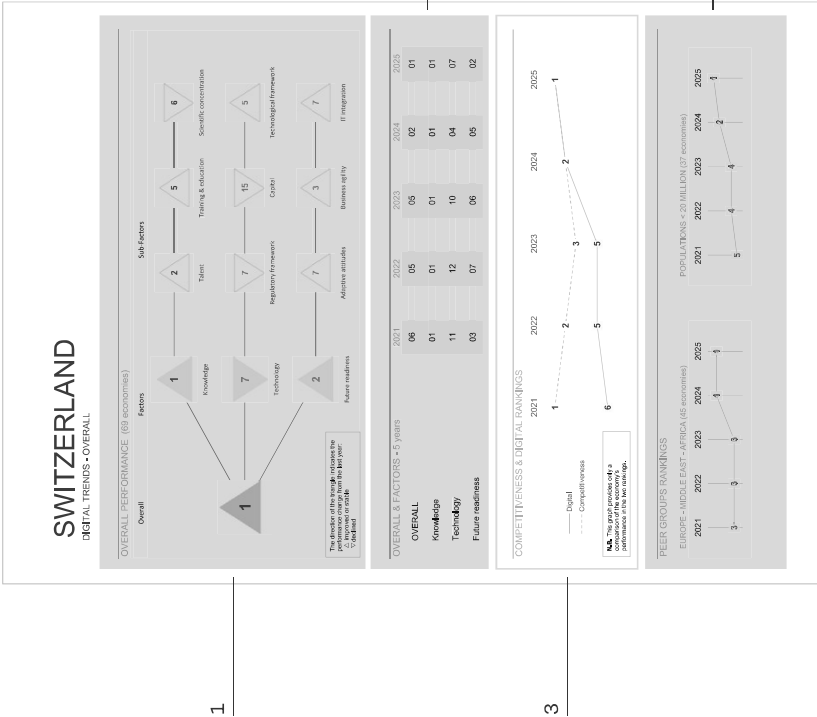
The evolution of the overall and factors digital rankings in the past 5 years.

3. Competitiveness and Digital Rankings

Comparison of the country' performances in the World Competitiveness Ranking and World Digital Competitiveness Ranking in the last 5 years.

4. Peer Group Rankings

Based on geographical region and population size.



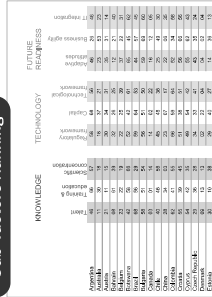
Digital Competitiveness Country Profile—Page 1

1 Overall Performance

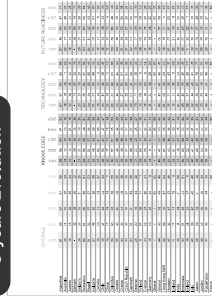
2 Overall & Factors

4 Peer Group Rankings

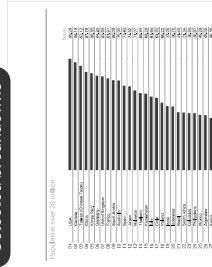
Sub-factors Ranking



5-years Evolution



Selected breakdowns



Digital Competitiveness Country Profiles

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 61 criteria rankings for 2025.

1. Factors Breakdown

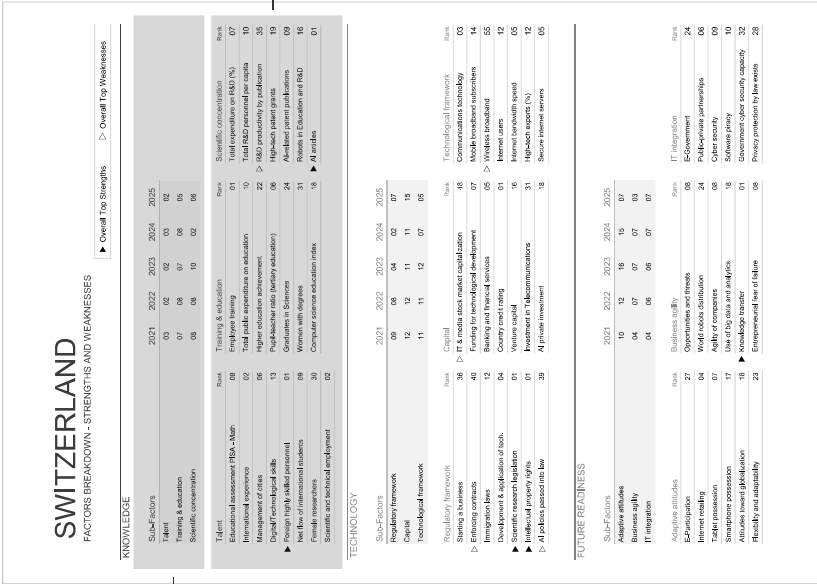
Shows the 5-years evolution of the sub-factors rankings composing the three factors of Knowledge, Technology and Future Readiness.

2. 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 ▶) and the five criteria in which its performance is the worst (weaknesses ◀) 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 61 indicators composing the World Digital Competitiveness Ranking and can thus be considered the digital competitive advantages and disadvantages of the economy.

The full criteria names can be found in the Appendix and the statistical tables are available for subscribers of the IMD World Competitiveness Online 7

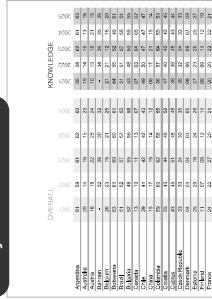
It is important to note that what constitutes a strength or weakness is relative to each economy's circumstances or development. Also, the ranking position of a country may not necessarily improve or decline as a consequence of its own evolution since it is always relative to the performance of the other 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.



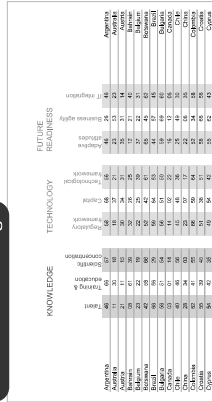
1 Factors Breakdown

2 Strengths and Weaknesses

5-years Evolution



Sub-factors Ranking



Appendices

Appendix 1: Composition of sub-regions and regions

Western Europe	Austria	Italy	Europe, Middle East & Africa
	Belgium	Luxembourg	
	Cyprus	Netherlands	
	Denmark	Norway	
	Finland	Portugal	
	France	Spain	
	Germany	Sweden	
	Greece	Switzerland	
	Iceland	United Kingdom	
	Ireland		
Eastern Europe	Bulgaria	Lithuania	Europe, Middle East & Africa
	Czech Republic	Poland	
	Estonia	Romania	
	Croatia	Slovenia	
	Hungary	Slovak Republic	
	Latvia		
	Bahrain	Nigeria	
Western Asia & Africa	Botswana	Oman	Europe, Middle East & Africa
	Ghana	Qatar	
	Jordan	Saudi Arabia	
	Kenya	South Africa	
	Kuwait	Türkiye	
	Namibia	UAE	

Ex-CIS & Central Asia	Kazakhstan	Asia & Pacific
	Mongolia	
	China	
Eastern Asia	Hong Kong SAR	Asia & Pacific
	Taiwan (Chinese Taipei)	
	Japan	
Southern Asia & The Pacific	Australia	Asia & Pacific
	India	
	Indonesia	
	Malaysia	
	Thailand	
North America	Canada	The Americas
	Mexico	
South America	Argentina	The Americas
	Brazil	
	Chile	
	Venezuela	

Analysis

Reconfiguring digital strategies amid trade fragmentation *National and firm-level challenges*

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The current world (dis)order is characterized by escalating geopolitical rivalries, contested trade norms, and fragmented institutional frameworks, which are together shaping all aspects of economic life and having particularly deep effects on firms operating across borders. Trade conflicts were once thought to be confined to disputes over tariffs or quotas, but are now clearly extending deep into the intangible roots of the digital economy: intellectual property, data flows, technical standards, and strategic technologies.

As a result, the competitiveness environment in which firms operate is no longer defined solely by market forces or innovation capabilities, but increasingly by the volatility of trade relations and the growing differences among countries and regions in the ways they regulate, develop, and adopt technology. In such a context, digital strategy is far from protected from external disruptions. Moreover, it is structurally embedded within such disruptions.

Access to technology and overseas markets, as well as research collaboration and international talent mobility, have become subject to a complex web of bilateral restrictions, retaliatory policies, and non-tariff barriers. This new level of institutional fragmentation erodes the predictability on which digital competitiveness has historically relied. Firms, particularly those embedded in global value chains or reliant on platform interoperability, face major strategic consequences. Their digital ambitions are now filtered through questions of geopolitical alignment, jurisdictional compliance, and technological self-sufficiency.

Moreover, the ripple effects extend beyond technology-intensive sectors. Even service-oriented firms must contend with localization demands (e.g., digital platforms built or hosted locally), dual-use restrictions (e.g., export controls on technologies with commercial and potential military use), and uncertainty in international standards recognition. In short, the

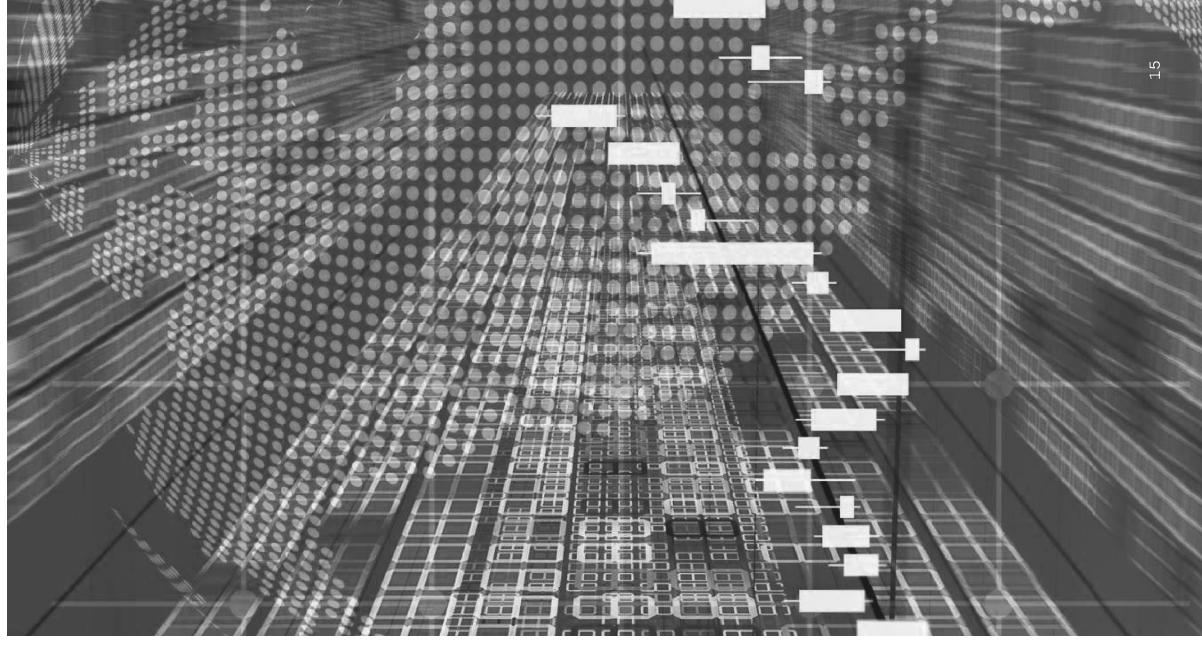
ongoing disintegration of the global economic order is not a background variable, but a hindrance to strategic viability.

As firms evaluate their digital strategies amid mounting trade tensions, the boundaries between economic planning and geopolitical risk management continue to blur. Understanding this multi-domain disruption is essential for analyzing how digital competitiveness is redefined in the current international economy. Not through efficiency and scale alone, rather, through resilience, adaptability, and institutional effectiveness across an increasingly contested global context.

With this scenario in mind, we assess in greater detail the impact of several strategic domains on digital strategy and how trade tensions are affecting them. These domains include market access and expansion, access to technology, regulatory environment, innovation and R&D, and talent acquisition and retention. The analysis of each domain is two-fold. First, we examine their fundamental role in digital strategy. Second, we present highlights of national rankings, regional patterns, and sectoral dynamics relevant to each domain. Such an assessment of the impact of trade fragmentation is based on evidence drawn from the perspectives of business leaders who participated in IMD's Executive Opinion Survey.

Indeed, a core part of the data forming the results of the IMD Digital Competitiveness Ranking comes from the survey responses from 6,162 senior executives in 69 countries. By focusing on a specific section of this survey, we can delve deeper into how trade conflict is affecting the five strategic domains of digital strategy at the firm level.

The survey asked respondents: "In which areas do international trade conflicts have the most impact on the digital strategy of your organization?" They could choose any number of the following answers: market access and expansion, access to technology, the regulatory environment, innovation and R&D, and talent acquisition and retention.

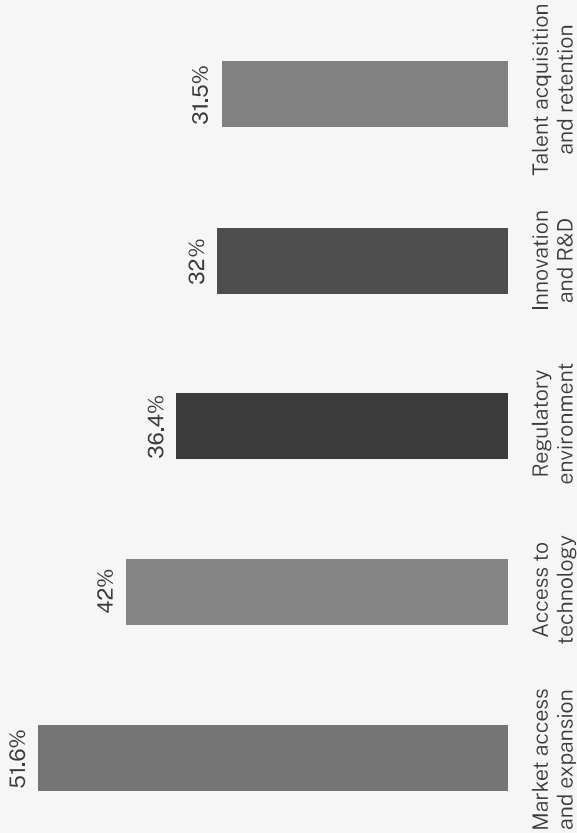


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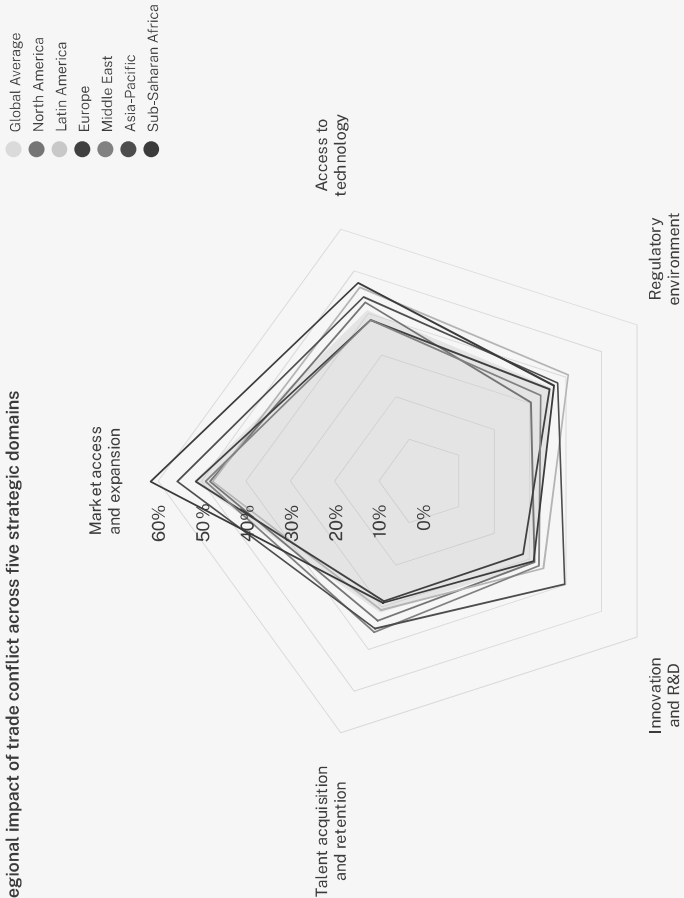
The results are different on a country level but globally consistent. Shortages are widely reported (see Figure 1). Highly impacted countries, meaning countries where executives voted the most for any one of the five domains, include both advanced and emerging economies. This suggests that exposure to cross-border digital flows, and not income level, is the primary determinant of strategic vulnerability to trade fragmentation.

The results indicate that the disruption firms are facing due to trade conflict is multi-dimensional. While market access and expansion, and access to technology emerge as the most widely cited areas of concern, regulatory fragmentation, innovation and R&D constraints, and talent

Figure 1: Impact of trade conflicts across strategic domains (percentage of executives reporting five separate effects)



Box 1: Regional impact of trade conflict across five strategic domains



Below, we analyze each domain comparatively and highlight national rankings, regional patterns, and sectoral dynamics. The findings show that trade conflict is now a structural feature of the global economy. It can shape where, how, and with whom digital strategies can be executed.

1. Market access and expansion

Market access stands out as the domain most directly and immediately affected by trade

conflicts. While traditionally associated with tariffs and border logistics, market access in the digital economy encompasses a wider and more complex set of institutional conditions. These include access to digital platforms, cloud infrastructure, foreign client bases, and interoperable data ecosystems. Firms pursuing digital expansion strategies rely not only on the ability to deliver services across borders but also on predictable access to regulatory environments that support secure, scalable, and lawful engagement with international customers.

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Evidence highlights the outsized impact of trade-induced constraints on market access. Small and medium-sized enterprises (SMEs), for instance, engaged in digital exports, experience revenue declines of up to 20% when faced with delays, licensing restrictions, or compliance bottlenecks associated with trade conflict.¹ This pattern is corroborated by countries experiencing digital trade restrictions, which see significantly reduced digital service exports and slower technological adoption.² Furthermore, access barriers disproportionately affect firms that lack the legal or administrative capacity to navigate fragmented trade regimes, particularly those in emerging markets. Such constraints operate through a range of formal and informal channels. Regulatory asymmetries like mandatory data localization, inconsistent licensing frameworks, and cross-border taxation undermine the ability of firms to operate seamlessly across jurisdictions.³

These policies convert scale-driven digital services into geographically isolated operations. The latter requires duplicated infrastructure, specialized compliance teams, or the abandonment of certain markets altogether. Even when firms are technically capable of cross-border operations, the reputational and legal risks introduced by trade-based retaliation can deter investment or hinder market-entry strategies.

1 Freund, C., Mattos, A., Mulaabdic, A., & Ruta, M. (2024). Is US trade policy reshaping global supply chains? *Journal of International Economics*, 152, 104011.
2 Ferracane, M. F., Lee-Makiyama, H., & Van Der Marel, E. (2018). Digital trade restrictiveness index. European Center for International Political Economy, 5.
3 Ferracane, M. F., Kren, J., & Van Der Marel, E. (2020). Do data policy restrictions impact the productivity performance of firms and industries? *Review of International Economics*, 28(3), 676-722.

What do executives say?

Among the five strategic domains evaluated in our Executive Opinion Survey, market access emerges as the most frequently affected by international trade conflicts. A total of 51.63% of survey participants report that trade tensions have negatively influenced their firm's ability to enter, operate in, or expand across international markets. This finding, in turn, underscores the heightened vulnerability of cross-border commercial engagement in an era of growing institutional fragmentation, retaliatory trade measures, and technological segmentation. Market access in the digital economy encompasses access to cloud platforms, cross-jurisdictional licensing, regulatory interoperability, and data mobility. All of these dimensions are increasingly subject to policy volatility. Firms pursuing digital internationalization rely on predictable access to digital infrastructure, stable digital services taxation frameworks, and legal assurance for remote service delivery. Trade conflict compromises these foundations by introducing abrupt changes in legal exposure, compliance cost, and reputational risk.

The countries reporting the most severe market access constraints provide key insights into how this disruption plays out in different economic contexts. Jordan ranks first globally, with 79.21% of executives citing trade-induced obstacles to market access. Kenya follows at 72.22%, Lithuania (70%), Latvia (69.05%), and Bulgaria (65.22%) complete the top five. Despite wide variation in income levels and digital sector maturity, these countries share common features. They have outward-oriented digital services sectors, limited domestic markets, and reliance on platform interoperability or transnational regulatory access.

Jordan and Kenya exemplify the challenges faced by smaller, outward-oriented digital economies navigating multiple regulatory regimes.⁴ Jordanian firms in fintech, business process outsourcing (BPO), and software as a service (SaaS) operate across the Middle East, Europe, and North America, but face mounting barriers from divergent cybersecurity standards, digital tax rules, and platform-specific sanctions. Similarly, Kenya's role as East Africa's digital hub is constrained by cross-border frictions such as content hosting mandates, internet taxation, and conflicting consumer protection laws. Emerging data nationalism policies further fragment regional markets, turning previously dynamic digital service flows into isolated national systems.⁵ In Europe, Lithuania, Latvia, and Bulgaria illustrate how smaller EU members with active tech export sectors remain vulnerable to external trade frictions. Though integrated into the EU digital market, their reliance on clients in the UK, the US, and Asia exposes them to post-Brexit divergence, GDPR debates, and transatlantic disputes. These elements raise compliance costs, legal uncertainty, and the need for duplicative infrastructure.

Other Asian and African countries also report substantial market access disruptions. Indonesia (63.93%) ranks sixth globally, reflecting the country's increasing digital export orientation. Indonesian firms face constraints from both China-US platform divisions and data flow friction with key ASEAN trading partners. Botswana (63.08%) and South Africa (62.30%) also appear in the top ten. The latter indicates that even in regions with lower aggregate digital

4 World Bank, & World Trade Organization. (2023). *Digital trade for development*. Washington, DC: World Bank; Geneva: World Trade Organization, <https://openknowledge.worldbank.org/handle/10986/40454>
5 Del Giovane, C., Ferencz, J. & López-González, J. (2023). *Nature evolution and potential implications of data localisation measures* (OECD Trade Policy Papers No. 278). OECD Publishing.

trade volumes, firms are feeling the impact of shifting access conditions, such as those related to cloud services, authentication protocols, and transnational payments. Additionally, Taiwan (Chinese Taipei, 64.66%) and Denmark (63.46%) offer cases of advanced economies facing unique access challenges. On the one hand, Taiwan's strategic alignment with US technology architecture exposes its firms to exclusion from certain Chinese platforms and standards while also making them collateral targets in retaliatory trade responses. On the other hand, Denmark's high score is notable given its strong digital governance record and EU integration. The likely drivers include stricter enforcement of EU digital services rules and uncertainty regarding access to non-EU digital markets amid increasing regulatory fragmentation.

What emerges across these examples is a clear pattern. The loss of market access is not necessarily due to declining competitiveness or lack of innovation, but to rising uncertainty in the legal, technological, and political conditions that govern international digital transactions. Firms are often caught between conflicting regimes such as the US cloud export compliance, Chinese platform restrictions, and EU data localization, and must make difficult strategic decisions about jurisdictional alignment.

2. Access to technology

Access to enabling technologies, including hardware, software, digital platforms, and specialized components, is essential for digital competitiveness. While innovation drives the creation of new capabilities, access to technology determines a firm's ability to adopt, scale, and operationalize those innovations.

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Trade policy plays a critical role in this access. When trade is open, it facilitates the global diffusion of cutting-edge tools. Conversely, when restricted, it isolates firms from critical resources. That is to say that trade integration accelerates technological upgrading via imports of intermediate and capital goods.⁶ However, such a process is jeopardized when geopolitical tensions result in export bans, blacklists, or licensing limitations.

There is evidence that digital trade barriers significantly reduce technological innovation efficiency.⁷ These barriers include cross-border licensing requirements, data localization rules, and platform access restrictions. Their effects are particularly important in mid-income economies with limited domestic alternatives. For example, evidence indicates that semiconductor trade disruptions led to cascading delays and cost increases in downstream firms reliant on timely access to high-performance chips. These indirect effects highlight the systemic character of technology supply chains, where constraints at the upstream level reverberate throughout entire sectors.⁸

At the firm level, the uncertainty surrounding trade-based technology restrictions inhibits investment in infrastructure upgrades and system integration. Firms facing uncertain access to foundational technologies, whether due to export controls, supply chain reconfiguration, or retaliatory sanctions, tend to delay digital modernization in favor of legacy

system maintenance.⁹ In dynamic sectors like fintech, logistics, and e-commerce, such hesitation leads to digital competitiveness gaps that are difficult to recover. In short, access to technology is not a passive condition but an active determinant of competitiveness parity in a volatile global economy.

What do executives say?

Access to enabling technologies also forms the operational basis of any digitally competitive enterprise. Think cloud infrastructure, digital platforms, semiconductors, and AI engines. In an increasingly conflictual trade landscape, this domain is subject to growing strain. 41.98% of survey respondents report that international trade conflicts have negatively affected their firm's access to essential technologies.

Cross-national analysis indicates that such an impact is not confined to any one region or income group. Rather, the most severely affected economies include both advanced industrial countries and emerging digital markets. Poland leads the global ranking, with 67.61% of executives citing negative effects in this domain. Ghana (61.40%), France (61.02%), Malaysia (60.50%), and Botswana (56.92%) round out the top five. This distribution points to a convergence of technological dependencies across geographies, where supply chain positioning and external licensing access may matter more than domestic capacity alone.

Poland and Ghana illustrate different forms of vulnerability to trade-related technology disruptions. Poland's dual role as both importer and integrator of digital systems makes its firms, particularly in manufacturing and logistics,

highly sensitive to export controls, platform restrictions, and evolving certification regimes linked to US, East Asian, and EU policies. Despite being embedded in the EU single market, Polish firms rely on external software and infrastructure, and face friction as initiatives like GAIA-X and the European Chips Act remain under development.¹⁰ Ghana, by contrast, represents the challenges faced by emerging digital economies that depend on imported telecom hardware, enterprise platforms, and licensed software to support growth. SMEs are especially vulnerable to tariff hikes, licensing barriers, and software access delays, with limited domestic substitutes. Similar risks affect other African digital exporters, including Nigeria (55.65%), where structural reliance on global platforms amplifies exposure to trade fragmentation.¹¹ France, Malaysia, and the Philippines illustrate how trade conflict disrupts technology access through both regulatory and supply chain channels. France's high impact score reflects tensions between its digital sovereignty agenda and reliance on global tech ecosystems. National rules on data residency and EU-focused procurement impose complex compliance burdens, which are intensified by platform shifts linked to US-China trade tensions.¹² In Southeast Asia, Malaysia faces technology friction due to supply chain exposure. Malaysia's role in global semiconductor production makes it vulnerable to restrictions on chip designs and cloud platforms. Malaysian firms are thus constrained by geopolitical dynamics beyond their control.¹³

10 Del Giovane, et al., 2023. *Nature, evolution and potential implications of data localisation...*; and European Commission, (2023). *The European Chips Act*. <https://digital-strategy.ec.europa.eu/en/policies/european-chips-act>

11 World Bank & World Trade Organization, 2023. *Digital trade for development...*; and UNCTAD, (2021). *Digital economy report 2021: Cross-border data flows and development – For whom the data flow*. <https://unctad.org/webflyer/digital-economy-report-2021>

12 Del Giovane, et al., 2023. *Nature, evolution and potential implications of data localisation...*; and UNCTAD, 2021. *Digital economy report 2021...*

13 World Bank & World Trade Organization, 2023. *Digital trade for development...*

Ultimately, access to technology is no longer ensured by economic status or national policy alone. It now depends on complex trade relations, licensing constraints, and platform geopolitics. Firms increasingly face disruptions to essential tools (e.g., cloud services and AI libraries) due to policy decisions beyond their control. As digital sovereignty efforts, fragmented standards, and retaliatory restrictions grow, access to technology is shaped as much by geopolitical alignment as by innovation capacity.

3. The regulatory environment

The regulatory environment has become one of the most complex and consequential domains through which trade conflicts disrupt digital strategy. Unlike traditional trade barriers, which are often transparent and quantifiable (e.g., tariffs or quotas), regulatory barriers emerge “behind the border” and operate through technical standards, compliance protocols, and institutional divergence. These non-tariff measures can exert greater economic influence than tariffs precisely because they are harder to contest, measure, or harmonize.¹⁴ In the context of digital strategy, regulatory divergence directly affects how, and whether, firms can scale services, transfer data, protect intellectual property, and secure legal standing in foreign markets.

Studies support the conclusion that regulatory fragmentation is a central constraint on digital trade and firm competitiveness. Barriers related to cross-border data flows, local content requirements, and technology certification significantly reduce services exports, especially

14 Baldwin, R. (2016). *The great convergence: Information technology and the new globalization*. Harvard University Press.

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among SMEs with limited compliance capacity.¹⁵ In parallel, the implementation of the General Data Protection Regulation (GDPR) has had extraterritorial consequences. While GDPR has raised global data privacy standards, its variable enforcement across jurisdictions has created legal uncertainty and fragmented compliance obligations, particularly for non-EU firms.¹⁶ That is, regulatory measures intended to enhance trust and accountability can unintentionally serve as exclusionary trade practices.

The burden of regulatory fragmentation is intensified by the fact that digital regulations are cross-cutting rather than sector-specific. In turn, such regulations force firms to simultaneously comply with overlapping standards in AI, financial reporting, and data governance across jurisdictions. This institutional decoupling reduces investment efficiency and stifles innovation in emerging technologies such as AI, biotech, and blockchain.¹⁷ Southeast Asia illustrates these dynamics clearly. ASEAN's efforts at regulatory harmonization are undermined by national divergences and geopolitical sensitivities, which delay data exchange and weaken digital supply chain integration.¹⁸ Firms in Malaysia, for instance, face concurrent compliance with local data residency laws, US-China platform divides, and EU-style privacy standards. That level of compliance imposes significant structural and strategic costs. As a result, regulatory alignment is at the forefront of digital competitiveness, requiring legal foresight, jurisdictional

adaptability, and sustained investment in compliance capabilities. Such factors cannot be easily hedged or outsourced in an increasingly fragmented digital economy.

What do executives say?

In the digital economy, the regulatory environment plays a decisive role in shaping how firms scale across markets, manage data, protect intellectual property, and ensure operational continuity. Unlike traditional trade barriers, which tend to be explicit and quantifiable, regulatory barriers emerge behind the border through technical standards, compliance frameworks, and institutional divergence. Such barriers are difficult to contest in trade negotiations and disproportionately affect digital firms operating in multiple jurisdictions. According to survey results, 36.42% of executives indicate that trade conflict has introduced or exacerbated regulatory constraints on their firm's digital strategy. This result suggests that the coherence of the legal environment is now a strategic variable in digital competitiveness.

At the global level, the five most affected countries are Jordan (56.44%), Malaysia (56.30%), Belgium (51.11%), Austria (50.56%), and Spain and Chile (both with 50%). Each of these countries illustrates a different facet of regulatory vulnerability. In Jordan and Malaysia, firms must navigate overlapping and sometimes contradictory legal regimes imposed by trading partners, technology suppliers, and regional blocs. In the European cases, regulatory complexity stems less from institutional weakness than from excessive fragmentation and extraterritorial legal exposure. The latter is particularly so in relation to global data governance norms. Meanwhile, Chile has opted for a hybrid positioning that leads it to

participate in OECD frameworks while engaging in Pacific regional trade. Such positioning exposes its digital landscape to simultaneous pressure from Western data norms and Asia-Pacific digital sovereignty measures.¹⁹

The rest of the top 10 includes the Netherlands (48%), Indonesia (47.54%), Germany (46.88%), and Ireland (46.55%). In the Netherlands and Germany, regulatory complexity arises not from lack of legal clarity but from geopolitical entanglements. As host countries to multinational cloud providers and digital platforms, they are often front-line implementers of contested global data policies.²⁰ German firms in particular are impacted by export controls tied to cybersecurity certifications and AI risk classifications.²¹ Indonesia's challenge arises from dual pressures. First, it needs to uphold national digital sovereignty while remaining compatible with global interoperability frameworks. Such a balance becomes harder to maintain under intensifying trade tensions.²²

Across all these cases, one finding remains clear. Regulatory divergence is no longer an incidental or secondary concern. It is a core issue in digital strategy formulation. As such, it affects everything from product architecture and user interface localization to contract structuring and data pipeline design. Firms must now budget for multi-jurisdiction legal compliance, anticipate rule changes driven by retaliatory trade actions, and maintain

19 Ministry of Trade and Industry, Government of Singapore, (2025). Overview of the Digital Economy Partnership Agreement (DEPA); and OECD (2025). Digital Government in Chile: Strengthening the Management of Digital Investments. OECD Publishing.
20 The Cyber Hive Analysis, (2025). European businesses rethinking cloud dependencies amid geopolitical risk. The Cyber Hive.
21 OECD (2024). OECD Artificial Intelligence Review of Germany. OECD Publishing.
22 OECD. (2024). OECD Digital Economy Outlook 2024: Embracing the Technology Frontier. OECD Publishing.

regulatory adaptability as a core capability. Success in such a context depends not only on technological innovation or market demand, but also on institutional intelligence. That is, the ability to interpret, align with, and adapt to a shifting regulatory landscape.

4. Innovation and R&D

Innovation and R&D are at the core of firm-level digital competitiveness. They enable the development of new products, processes, and services that differentiate firms in increasingly saturated markets. Trade openness is important in fostering innovation through knowledge spillovers, access to advanced inputs, and global learning-by-doing mechanisms.²³ In practice, these mechanisms are disrupted when geopolitical tensions limit cross-border flows of information, capital, and technical collaboration. Thus, any erosion of international trade cooperation directly threatens the effectiveness of innovation systems. This is particularly so for those dependent on globally distributed R&D networks.

There is evidence that trade conflict-induced constraints on innovation are not only financial but structural. For instance, while Chinese firms on US entity lists (i.e., classified as a national security issue by US authorities) increased their R&D expenditures by 16.6% in response to export restrictions, they did not experience a corresponding increase in innovation output, such as patents or product launches.²⁴ Such a divergence reveals the limitations of defensive innovation strategies that attempt to substitute domestic efforts for blocked international inputs

23 Grossman, G. M., & Helpman, E. (1991). Trade, knowledge spillovers, and growth. *European economic review*, 35(2-3), 517-526.
24 Hu, H., Yang, S., Zeng, L., & Zhang, X. (2024). US-China trade conflicts and R&D investment: evidence from the BIS entity lists. *Humanities and Social Sciences Communications*, 11(1), 1-15.

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or partnerships. The quality and strategic value of innovation declines when global collaboration and specialized imports are no longer reliably accessible.

The vulnerability of innovation to trade conflict is particularly visible in countries situated within larger regional innovation networks. Geopolitical sanctions and policy frictions reduce co-patenting and joint research activities between Western and Eastern Europe.²⁵ Fragmentation of research ecosystems erodes the diversity and quality of innovation pipelines. Fragmentation thus reduces firms' ability to harness external expertise and technological advances. This is not limited to formal R&D partnerships.

Informal diffusion channels such as industry conferences, cross-border hiring, and shared research infrastructure are also undermined by trade conflict. Furthermore, planning for innovation becomes increasingly volatile under conditions of trade uncertainty. Firms facing policy ambiguity often delay or scale down irreversible investments.²⁶ Innovation projects, which require multi-year capital commitments and involve considerable sunk costs, are particularly sensitive to this risk.

What do executives say?

Innovation and R&D are increasingly shaped by the pressures of geopolitical fragmentation. 31.96% of high-level executives report that international trade conflicts have adversely affected their organization's innovation and R&D strategies. While this figure is lower than the impact levels recorded for market access and technology acquisition, it nonetheless signals

a structural vulnerability in firms' capacity to sustain long-term innovation cycles under conditions of strategic uncertainty.

Economies that are deeply embedded in cross-border innovation environments show the highest levels of concern in this regard. The Czech Republic ranks first, with 58.33% of executives identifying trade conflict as a significant constraint. Malaysia follows closely at 54.62%, while Indonesia (49.18%), Korea Rep. (48.68%), and China (47.95%) round out the top five. These economies, though diverse in income and innovation capacity, share a common trait: They experience high exposure to international research collaboration, technological co-dependence, and integrated production value chains. The Czech Republic and Malaysia exemplify how deep integration into regional innovation ecosystems heightens exposure to geopolitical disruption. Czech firms, though moderate in domestic R&D spending, rely heavily on EU research funding, cross-border technology transfer, and industrial partnerships linked to Germany and Austria. These ties make innovation performance sensitive to trade tensions such as EU-US data-sharing uncertainties, dual-use export controls, and shifting digital services regulation.²⁷ Malaysia's high vulnerability similarly reflects its role in East Asia's semiconductor and electronics value chains, where local firms act as R&D intermediaries for Japanese, Korean, and Chinese tech leaders. This position leaves them exposed to export restrictions and platform sanctions originating from the US-China technology rivalry, particularly in areas like cloud access, AI tools, and chip design, which directly constrain their innovation capacity.²⁸

25 Makkonen, T., & Mitze, T. (2021). Geo-political conflicts, economic sanctions and international knowledge flows. *arXiv preprint arXiv:2112.00564*.

26 Bloom, N., Bond, S., & Van Reenen, J. (2007). Uncertainty and investment dynamics: The review of economic studies, 74(2), 391-415.

28 World Bank & World Trade Organization. 2023. Digital trade for development....; and UNCTAD. 2021. Digital economy report 2021....

Indonesia represents a distinct but instructive case. As a rising fintech and e-commerce center, its digital innovation environment is more service-oriented and less dependent on hardware co-development. Nevertheless, it is structurally reliant on foreign intellectual property (IP), software platforms, and cross-border investment.²⁹ Restrictions on foreign participation in digital infrastructure, or platform decoupling between Chinese and Western providers, introduce friction into R&D planning.³⁰ In such a context, digital firms depend on an uninterrupted flow of global tools and standards to remain competitive. Furthermore, Korea and China highlight the challenges faced by national innovation systems under trade-induced decoupling. In China's case, aggressive domestic R&D investment has been ramped up to compensate for diminished access to US technologies, but results have been mixed. Research has shown that while firms increase expenditures, the innovation yield measured in patents, collaborations, or commercialized breakthroughs has not always improved proportionally.³¹ Korea faces parallel challenges, with US and Chinese export controls affecting critical sectors such as AI, advanced displays, and 5G infrastructure.³²

Survey results thus highlight that innovation resilience depends on domestic capability or spending intensity as well as on a country's structural position within global research flows and technological dependencies. As trade

29 OECD (2024). *Services Trade in Indonesia: Exploring patterns, policies, and reform scenarios*. OECD Publishing.

30 U.S. International Trade Administration. (2025). *Indonesia Digital Economy*. Retrieved from <https://www.trade.gov/country-commercials-guides/indonesia-digital-economy>

31 Hu, H., Yang, S., Zeng, L., & Zhang, X. (2024). US-China trade conflicts and R&D investment: evidence from the BIS entity lists. *Humanities and Social Sciences Communications*, 11(1), 1-15.

32 Kim, H., & Cho, J. (2024). The impact of US export controls on Korea's semiconductor exports. *KDI Journal of Economic Policy*, 46(3), 1-23.

tensions multiply and multilateral coordination declines, countries and firms embedded in collaborative environments face heightened exposure to external regulatory shifts, export barriers, and retaliatory policies.

5. Talent acquisition and retention

In an economy increasingly defined by digital capabilities, access to high-skilled human capital has become a central determinant of firm digital competitiveness. Talent acquisition and retention are particularly vulnerable to trade conflicts because they rely on frameworks that enable mobility, cross-border service provision, and international recognition of qualifications. When these frameworks are disrupted, for instance, through visa restrictions or retaliatory immigration policies, the ability of firms to hire globally competitive talent deteriorates. This has both direct operational consequences and long-term strategic implications for innovation, service delivery, and market responsiveness. Evidence suggests that firms operating in jurisdictions affected by trade-related restrictions on labor mobility report longer recruitment timelines and lower productivity. Multinationals exposed to bilateral trade tensions often face hiring delays and higher labor costs due to increased visa compliance, partner country retaliation, or exclusion from cooperative education and training programs.³³ These frictions are particularly harmful in digitally intensive sectors where expertise in cybersecurity, AI, cloud architecture, or data engineering is both scarce and globally contested. Firms unable to source talent externally are often forced into suboptimal

33 Gordon, J. (2022). In the zone: Work at the intersection of trade and migration. *Theoretical Inquiries in Law*, 23(2), 147-183.

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domestic hiring or expensive retraining initiatives, which limit their capacity to scale up their digital transformation.

The spatial fragmentation of digital labor markets also limits the use of remote work and online platforms, which were once seen as mitigating tools for talent shortages. Trade conflicts affecting cloud infrastructure, cross-border payments, and data governance indirectly reduce the viability of digital freelancing and remote service delivery.³⁴ This disproportionately affects firms in emerging markets that depend on global talent marketplaces to access specialized expertise. Even when local skills are available, the absence of global exposure and collaboration hinders capability development, reinforcing the digital skills divide between countries. Furthermore, high-skilled migration is often tightly linked to research collaboration, joint ventures, and corporate mobility programs. Digital firms in the US and EU increasingly cite restrictive immigration policies exacerbated by trade tensions as barriers to hiring in AI, biotech, and fintech sectors.³⁵ The erosion of the academic and professional mobility pipelines, moreover, reduces not only the volume but also the diversity of available talent, which undermines organizational adaptability and innovation capabilities. In other words, the intersection of trade and talent mobility reveals a new vulnerability in the digital strategy formulation. Firms that once relied on globally competitive labor markets must now build resilience in an environment of constrained access and politicized hiring frameworks.

34 Berg, J., Furrer, M., Harmon, E., Rani, U., & Silberman, M. S. (2018). Digital labour platforms and the future of work: Towards decent work in the online world. ILO

35 See Zwetsloot, R., Zhang, B., Dreksler, N., Kahn, L., Anderljung, M., Dafoe, A., & Horowitz, M. C. (2021, July). Skilled and Mobile: Survey Evidence of AI Researchers' Immigration Preferences. In Proceedings of the 2021 AAAI/ACM Conference on AI, Ethics, and Society (pp. 1050-1059).

What do executives say?

Talent acquisition is a critical dimension of digital competitiveness, yet it remains particularly vulnerable to disruption in a fragmented global trade environment. Trade-induced restrictions on labor mobility include visa tightening, diplomatic frictions, or restrictions on labor-sending countries. Survey results indicate that 31.49% of respondents report international trade conflicts have negatively affected their ability to hire or retain digital talent. While this makes talent the least cited of the five strategic domains analyzed, the absolute level of concern (i.e., reported by nearly one in three respondents) suggests that human capital flows are subject to structural pressures with significant operational implications. The highest reported impact levels come from countries with distinct forms of labor market dependency and openness. Kuwait ranks first, with 56.92% of executives citing trade-related disruptions to talent strategy. The Philippines (45.54%), Cyprus (44.68%), Puerto Rico (44.44%), and Indonesia (44.26%) follow closely behind. These figures highlight a shared vulnerability across economies that rely either on expatriate labor for digital operations or on international labor markets to source specialized digital expertise.

Kuwait's top position reflects its structural reliance on imported talent in sectors such as IT consulting, digital infrastructure, and fintech. Despite policy efforts to nationalize portions of the workforce, the country's digital economy continues to draw heavily from South Asian and Southeast Asian labor markets.³⁶ Trade-related restrictions on labor mobility pose direct threats to workforce continuity. These constraints are

36 ILO (2018). Decent Work Country Programme for Kuwait. ILO country report.

compounded by the increasing politicization of migration policy and the spillover effects of bilateral diplomatic tensions. The Philippines, a global hub for business process outsourcing (BPO), relies on skilled digital professionals to serve clients across North America, Europe, and Asia. Trade-related barriers (e.g., remote work taxes, licensing hurdles, and data flow restrictions) make it harder for firms to maintain contracts and retain talent, especially in smaller BPO centers with limited shock absorption capacity.

Cyprus and Puerto Rico provide another example of small economies reliant on cross-border digital talent. Cyprus is a growing hub for IT services, software development, and digital marketing. Firms in the country depend heavily on internationally mobile professionals. Any disruptions in visa reciprocity or international credential recognition thus undermine the subcontracting pipelines and workforce continuity.³⁷ Similarly, Puerto Rico's digital firms face shrinking talent pools and compliance burdens when international remote work and licensing rules shift. Additionally, Indonesia presents distinct vulnerabilities. Despite its large domestic market, its digital economy, particularly in fintech and logistics tech, is constrained by severe shortages of advanced technical talent. Firms tap into talent within the ASEAN region, yet trade-related restrictions such as hiring bans and cross-border frictions significantly limit access to the skills needed for innovation.³⁸

Other countries that report high impact in this domain include Peru (43.18%), Malaysia (42.86%), Bulgaria (42.03%), Türkiye (41.67%),

37 IMF (2024). Cyprus: 2024 Article IV consultation—staff report. IMF Publication.

38 Economic Research Institute for ASEAN and East Asia (ERIA). (2024). Enhancing ASEAN's Competitiveness: Talent Mobility and Cooperation in the Digital Economy.

and Hungary (41.57%). In Malaysia's case, the dual dynamic of being both a receiver of digital talent and a regional exporter of IT services means that any hindrance to labor mobility resonates through both demand and supply channels. In Türkiye and Hungary, the issue is compounded by economic and political uncertainty, which amplifies the difficulty of attracting and retaining internationally mobile talent even without formal restrictions. While the impact on talent acquisition is more localized than market entry or technology access, its implications are no less strategic. A constrained talent environment not only raises costs and delays project implementation but also limits innovation and digital integration across business units. For AI and platform engineering globally competitive firms, reliance on specialized cross-border expertise is a structural feature of their business models. When those models are disrupted by external policy tensions, substitution is rarely immediate or efficient.

Reconfiguring digital strategies amid trade fragmentation
National and firm-level challenges

Box 2: The impact of international trade conflict on digital strategy: global averages



Rethinking digital
strategy amid 2025's
trade fragmentation

Digital strategy is no longer defined solely by internal capabilities or innovation diffusion.³⁹ It should now be understood as an externally responsive process, shaped by trade conflict, regulatory fragmentation, and geopolitical alignment. The five domains examined

39. Ismail, M. H., Khater, M., & Zaki, M. (2017). Digital business transformation and strategy: What do we know so far. Cambridge Service Alliance, 10(1), 1-35.

(market access, access to technology, regulatory environment, innovation and R&D, and talent acquisition and retention) serve as the principal channels through which these external pressures condition firm-level digital competitiveness. Each of these areas connects to broader institutional dynamics and subsequently to digital strategy. Market access and access to technology were the most frequently cited but concerns across the five domains were evenly distributed, globally. Countries like the Czech Republic, Malaysia, and Jordan illustrate that vulnerability to the impact of trade fragmentation is driven less by digital capacity and more by exposure to cross-border flows.

Analysis of the executives' answers shows us that the five domains are interdependent. This means that firms cannot isolate one area without encountering constraints in others. For instance, impacts on market access could cascade into barriers to talent acquisition, innovation and R&D, and/or regulatory compliance. In such a context, firms interested in growing their strategic resilience therefore need to develop capabilities across multiple fronts, including regulatory and geopolitical adaptability and jurisdictional flexibility. For policymakers, supporting digital competitiveness is starting to demand much more than investment in infrastructure or even in skills. Instead, it needs a coordinated trade policy and regulatory

alignment with a view to reducing institutional uncertainty and restoring coherence to the digital economy's operating environment. Trade conflicts, in short, have evolved into a structural condition of the global economy. They shape the geography, processes, and partnerships through which countries and firms implement their digital strategies.

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Digital competitiveness is central to economic performance and has become a defining component of national resilience in the face of shocks. Therefore, the rapid pace at which industries, companies, and governments are adopting and applying new technologies underscores the need for robust digital policy frameworks, flexible and adaptive business practices, as well as having mobile and highly skilled talent capable of maximizing the benefits of increased digital penetration. From data-driven automation and decision-making to artificial intelligence, digital technologies are reshaping production, services, and governance at an alarmingly disruptive pace across all industries.

The 2025 World Digital Competitiveness Ranking (WDCR) is based on a combination of 40 hard data indicators and 21 survey questions capturing executive perceptions, providing a comprehensive assessment of how economies are adapting to digital transformation. This essay focuses specifically on insights from IMD's Executive Opinion Survey, which collected the perspectives of more than 6,000 senior executives worldwide between January and March 2025. Analyzing these responses by country and sector of activity reveals that digital progress is far from uniform across economies. The resulting digital divide reflects structural disparities both between countries and, more significantly, within them.

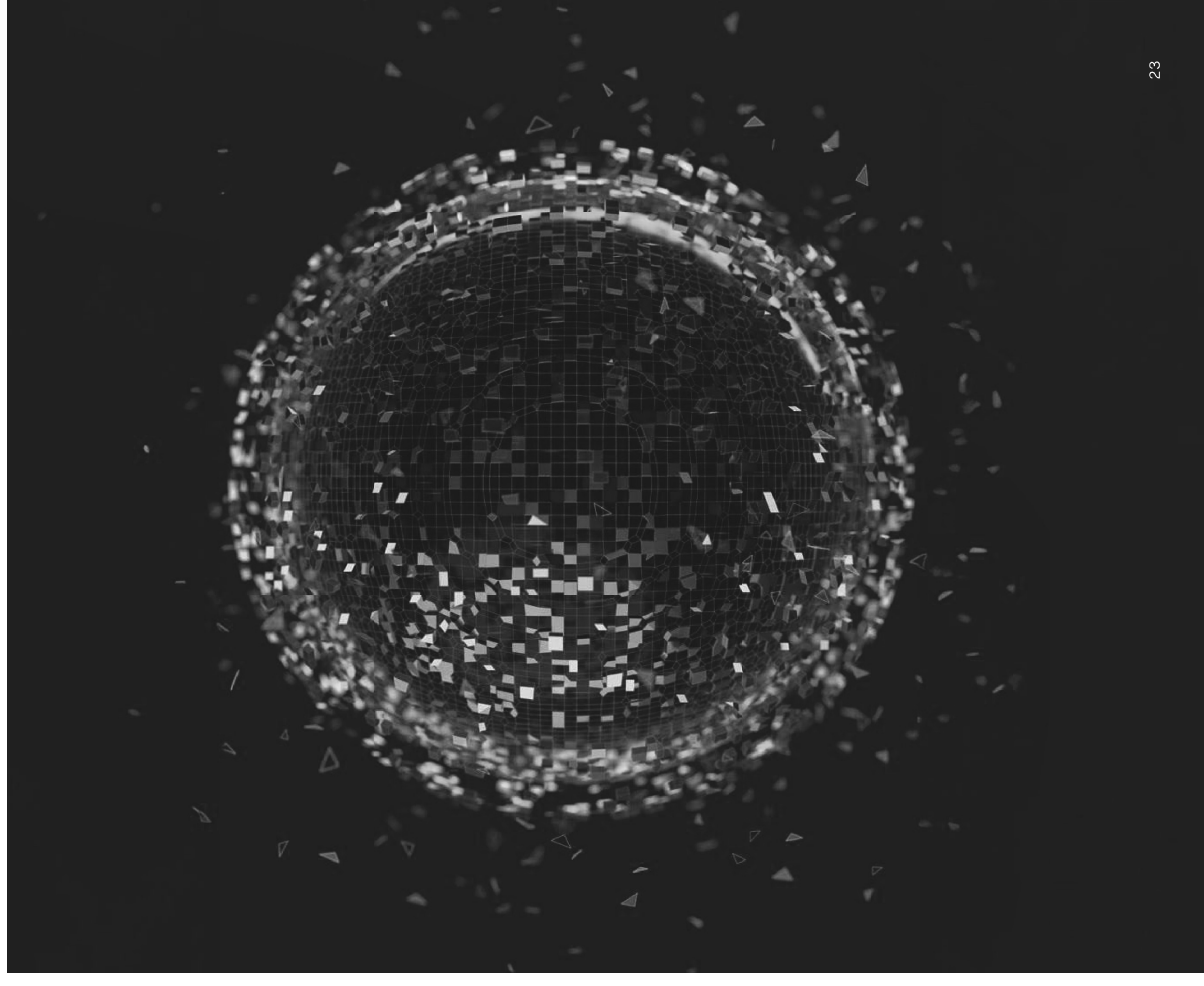
The data forming the results of the 2025 WDCR is from international, national, and regional sources.

A core part of the data making up the results of the 2025 World Digital Competitiveness Ranking is the IMD Executive Opinion Survey. Between January and March 2025, we asked 6,162 global executives 21 questions on the business climate in their location. In addition, this year we took the survey and disaggregated responses to one digitally related question (the only question that did not feed into the overall results, incidentally): “How do trade disputes affect the digital strategy of your company?”

We regrouped the answers from executives in each country by the sector of activity of the respondents and then looked for patterns that cross-cut them. We found that economies are not advancing digitally in a uniform way. The resulting digital divide is not only a matter of disparities between countries, but also within them.

These domestic gaps might be geographical – rural and urban areas being very different – or socioeconomic, reflecting variations across income groups. But what jumped out the most is that they are also sectoral, with the various industries experiencing and undertaking digital adoption at vastly different speeds. While some sectors move quickly to integrate digital tools, others lag, creating vulnerabilities for their country's long-term competitiveness.

These disparities matter deeply in the current global context. Ongoing geopolitical tensions are complicating national and company-level digital strategies. Meanwhile, trade disputes, diverging regulatory frameworks, and a growing desire for digital sovereignty – that is, boosting nations or firms' abilities to control their digital environment – are fragmenting global digital governance.



Digital enablers at the industry level *Impacts and trends*

The result is increased uncertainty and complexity for firms and governments attempting to navigate an increasingly contested landscape. In this environment, understanding how digital enablers impact industries in different ways becomes an essential analytical tool for working out why some industries and countries will continue to benefit from a competitive edge in the digital economy.

Research by the World Competitiveness Center suggests that industry performance and country-level competitiveness in the digital arena are primarily influenced by three critical digital enablers that facilitate technology adoption and assimilation: (1) digital governance and policy frameworks, (2) company capabilities, and (3) human capital.

By analyzing all three, we can move beyond isolated indicators and highlight the systemic conditions through which industries convert digital opportunities into competitiveness. For each enabler, we examine survey-based industry results to understand how executives perceive their digital readiness, see where gaps emerge, and why these differences matter.

In the IMD Executive Opinion Survey, business leaders answer questions using a scale from 1 to 6. A score of 1 indicates that the factor being evaluated does not support competitiveness in its economy, and 6 means that it strongly does. For this analysis only, we have converted these scores into percentages to provide a clearer basis for comparison: a score of 0% reflects complete dissatisfaction, while 100% represents the highest possible level of support for competitiveness according to executives.

By grouping the 21 survey questions into three categories – the key digital enablers – our analysis moves beyond individual data points to highlight systemic strengths and weaknesses that are perceived at the industry level. This is supported by the supposition that the enablers provide the structural conditions through which firms and industries translate digital opportunities into tangible performance gains.

Enabler 1: Digital governance and policy frameworks

Effective digital governance creates the conditions for industries to adopt and scale digital tools. It encompasses the institutional and regulatory environment that shapes how firms can operate digitally, covering areas from cybersecurity to intellectual property protection, and can include public-private partnerships or the management of digital infrastructure. As global digital governance fragments, however, the outcomes of such frameworks diverge across industries.

Our analysis examines six survey questions related to this enabler: management of cities, banking and financial services, public-private partnerships, cybersecurity, laws relating to scientific research, and intellectual property rights. The results reveal significant variation in how executives perceive the quality of digital governance in their economies.

Banking and financial services consistently score highly across industries, with an average satisfaction rate of 62.2%. Executives in finance and insurance report the highest satisfaction at 69.5%, reflecting decades of regulatory attention and investment in digital infrastructure. At the other end of the spectrum, executives in agriculture (58%) and construction (57.8%) are least satisfied, suggesting that existing regulatory and financial frameworks are less responsive to the needs of more traditional sectors. The relative uniformity of scores across industries highlights the long-standing policy priority given to the digitalization of financial services in economies across the world, helping explain why the financial sector has often spearheaded digital adoption. However, the lower satisfaction in agriculture and construction signals potential blind spots: without targeted policies to extend governance benefits more evenly, economies risk entrenching a digital divide between highly digitized and lagging industries.

The small disparities observed in banking services satisfaction extend more prominently to other areas of digital governance, suggesting that institutional attention remains uneven across sectors. Traditional industries like agriculture score notably lower on important governance indicators such as intellectual

property rights protection (61.2% compared to the industry-wide average of 67%) or the management of cities (59.8% versus 65.3%). This suggests that governance frameworks in the digital sphere may be optimized for certain sectors that are considered more profitable at the expense of more traditional ones, such as construction and education.

This pattern extends to opinions on the level of cybersecurity within each field: whereas agriculture, construction and education executives rate cybersecurity slightly below the global average of 60.2%, executives in finance, insurance, and real estate rate their level of cybersecurity at 65.4%, indicating that digital security governance may not adequately address emerging vulnerabilities in sectors undergoing digital transformation and may be overly focused on protecting the industries which have already undertaken such digitalization. This could also reflect cybersecurity policies that have evolved reactively around high-value sectors rather than proactively across the broader economy.

Public-private partnerships reveal further asymmetries. Transport and storage executives rate this dimension at 65.5%, above the cross-industry average of 62.6%, likely reflecting the infrastructure-intensive nature of the sector and its reliance on government coordination in areas such as port digitalization or smart traffic systems. Construction, hospitality, and manufacturing show similar levels of satisfaction, indicating that public investments are perceived as more effectively implemented in infrastructure-heavy industries. By contrast, satisfaction scores are lowest in the electricity, gas, and water sectors; industries that, despite being partly nationalized, often face complex governance structures that slow innovation. This could suggest that governments may prioritize PPPs where returns are most visible, leaving less profitable sectors under-supported.

Divergent regulatory approaches among major economies further complicate governance outcomes. The European Union's focus on data protection through frameworks such as the GDPR provides robust consumer safeguards but imposes compliance burdens that can weigh heavily on smaller firms and certain industries. Meanwhile, competition between the United States and China over technology exports has introduced new trade restrictions, which further fragment markets and increase uncertainty. As

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this regulatory divergence deepens, industries operating across borders face growing complexity that risks slowing innovation diffusion and scale, two critical drivers of digital competitiveness.

Enabler 2: Company capabilities

Company capabilities refer to firm-level organizational attributes that enable digital adoption, literacy, and competitiveness more broadly. It includes indicators such as company agility, knowledge transfer, use of big data, access to venture capital, recognition of opportunities and threats, and flexibility and adaptability. Analysis of these six indicators reveals that digital capabilities are unevenly distributed across industries, with important implications for national competitiveness strategies.

The most striking finding is the universal challenge faced by firms when trying to access venture capital to develop their activities. The executive opinion survey suggests that every industry struggles in this dimension, with satisfaction scores ranging from a low of just 43.6% in the arts, entertainment, and recreation industries to a high of only 59.6% in accommodation and food services. Manufacturing, despite being the largest sector in our sample with over 1,100 respondents (21% of the total), scores just 51%. Executives in professional, scientific, and technical services, which should theoretically attract innovation capital, also report just 52.6% satisfaction with their access to venture capital. Similarly, in the IT and communications sectors, the core of the digital economy, executives' satisfaction is below average at 59%.

This industry-wide dissatisfaction points to a systemic financing gap. Venture capital remains concentrated in a few geographic hubs (like Silicon Valley) and narrow technology fields such as software or fintech, leaving most traditional industries digitally undercapitalized despite their potential for transformation. Digitalization in sectors such as manufacturing, agriculture, or transport requires financing models aligned with longer time horizons and higher capital intensity, yet current mechanisms are structurally misaligned with these needs. In short, venture capital markets appear ill-suited to enabling large-scale digital transformation beyond the startup ecosystem.

Company agility shows more variation and reveals some

unexpected patterns that challenge common assumptions about digital readiness. Executives in the transport and storage industries scored 63.4% in company agility, matching manufacturing and slightly ahead of the finance, insurance, and real estate sector, which all exceeded the industry-wide average of 61.2%. Construction also achieves 60%, a strong result for a sector often characterized as resistant to change. These findings could suggest that operational pressures in logistics and global supply chains have driven higher organizational agility in sectors previously believed to be digitally conservative. The contrast with education is instructive: despite its knowledge-intensive nature, executives in education rate their sector just 58% on agility, likely reflecting frustration with institutional rigidity and regulatory constraints rather than the nature of the work itself. Ultimately, these results suggest that digital competitiveness depends as much on organizational flexibility and decision-making structures as on access to new technologies themselves.

Knowledge transfer presents perhaps one of the most concerning patterns for long-term digital competitiveness. In the education sector, responsible for developing and disseminating knowledge across society, executives only score 55.4% satisfaction with their ability to do that effectively, below the cross-industry average of 57.3% and behind professional, scientific, and technical services (56.4%). This result underscores structural rigidity with deep implications: if educational institutions face difficulty transferring knowledge within their own systems, their ability to prepare students and professionals for rapidly evolving digital careers is inherently limited. The challenge extends across the economy. Agriculture scores 55%, manufacturing 56.8%, and even the IT and communications sector, which is expected to lead in digital diffusion, registers just 58.2% from its executives. Such scores could point to a systemic weakness in moving knowledge from research to application, from innovators to adopters, and from early experimentation to broad operational use. In this sense, weak knowledge transfer mechanisms constrain the translation of national R&D capacity into productivity gains, particularly in traditional sectors where institutional collaboration is limited or fragmented.

The adoption of big data analytics shows clear sectoral stratification that correlates with both the availability of data and the clarity of use cases. For instance, the manufacturing sector

has clear potential applications for big data use in predictive maintenance, quality control, and supply chain optimization. However, executives in the field only score a satisfaction of 55.8%, below the industry-wide average, potentially indicating dissatisfaction with data availability. On the other hand, the sector most satisfied with its use and application of big data is accommodation and food services, which outperforms expectations at 62.6%, possibly reflecting the sector's intensive collection and use of customer and operational data. It is interesting to note that, once again, executives in knowledge-intensive sectors such as education and scientific research are unhappy with the lack of data-driven decision-making that occurs in their field, scoring below the industry-wide average.

Cross-country comparisons reinforce the dynamics explored and support these arguments. In Germany's manufacturing sector, for example, executives report strong operational capabilities: employee training (72%), technology development (70%), and digital skills (72%) all exceed global averages and reflect decades of investment in vocational training, close university-industry collaboration, and structured initiatives to embed digital skills in production systems. Yet, despite this, weaknesses emerge in company capabilities. Most notably, venture capital access stands 7 percentage points below the average at just 44% and knowledge transfer scores 52%, versus 57% globally. This dual profile reveals a critical insight: strong institutional frameworks for workforce development and operational excellence don't automatically create innovation ecosystems at the company level or entrepreneurial dynamism. Germany excels at helping established manufacturers adopt and apply digital technologies, but struggles to generate funds for and scale disruptive digital innovations.

In the United States, the landscape of company capabilities shows even more variations between industries and, implicitly, between regions. IT and communications executives rate venture capital access at 64%, the highest value in the sample, and knowledge transfer at 66%, nearly ten percent above the global average. These high scores reflect the strength of innovation clusters such as Silicon Valley, Seattle, and Austin, where dense ecosystems of investors, accelerators, universities, and experienced entrepreneurs reinforce one another. However, traditional sectors tell a different story. US manufacturing

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executives record only 42% satisfaction with venture capital access and 50% for big data analytics, below global averages and well under leading US industries. This internal divergence reflects both geographic concentration of digital capabilities and sector-specific institutional development. Technology hubs benefit from dense networks of investors, accelerators, universities, and experienced entrepreneurs. However, traditional industries in other regions lack these ecosystems, creating an internal digital divide, even within one of the world's leading digital economies.

These findings underscore that company capabilities are a foundational yet uneven enabler of digital competitiveness. They determine how effectively firms can absorb, adapt, and scale digital innovations, but also reveal structural asymmetries that shape national digital performance. Across industries, the persistent financing gap in venture capital and the systemic weakness in knowledge transfer point to a broader institutional misalignment between the digital economy's needs and existing market mechanisms. Meanwhile, differences in agility and big data adoption show that organizational flexibility and managerial culture remain critical to turning technological potential into productivity gains.

At the national level, contrasting examples highlight two distinct models of capability development. Germany's strength in skills formation and operational excellence demonstrates the power of long-term institutional investment but also exposes the limits of execution-driven systems that struggle to foster entrepreneurial experimentation. The United States, by contrast, illustrates how innovation ecosystems (which are dense, regionally concentrated networks of capital, talent, and research) can drive digital leadership in specific industries while leaving others behind. Both cases reveal that digital competitiveness increasingly depends not just on the presence of technology or talent, but on the ability of firms and institutions to integrate them into coherent, agile systems of innovation. Building inclusive digital economies requires fostering the organizational, financial, and knowledge-transfer mechanisms that allow all sectors, not just digital frontrunners, to participate in and benefit from technological progress.

Enabler 3: Human capital

Human capital encompasses the workforce skills and talent mobility necessary to develop digital competencies. Our analysis examines six indicators: employee training, digital skills, immigration laws, attitude towards globalization, foreign highly skilled personnel, and international experience of senior managers. The patterns that emerge challenge several conventional assumptions about which sectors possess strong digital human capital and reveal where economies risk structural skill mismatches.

Executive satisfaction with digital skills as an enabler of competitiveness shows a surprising hierarchy, with many industries scoring high marks compared to other indicators. Not surprisingly, IT and communications score amongst the highest with 70.4%, surpassed only by the transport industry (71.8%) and the finance, insurance, and real estate sector (71%). Even within more traditional sectors, satisfaction with digital skills is high with manufacturing (68.8%), construction (67.6%), and education (66.8%), all relatively close behind. The relatively strong performance of infrastructure-intensive sectors suggests a broader trend: industries with tangible efficiency gains from digitalization invest more successfully in workforce digital capabilities than those where the benefits are diffuse or harder to quantify.

On the other hand, executives' assessment of employee training reveals concerning disparities that hint at the existence of a growing digital divide with regard to human capital. With a cross-industry average of 62.3%, three industries stand out as notable weak performers in 2025: agriculture (60.6%), services (58%), and most concerningly, education (55.2%). Though such results are prone to the personal bias of respondents, the latter score is somewhat concerning, as it suggests that the sector responsible for training young professionals is itself underinvesting in digital skill development. This potential institutional weakness could have important cascading effects. If educators lack digital proficiency and pedagogical models remain outdated, they cannot effectively prepare future talent for digitally intensive careers. The issue here is not simply one of technical order through skill acquisition, but rather about the capacity for continuous learning and adaptation, which are attributes central to resilience in the face of technological change.

The strongest performers in employee training provide valuable contrasts. Transport and storage lead with 67.2%, followed by manufacturing (65.8%) and accommodation and food services (65.6%). These sectors face direct operational consequences from inadequate training, such as safety risks, service failures, or quality lapses, which create powerful incentives for workforce investment. Education, by contrast, experiences more diffuse and delayed feedback from training gaps, reducing the urgency for reform and modernization.

Recruitment of foreign highly skilled personnel shows the widest variation of any human capital indicator, exposing how industries integrate (or fail to integrate) into global talent markets. Agriculture ranks lowest at 51.4%, reflecting the relative geographic immobility of agricultural work and challenges in attracting international expertise. Construction follows at 59.4%, again showing how location-bound sectors struggle with global recruitment. In contrast, accommodation and food services reach 64.4%, benefiting from the global nature of hospitality careers. IT and communications score 59.2%, and professional, scientific, and technical services slightly lower at 58.6%, suggesting that immigration restrictions and regulatory hurdles constrain even knowledge-intensive and internationally integrated sectors.

International experience of senior managers follows a similar pattern. Accommodation and food services (63.0%) and transport (63.4%) lead agriculture (56.0%) and arts and entertainment (53.2%) by significant margins. The notion of international experience within an industry is extremely relevant because internationally experienced leadership correlates with awareness of global best practices, openness to external innovation, and access to transnational networks that facilitate knowledge transfer. Industries whose leadership has global exposure are better positioned to identify and adopt digital innovations, regardless of their origin. Attitudes toward globalization, while less dispersed, still vary meaningfully and range from 62.2% in arts and entertainment to 70.0% in accommodation and food services. This consistency across industries suggests that while executive sentiment about global integration remains generally positive, practical integration through skilled migration and cross-border managerial experience is less uniform.

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Country examples illustrate how these dynamics play out in practice. Poland's professional, scientific, and technical services sector demonstrates both the progress and constraints of human capital development in emerging economies. Digital skills reach around 68%, close to Germany's 72%, and communications technology infrastructure scores near 74%, reflecting sustained investment in STEM education and an expanding technology services base. Yet venture capital access remains low at 36%, international managerial experience around 48%, and foreign talent recruitment approximately 56%. Poland's trajectory shows how strong domestic capability development can narrow execution gaps with advanced economies, but integration into global innovation networks and capital flows remains limited.

Japan offers a contrasting view. Executives rate technology development at 82% and digital skills at 72%, underscoring world-class technical education and engineering capacity. However, company agility is just 40% (versus a 61% global benchmark), decision-making using big data analytics is 39% (versus 56.2%), and the international experience of senior managers is a mere 30%. Knowledge transfer (50%) and attitudes toward globalization (57%) also fall below global averages. Hierarchical management cultures, consensus-oriented decision-making, and limited international exposure constrain Japan's ability to translate technical proficiency into organizational adaptability. An interesting takeaway from the Japanese scenario is that technical expertise alone is insufficient; digital competitiveness also requires adaptability, cross-cultural fluency, and institutional openness to experimentation and failure.

Human capital remains one of the most decisive enablers of digital competitiveness, but also one of the most complex. The data suggests that digital skills and training investments are unevenly distributed across sectors, often favoring those with immediate operational incentives. Meanwhile, barriers to global talent mobility and limited international experience constrain cross-border learning and innovation diffusion. Countries like Germany and Japan show that technical excellence does not guarantee agility, while emerging economies like Poland reveal that domestic capability-building must be paired with international integration to achieve lasting competitiveness. Building human capital for the digital age, therefore, requires more than skill accumulation; it demands institutional

adaptability, openness to global exchange, and leadership capable of bridging technological potential with strategic execution.

Four sectoral trends shaping digital policy

Several cross-cutting themes emerge from the analysis of the role and impact of digital governance, company capabilities, and human capital as key enablers of digital competitiveness. From the insights of executives, here are four sectoral trends that are particularly relevant for future digital policy.

1. Infrastructure-intensive industries outperform expectations.

Transport, construction, and manufacturing display high digital readiness across communications technology, digital skills, and company agility. For instance, executives in construction rate their industry at 72.4% in communications technology, 67.6% in digital skills, and 66.4% in flexibility and adaptability. Operational imperatives such as efficiency, safety, and cost control may play an important role in accelerating digital adoption where the benefits are immediate and measurable. This challenges the long-standing narrative that traditional industries are resistant to digital transformation and illustrates that well-defined incentives and proven business cases can drive significant progress even in more conservative or manual sectors.

2. Knowledge-based sectors are underperforming despite their strategic importance.

According to executives in education, the industry is underperforming compared to other economic sectors in a few key metrics such as employee training (55.2%), knowledge transfer (55.4%), and digital skills (66.8%), revealing some important structural bottlenecks in the way economies address human capital accumulation in one of the most important industries for digital proficiency: teaching and education. As the sector tasked with enhancing human capital, its perceived inability to modernize could heavily undermine broader

digital readiness. The issue appears institutional rather than technological: rigid governance, static employment structures, and risk-averse cultures inhibit reform even where awareness and resources exist. Without addressing these systemic barriers, economies risk reinforcing a digital skills deficit that limits innovation diffusion across all industries.

3. The lack of venture capital availability is a universal constraint.

Globally, executives across all industries demonstrate dissatisfaction with their access to venture capital. In fact, of all 21 survey questions, the global average for venture capital availability is the lowest in the sample (50.6%), nearly ten points behind executives' satisfaction with the availability of company funding for technological development (59.4%). Even leading industries such as IT and communications (50.8%), professional, scientific, and technical services (52.6%), and finance, insurance, and real estate (51.4%) report dissatisfaction. This could hint at a structural misalignment between existing venture capital models, which are generally designed for asset-light and rapidly scalable startups, and the capital-intensive realities of digital transformation in manufacturing, transport, or agriculture. Unless financing mechanisms evolve to support longer innovation cycles and physical investment needs, digital transformation could risk remaining concentrated in a narrow set of industries.

4. Governance frameworks remain uneven across sectors.

Banking, finance, and infrastructure benefit from decades of coordinated regulation, public investment, and institutional support for digital initiatives. In contrast, emerging digital sectors and transforming traditional industries face fragmented governance characterized by unclear regulatory pathways, weak IP protection, and limited public-private coordination. This unevenness generates uncertainty and slows digital diffusion beyond the most regulated sectors. Expanding governance frameworks to support a wider range of industries could strengthen national digital resilience and ensure more inclusive competitiveness.

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We can see from these global patterns that different industries experience digital enablers in different ways. For business leaders, understanding both which industries and countries are successfully addressing specific digital challenges can inform partnership strategies, investment decisions, and talent development priorities. Recognizing that multiple pathways to competitiveness exist allows for learning from diverse models rather than assuming a single approach works universally.

Ultimately, digital competitiveness in a fragmented world depends on bridging divides. Success lies not in achieving headline scores in isolated sectors but in ensuring digital transformation spreads broadly, inclusively, and sustainably

across the economic landscape. Economies that combine robust governance, adaptable companies, and continuous human capital development across all industries, not just priority sectors, will prove more resilient than those dependent on narrow excellence, however exceptional that excellence may be.

As geopolitical tensions continue to reshape the institutional environment for digital strategy, this broad-based resilience becomes ever more critical for sustained digital competitiveness.

An analysis of the 2025 World Digital Competitiveness Ranking's Top 10

Switzerland climbs to the top of the 2025 edition of IMD's World Digital Competitiveness Ranking (WDCR), advancing one position from the previous year. It is followed by the US, which makes a significant leap of two positions to claim second place, and Singapore, which moves down two spots to complete this year's podium. Hong Kong SAR continues its ascent, gaining three positions to rank fourth, while Denmark slips two places to fifth. The Netherlands shows a solid improvement, moving up two positions to sixth overall. A notable new entrant to the top 10 is Canada, which jumps an impressive six positions to rank seventh. Sweden, however, experiences a decline, dropping three spots to eighth. The United Arab Emirates also enters the top 10 for the first time, climbing two positions to ninth. Finally, Taiwan (Chinese Taipei) moves down one position to complete the top 10. Korea Republic (previously sixth) and Norway (previously 10th) drop out of the top 10 in 2025, losing nine and three positions, respectively.

Switzerland secures the top spot in the 2025 WDCR, driven by its world-leading performance in the Knowledge factor, where it maintains first position, and a significant three-position jump in the Future Readiness factor to second place. While its Technology factor ranking saw a slight decline of three positions to seventh, the country's overall profile remains exceptionally strong and balanced. At the sub-factor level, Switzerland demonstrates leading performance in Talent (second), Training & Education (fifth), and Business Agility (third). Its ascent in Future Readiness is underpinned by improvements across its components, showcasing a society and business environment that is highly prepared for digital transformation. Switzerland's key strengths are deeply embedded in its human capital and institutional quality. It ranks first globally for the quality of employee training, the effectiveness of its scientific research legislation, its robust intellectual property rights, and its unparalleled capacity for knowledge transfer between companies and universities. However, the slight dip in the Technology factor can be attributed to relative declines in the Regulatory Framework (seventh, down from second) and Capital (15th, down from 11th) sub-factors. Specific areas for improvement include enforcing contracts, where Switzerland ranks 40th, and the penetration of wireless broadband, where it places a surprisingly low 55th.

The **US** makes a significant leap into second place overall, climbing two positions from 2024. This strong performance is driven by its undisputed leadership in the Technology factor, where it ranks first globally, and a strong showing in the Knowledge (sixth) and Future Readiness (eighth) factors. The US's core strength in Technology is built on its top-ranked Capital sub-factor, which is fueled by the world's largest pool of AI private investment (first), readily available funding for technological development (sixth), and a vibrant venture capital market as perceived by its executives (fourth). Its natural leadership in the Scientific Concentration sub-factor (second) is evidenced by top five ranks in five out of seven indicators, including second positions in both AI-related patent publications and the number of robots in education and R&D. At the indicator level, the US displays many strengths, including the world's largest volume of internet retailing (first), the highest protection against software piracy (first), and the world's best computer science education index (first). However, the country's overall performance is moderated by notable weaknesses in areas related to social adaptation and talent accessibility. It ranks poorly for its attitudes toward globalization (61st) and faces challenges with its immigration laws, which are perceived as a barrier to attracting talent (ranking 64th). Other areas for improvement include the quality of employee training (39th) and public expenditure on education (14th), suggesting that while the nation excels at high-end innovation, it could face future challenges linked to an inadequate framework for talent attraction and retention.

After leading the ranking in 2024, **Singapore** slides to third position in the 2025 WDCR. Despite this shift, it remains a digital powerhouse, securing top-tier rankings across all three factors: Knowledge (fourth), Technology (second), and Future Readiness (sixth). Singapore's performance is remarkably balanced, ranking in the top 10 for six of the nine sub-factors, and demonstrates exceptional strength in its Regulatory Framework (first), a testament to its business-friendly digital environment. At the indicator level, Singapore's strengths are widespread. It tops the number of high-tech patent grants per capita worldwide (first) and achieves the second rank for both its PISA math educational

The top 10 countries

- | | |
|----|-------------------------|
| 1 | Switzerland |
| 2 | United States |
| 3 | Singapore |
| 4 | Hong Kong SAR |
| 5 | Denmark |
| 6 | Netherlands |
| 7 | Canada |
| 8 | Sweden |
| 9 | United Arab Emirates |
| 10 | Taiwan (Chinese Taipei) |

An analysis of the 2025 World Digital Competitiveness Ranking's Top 10

assessment scores and the effectiveness of its banking and financial services. Additionally, Singapore demonstrates high levels of institutional support for IT Integration in its economy (sixth) with strong performances in E-government scores (third) and the government's cyber security capacity (third). Its business environment is further characterized by highly agile companies (ninth) and a positive attitude towards globalization (eighth). The decline in its overall rank can be mostly attributed to Singapore's weaker performance across all three sub-factors in Future Readiness, including a 10-position drop in both the Adaptive Attitudes and Business Agility sub-factors. Such results can be explained by lagging levels of internet retailing (28th), low perceptions of firm flexibility and adaptability (26th), low investment in telecommunications (61st). Other persistent weaknesses include its low total public expenditure on education (63rd) and a comparatively low proportion of female researchers (46th).

Hong Kong SAR continues its impressive upward trajectory in digital competitiveness, climbing three places to rank fourth overall. This strong performance in 2025 is built on top five positions in the Technology (third) and Knowledge (fifth) factors, complemented by a solid 10th place in Future Readiness, a five-position increase from the previous year. Hong Kong's technological prowess is highlighted by its first place ranking in the Technological Framework and Adaptive Attitudes sub-factors, as well as top 10 positions in the Talent (fifth), Training & Education (third), and Business Agility (Seventh) sub-factors. Hong Kong demonstrates world-leading scores in the Talent sub-factor, with top ranks in PISA math scores (fourth), the international experience of its managers (sixth), and scientific and technical employment (seventh). Its digital competitiveness is further supported by its large proportion of high-tech exports (second) coupled with the world's highest percentage of graduates in the sciences (first). At the indicator level, Hong Kong excels in several key areas, including the ease of starting a business (fourth), and the quality of its banking and financial services (eighth). Its Adaptive Attitudes scores are also a major asset, ranking first globally in this sub-factor, driven by the second highest smartphone possession rate and a highly positive attitude toward globalization (second). Despite these strengths, Hong Kong continues to fare poorly under the IT Integration sub-factor (29th), particularly in areas linked to institutional

strength as demonstrated by low scores concerning government cybersecurity capacity (44th) and the legal framework for privacy protection (49th).

Denmark slips two positions to fifth in the 2025 ranking but remains one of the world's most digitally advanced economies. Its performance is balanced, with top 10 rankings in all three factors: Future Readiness (first), Technology (fifth), and Knowledge (ninth). Denmark's top position in Future Readiness is a testament to its highly adaptive society and agile business sector. It leads the world in E-Participation (first) and E-Government (first), demonstrating a seamless integration of digital tools into civic and public life. The Business Agility sub-factor (second) is another major strength, with Danish companies ranking fourth for their agility and second for their use of big data and analytics according to executives. In the Technology factor, Denmark excels in its Regulatory Framework (second) and boasts the highest number of secure internet servers per capita globally (first). The country's strengths are further evidenced by its top ranking for country credit rating and the quality of employee training (second). The minor drop in the overall ranking is partly due to a relative decline in the Knowledge factor, where weaknesses persist in the number of graduates in sciences (25th) and the proportion of female researchers (35th). Scientific Concentration appears to be a consistent area for improvement, with weak scores in R&D productivity by publication (47th) and a low number of high-tech patent grants (35th).

The Netherlands gains two ranks to secure sixth place in 2025. This advancement is driven by consistent improvements across all three digital factors, with the biggest gain achieved in Technology (fourth, up from eighth) followed by Future Readiness (fourth, up from seventh) and a solid seventh place in the Knowledge factor (up from ninth). The country's technological infrastructure is world-class, reflected in its sixth place rank for the Technological Framework sub-factor, which includes having the third most secure internet servers per capita. The Netherlands also boasts an exceptional environment for Capital, ranking third in this sub-factor, supported by the second largest IT & media stock market capitalization as a percentage of GDP. In Future Readiness, the country excels in Adaptive Attitudes (third) and IT Integration (ninth), with its population showing a highly positive attitude towards globalization (third) and a high degree

of tablet possession (ninth). The Knowledge factor is bolstered by the Talent sub-factor (sixth), with managers possessing significant international experience (fourth) and the economy demonstrating a strong ability to attract foreign highly skilled personnel (seventh). Despite these strengths, the Netherlands shows room for improvement in Training & Education (25th), particularly concerning the quality of employee training (16th). Other weaknesses include a relatively low number of graduates in the sciences (45th) of which few are women (49th).

Canada makes a remarkable entry into the top 10, jumping six positions to seventh place overall. This significant leap is primarily fueled by a substantial improvement in the Future Readiness factor, climbing 10 positions to ninth, and in the Knowledge factor, where it climbs from sixth to second place. At the sub-factor level, Canada demonstrates world-leading performances in Training & Education (first), Talent (third), and IT Integration (fifth). The country ranks second for the percentage of women with degrees and sixth for higher education achievement, showcasing a highly educated workforce. The country excels in talent appeal, with a high net flow of international students (fifth) and a strong ability to attract foreign highly skilled personnel (ninth), in part due to its high levels of scientific and technical employment (third). In the Technology factor, Canada showcases a dynamic environment that attracts capital (second in the sub-factor) with significant private investment in AI (fifth) and access to venture capital that satisfies business executives (seventh). Further strengths at the indicator level include the government's cyber security capacity (fourth), and the knowledge transfer occurring in the economy (third). Canada's primary weaknesses lie in specific infrastructure indicators, such as wireless broadband penetration (59th) or its low proportion of high-tech exports (33rd). Further improvements could also be made in contract enforcement (53rd) and the number of AI policies passed into law (32nd).

Sweden experiences a three-position drop to eighth place in the 2025 ranking. Despite this decline, it retains strong digital attributes across all digital factors, particularly in Knowledge where it ranks third and achieves top 10 positions in all three subfactors. Sweden's most notable attributes include high public expenditure on education (third), high quality employee training (fourth), and its scientific and technical employment (first). In the

An analysis of the 2025 World Digital Competitiveness Ranking's Top 10

Technology factor, Sweden remains 10th, showcasing strengths in intellectual property rights (11th), its banking and financial services (fourth), the level of AI investment (fourth) as well as the country's credit rating (first). However, Sweden's overall rank was impacted by a sharp decline in the Future Readiness factor (down to 11th from fourth). The most notable drop is observed in the Business Agility sub-factor, falling from ninth to 16th as a result primarily of declining business sentiment relating to the detection of opportunities and threats (41st) and entrepreneurial fear of failure (23rd). At the indicator level, while the country remains a leader in the use of big data and analytics (eighth), perceptions of company agility have weakened (16th). Other challenges include a relatively low number of female researchers (38th) and low investment in telecommunications (53rd), which could hinder future infrastructure development.

The United Arab Emirates (UAE) enters the top 10 for the first time, climbing two spots to ninth place. This achievement is a testament to its focused strategy on digital transformation, reflected in outstanding performances in the Future Readiness (fifth) and Technology (sixth) factors. The UAE's key strength lies in its world-leading Talent sub-factor (first), where it ranks first for the international experience of its managers, first for digital/technological skills, and second for attracting foreign highly skilled personnel. This ability to attract and retain top global talent is the foundation of the UAE's digital economy. In the Technology factor, the UAE excels in its Regulatory Framework (fourth) and Capital environment (ninth). Its business-friendly policies include immigration laws that are conducive to a more productive economy (second) and the development and application of technology (third). Further strengths include the quality of public-private partnerships (first) and the highly positive attitudes of the business world to globalization (fourth). Despite these strengths, the UAE's performance in the Knowledge factor (12th) is held back by a weaker Scientific Concentration sub-factor (34th), performing relatively lower in R&D expenditure and personnel per capita compared to other top digital economies. At the institutional level, further improvements should be considered in increasing total public spending on education (51st) as well as a sharper focus on passing AI policies into law (57th) and implementing privacy protection laws (40th) to increase the general level of cyber security of the population.

Taiwan (Chinese Taipei) completes this year's top 10, though slipping one position from 2024. It continues to be a digital leader, particularly in the Future Readiness factor, where it ranks an impressive third globally. This is driven by its world-leading Business Agility sub-factor (first), with its companies ranking second for agility and third for their use of big data and analytics. Taiwan also demonstrates strengths in the Technology factor (11th), supported by a top-tier capital environment (fifth) that includes the world's largest IT & media stock market capitalization as a percentage of GDP (first). Its technological prowess is further highlighted by its high rank for high-tech exports (fourth). The Knowledge factor (16th) remains the area with the most room for improvement, although it performs strongly in Training & Education (sixth) and Scientific Concentration (10th), boasting the second highest R&D personnel per capita. Key weaknesses that temper its overall rank include a low proportion of female researchers (56th), a high pupil-teacher ratio in tertiary education (51st), and persistent challenges in the regulatory space, ranking last (68th) for having AI policies passed into law, indicating a need to formalize its governance of emerging technologies.



Rankings in a Nutshell

The 2025 IMD World Digital Competitiveness Ranking

The IMD World Digital Competitiveness Ranking presents the 2025 overall ranking for the 69 economies covered by the Center. The economies are ranked from the most to the least competitive. The Scores shown to the right are actually indices (0 to 100) generated for the unique purpose of constructing charts and graphics. The final column shows the improvement or decline from the previous year.

2025 Digital Competitiveness Ranking

		Score	
01	Switzerland	100.00	↗ 1
02	USA	99.29	↗ 2
03	Singapore	99.18	↘ 2
04	Hong Kong SAR	97.79	↗ 3
05	Denmark	97.23	↘ 2
06	Netherlands	96.82	↗ 2
07	Canada	96.19	↗ 6
08	Sweden	95.42	↘ 3
09	UAE	93.38	↗ 2
10	Taiwan (Chinese Taipei)	93.12	↘ 1
11	Finland	91.12	↗ 1
12	China	87.79	↗ 2
13	Norway	87.34	↘ 3
14	Iceland	87.28	↗ 5
15	Korea Rep.	86.55	↘ 9
16	Ireland	85.54	↗ 1
17	Lithuania	84.30	↗ 5
18	Germany	84.25	↗ 5
19	United Kingdom	83.65	↘ 1
20	Qatar	82.35	↗ 6
21	France	81.91	↘ 1
22	Saudi Arabia	80.09	↗ 5
23	Australia	79.90	↘ 8
24	Austria	79.85	↗ 1
25	Belgium	78.52	↘ 4
26	Estonia	77.84	↘ 2
27	Luxembourg	76.88	↗ 2
28	New Zealand	75.67	↗ 5
29	Spain	75.43	↘ 1
30	Japan	74.92	↗ 1

		Score	
31	Latvia	74.87	↗ 7
32	Bahrain	74.65	↘ 2
33	Portugal	71.29	↗ 2
34	Malaysia	71.07	↗ 2
35	Czech Republic	71.06	↘ 3
36	Oman	70.31	-
37	Puerto Rico	69.35	↗ 7
38	Thailand	68.95	↘ 1
39	Kazakhstan	68.29	↘ 5
40	Italy	65.65	-
41	Slovenia	65.06	-
42	Kuwait	64.92	↗ 3
43	Chile	64.65	↘ 1
44	Jordan	60.33	↗ 6
45	Poland	60.22	↘ 6
46	Hungary	60.14	↗ 7
47	Romania	59.39	-
48	Cyprus	56.87	-
49	Greece	57.30	-
50	India	57.00	↗ 1
51	Indonesia	56.76	↘ 8
52	Croatia	55.18	↘ 6
53	Brazil	51.63	↗ 4
54	South Africa	51.34	-
55	Colombia	50.95	↗ 3
56	Philippines	50.87	↗ 5
57	Slovak Republic	50.72	↘ 5
58	Bulgaria	48.53	↘ 2
59	Mexico	48.29	-
60	Argentina	49.02	↗ 2
61	Botswana	48.30	↘ 1
62	Kenya	46.58	-
63	Türkiye	43.94	↘ 8
64	Peru	42.78	↘ 1
65	Ghana	42.57	-
66	Namibia	40.07	-
67	Mongolia	39.91	↘ 3
68	Nigeria	34.55	↘ 2
69	Venezuela	20.49	↘ 2

The IMD World Digital Competitiveness Ranking Methodology

The IMD World Digital Competitiveness Ranking (WDCR) analyzes and ranks the extent to which countries adopt and explore digital technologies leading to transformation in government practices, business models and society in general.

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.

Based on our research, the methodology of the WDCR ranking defines digital competitiveness into three main factors:

		
Knowledge	Technology	Future readiness

In turn, each of these factors is divided into 3 sub-factors which highlight every facet of the areas analyzed. Altogether, the WDCR features 9 such sub-factors. These 9 sub-factors comprise 61 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).

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% ($100 \div 9 \sim 11.1$).

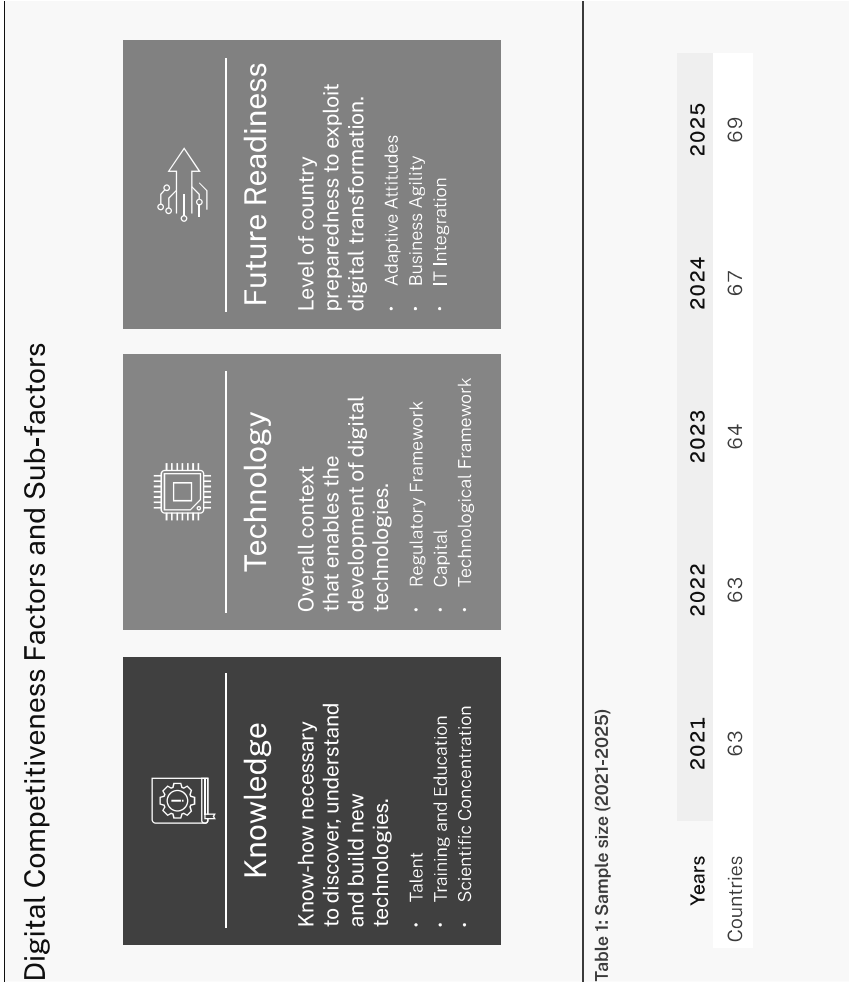
Criteria can be hard data, which analyze digital competitiveness as it can be measured (e.g. Internet bandwidth speed) or soft data, which analyze competitiveness as it can be perceived (e.g. Agility of companies). Hard criteria represent a weight of 2/3 in the overall ranking whereas the survey data represent a weight of 1/3.

The 61 criteria include 25 new indicators which are only used in the assessment of the WDCR ranking. The rest of the indicators are shared with the IMD World Competitiveness Ranking.

In addition, two criteria are for background information only, which means that they are not used in calculating the overall competitiveness ranking (i.e., Population and GDP).

Finally, aggregating the results of the 9 sub-factors makes the total consolidation, which leads to the overall ranking of the WDCR.

What is the IMD World Digital Competitiveness Ranking?



The 2025 IMD World Digital Competitiveness Ranking

Selected breakdown

Europe - Middle East - Africa

		Score
01	Switzerland	100.00
02	Denmark	97.23
03	Netherlands	96.82
04	Sweden	95.42
05	UAE	93.38
06	Finland	91.12
07	Norway	87.34
08	Iceland	87.28
09	Ireland	86.54
10	Lithuania	84.30
11	Germany	84.25
12	United Kingdom	83.65
13	Qatar	82.35
14	France	81.91
15	Saudi Arabia	80.09
16	Austria	79.85
17	Belgium	78.52
18	Estonia	77.84
19	Luxembourg	76.68
20	Spain	75.43
21	Latvia	74.87
22	Bahrain	74.65
23	Portugal	71.29
24	Czech Republic	71.06
25	Oman	70.31
26	Kazakhstan	68.29
27	Italy	65.65
28	Slovenia	65.06
29	Kuwait	64.92
30	Jordan	60.33
31	Poland	60.22
32	Hungary	60.14
33	Romania	59.39
34	Cyprus	58.87
35	Greece	57.30
36	Croatia	55.18
37	South Africa	51.34
38	Slovak Republic	50.72
39	Bulgaria	49.53
40	Botswana	48.30
41	Kenya	46.58
42	Turkiye	43.94
43	Ghana	42.57
44	Namibia	40.07
45	Nigeria	34.55

Asia - Pacific

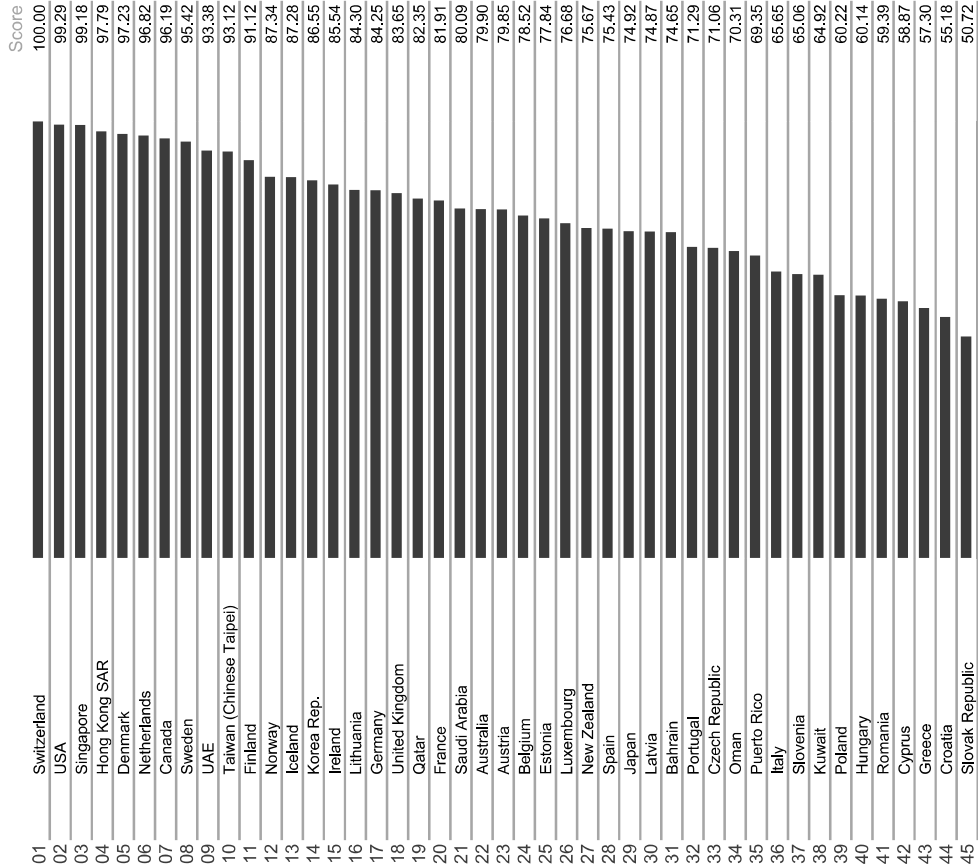
		Score
01	Singapore	99.18
02	Hong Kong SAR	97.79
03	Taiwan (Chinese Taipei)	93.12
04	China	87.79
05	Korea Rep.	86.55
06	Australia	79.90
07	New Zealand	75.67
08	Japan	74.92
09	Malaysia	71.07
10	Thailand	68.95
11	India	57.00
12	Indonesia	56.76
13	Philippines	50.87
14	Mongolia	39.91

The Americas

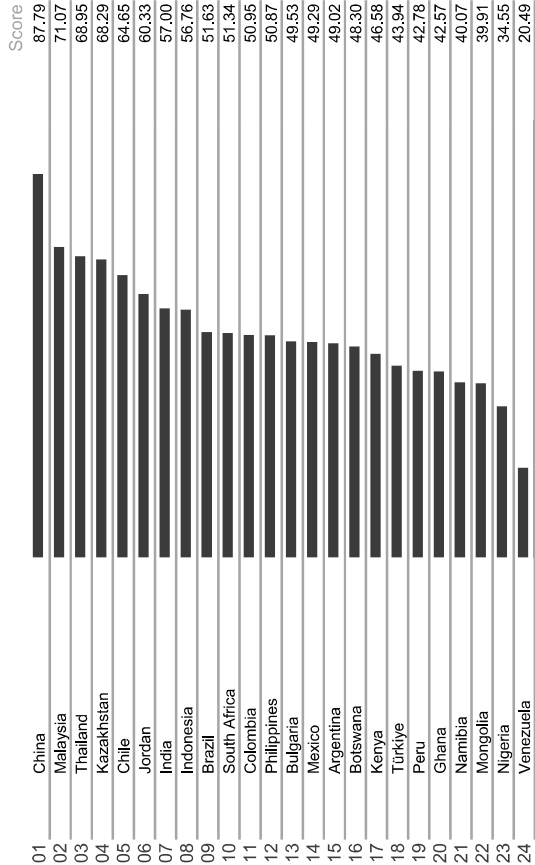
		Score
01	USA	99.29
02	Canada	96.19
03	Puerto Rico	69.35
04	Chile	64.65
05	Brazil	51.63
06	Colombia	50.95
07	Mexico	49.29
08	Argentina	49.02
09	Peru	42.78
10	Venezuela	20.49

Selected breakdown

GDP per capita greater than \$20,000



GDP per capita less than \$20,000



Selected breakdown

Population over 20 million

		Score
01	USA	99.29
02	Canada	96.19
03	Taiwan (Chinese Taipei)	93.12
04	China	87.79
05	Korea Rep.	86.55
06	Germany	84.25
07	United Kingdom	83.65
08	France	81.91
09	Saudi Arabia	80.09
10	Australia	79.90
11	Spain	75.43
12	Japan	74.92
13	Malaysia	71.07
14	Thailand	68.95
15	Kazakhstan	68.29
16	Italy	65.65
17	Chile	64.65
18	Poland	60.22
19	India	57.00
20	Indonesia	56.76
21	Brazil	51.63
22	South Africa	51.34
23	Colombia	50.95
24	Philippines	50.87
25	Mexico	49.29
26	Argentina	49.02
27	Kenya	46.58
28	Türkiye	43.94
29	Peru	42.78
30	Ghana	42.57
31	Nigeria	34.55
32	Venezuela	20.49

Population under 20 million

		Score
01	Switzerland	100.00
02	Singapore	99.18
03	Hong Kong SAR	97.79
04	Denmark	97.23
05	Netherlands	96.82
06	Sweden	95.42
07	UAE	93.38
08	Finland	91.12
09	Norway	87.34
10	Iceland	87.28
11	Ireland	85.54
12	Lithuania	84.30
13	Qatar	82.35
14	Austria	79.85
15	Belgium	78.52
16	Estonia	77.84
17	Luxembourg	76.68
18	New Zealand	75.67
19	Latvia	74.87
20	Bahrain	74.65
21	Portugal	71.29
22	Czech Republic	71.06
23	Oman	70.31
24	Puerto Rico	69.35
25	Slovenia	65.06
26	Kuwait	64.92
27	Jordan	60.33
28	Hungary	60.14
29	Romania	59.39
30	Cyprus	58.87
31	Greece	57.30
32	Croatia	55.18
33	Slovak Republic	50.72
34	Bulgaria	49.53
35	Botswana	48.30
36	Namibia	40.07
37	Mongolia	39.91

Selected breakdown

KNOWLEDGE

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

		Score			
01	Switzerland	98.22	31	Iceland	66.17
02	Canada	94.88	32	Slovenia	66.15
03	Sweden	94.41	33	Czech Republic	65.40
04	Singapore	92.91	34	Kazakhstan	63.66
05	Hong Kong SAR	92.29	35	Latvia	62.62
06	USA	90.60	36	Qatar	61.23
07	Netherlands	87.23	37	Thailand	60.62
08	Korea Rep.	86.71	38	Bahrain	59.75
09	Denmark	85.93	39	Italy	59.18
10	Finland	85.61	40	Poland	58.10
11	United Kingdom	85.21	41	Oman	56.60
12	UAE	82.95	42	Hungary	55.88
13	Germany	82.89	43	Kuwait	55.68
14	China	82.42	44	Cyprus	54.68
15	Austria	81.45	45	Croatia	52.51
16	Taiwan (Chinese Taipei)	80.78	46	India	51.07
17	Norway	80.26	47	Chile	50.84
18	Australia	79.46	48	Romania	50.71
19	Ireland	78.54	49	Greece	50.64
20	Belgium	77.16	50	Jordan	49.41
21	France	75.92	51	Puerto Rico	49.04
22	Lithuania	74.62	52	Slovak Republic	49.01
23	Japan	74.61	53	Colombia	47.62
24	Luxembourg	72.72	54	Brazil	45.07
25	Spain	71.57	55	Bulgaria	44.86
26	Saudi Arabia	70.17	56	Mexico	44.12
27	Estonia	68.70	57	Kenya	43.78
28	Portugal	67.13	58	South Africa	41.88
29	Malaysia	66.82	59	Namibia	41.76
30	New Zealand	66.46	60	Türkiye	41.04
			61	Botswana	40.29
			62	Indonesia	39.45
			63	Argentina	38.88
			64	Mongolia	37.97
			65	Philippines	36.03
			66	Peru	34.75
			67	Nigeria	27.98
			68	Ghana	27.22
			69	Venezuela	15.65

Selected breakdown

TECHNOLOGY

Overall context that enables the development of digital technologies

		Score			
01	USA	100.00 ↗	31	Austria	70.90 ↗
02	Singapore	96.36 ↘	32	Latvia	70.50 ↗
03	Hong Kong SAR	94.60	33	Estonia	70.12 ↘
04	Netherlands	92.21 ↗	34	Malaysia	68.38 ↗
05	Denmark	90.62 ↗	35	Spain	66.83 ↘
06	UAE	88.74 ↗	36	Portugal	66.13
07	Switzerland	88.68 ↘	37	Hungary	65.65 ↗
08	Iceland	88.24 ↗	38	Oman	65.47
09	Canada	86.68 ↗	39	Czech Republic	64.82 ↘
10	Sweden	86.56 ↘	40	Kuwait	63.11 ↗
11	Taiwan (Chinese Taipei)	86.42 ↘	41	Chile	59.55 ↘
12	Finland	84.70 ↗	42	Kazakhstan	58.86 ↗
13	Qatar	82.97 ↗	43	Slovenia	58.74 ↗
14	France	81.83 ↗	44	Romania	57.76 ↗
15	China	81.58	45	Italy	57.15 ↘
16	Norway	80.80 ↘	46	Cyprus	55.70 ↗
17	Ireland	77.37 ↗	47	Greece	55.54 ↗
18	United Kingdom	76.48 ↗	48	Indonesia	54.34 ↘
19	Puerto Rico	76.17 ↗	49	Poland	54.34 ↘
20	Germany	75.91 ↗	50	Croatia	54.04 ↘
21	Lithuania	75.41 ↗	51	Jordan	53.87 ↗
22	Australia	74.61 ↘	52	India	52.45 ↗
23	Saudi Arabia	74.55 ↗	53	Bulgaria	52.28 ↘
24	New Zealand	74.06 ↘	54	Philippines	48.72 ↗
25	Luxembourg	72.76 ↘	55	Botswana	46.98 ↗
26	Bahrain	71.83 ↗	56	Slovak Republic	44.15 ↗
27	Japan	71.81 ↘	57	South Africa	43.42 ↘
28	Belgium	71.56 ↗	58	Brazil	41.33 ↗
29	Thailand	71.34 ↘	59	Mexico	38.66 ↗
30	Korea Rep.	71.03 ↘	60	Ghana	38.22 ↗
			61	Kenya	37.86
			62	Peru	35.61 ↗
			63	Mongolia	35.40 ↗
			64	Namibia	35.02
			65	Colombia	34.68 ↘
			66	Nigeria	32.91 ↗
			67	Türkiye	31.76 ↘
			68	Argentina	30.28 ↘
			69	Venezuela	0.00 ↘

Selected breakdown

FUTURE READINESS

Level of country preparedness to exploit digital transformation

[illegible]

Factor Rankings: five-year overview

OVERALL

	2021	2022	2023	2024	2025
Argentina	61	59	61	62	60
Australia	20	14	16	15	13
Austria	16	18	22	25	24
Bahrain	-	32	38	30	32
Belgium	26	23	15	21	25
Botswana	63	61	60	60	61
Brazil	51	52	57	57	53
Bulgaria	52	48	55	56	58
Canada	13	10	11	13	07
Chile	39	41	42	42	43
China	15	17	19	14	12
Colombia	59	60	62	58	55
Croatia	55	43	44	46	52
Cyprus	43	45	51	48	44
Czech Republic	33	33	24	32	35
Denmark	04	01	04	03	05
Estonia	25	20	18	24	26
Finland	11	07	08	12	11
France	24	22	27	20	21
Germany	18	19	23	23	18
Ghana	-	-	-	65	65
Greece	44	50	52	49	49
Hong Kong SAR	02	09	10	07	04
Hungary	45	42	47	53	46
Iceland	21	21	17	19	14
India	46	44	49	51	50
Indonesia	53	51	45	43	51
Ireland	19	24	21	17	16
Italy	40	39	43	40	40
Japan	28	29	32	31	30
Jordan	49	53	50	50	44
Kazakhstan	32	36	34	34	39
Kenya	-	-	-	-	62
Korea Rep.	12	08	06	06	15
Kuwait	-	-	41	45	42
Latvia	37	34	40	38	31
Lithuania	30	25	28	22	17
Luxembourg	22	30	26	29	27
Malaysia	27	31	33	36	34
Mexico	56	55	54	50	59
Mongolia	62	62	63	64	67
Namibia	-	-	-	-	66
Netherlands	07	06	02	08	06
New Zealand	23	27	25	33	28
Nigeria	-	-	-	66	68
Norway	09	12	14	10	13
Oman	-	-	-	-	36
Peru	57	57	56	63	64
Philippines	58	56	59	61	56
Poland	41	46	39	39	45
Portugal	34	38	36	35	33
Puerto Rico	-	-	-	44	37
Qatar	29	26	29	26	20
Romania	50	49	48	47	47
Saudi Arabia	36	35	30	27	22
Singapore	05	04	03	01	03
Slovak Republic	47	47	46	52	57
Slovenia	35	37	37	41	41
South Africa	60	58	58	54	54
Spain	31	28	31	28	29
Sweden	03	03	07	05	08
Switzerland	06	05	05	02	01
Taiwan (Chinese Taipei)	08	11	09	09	10
Thailand	38	40	35	37	38
Turkiye	48	54	53	55	63
UAE	10	13	12	11	09
United Kingdom	14	16	20	18	19
USA	01	02	01	04	02
Venezuela	64	63	64	67	69

KNOWLEDGE

	2021	2022	2023	2024	2025
Argentina	55	58	62	61	63
Australia	19	14	15	13	18
Austria	10	13	16	21	15
Bahrain	-	34	36	35	38
Belgium	21	21	12	18	20
Botswana	64	55	52	49	61
Brazil	51	51	57	56	54
Bulgaria	53	48	53	59	55
Canada	07	03	04	06	02
Chile	49	50	47	47	47
China	06	17	21	15	14
Colombia	56	57	54	55	53
Croatia	47	40	40	42	45
Cyprus	39	39	48	43	44
Czech Republic	35	32	24	32	33
Denmark	08	06	09	07	09
Estonia	27	23	25	25	27
Finland	09	09	11	12	10
France	20	20	22	22	21
Germany	14	11	14	20	13
Ghana	-	-	-	66	68
Greece	45	47	51	50	49
Hong Kong SAR	05	07	06	05	05
Hungary	43	43	46	46	42
Iceland	33	31	32	30	31
India	41	46	45	45	46
Indonesia	60	60	60	53	62
Ireland	23	22	19	16	19
Italy	40	41	43	41	39
Japan	25	28	28	31	23
Jordan	48	53	59	57	50
Kazakhstan	36	30	30	33	34
Kenya	-	-	-	-	57
Korea Rep.	15	16	10	08	08
Kuwait	-	-	44	48	43
Latvia	34	36	39	38	35
Lithuania	26	24	23	23	22
Luxembourg	29	35	33	24	24
Malaysia	22	25	29	34	29
Mexico	54	52	50	56	56
Mongolia	58	61	56	62	64
Namibia	-	-	-	-	59
Netherlands	11	08	07	09	07
New Zealand	28	33	34	39	30
Nigeria	-	-	-	65	67
Norway	17	19	20	17	17
Oman	-	-	-	-	41
Peru	59	56	55	63	66
Philippines	63	62	63	64	65
Poland	38	42	37	37	40
Portugal	32	29	31	29	28
Puerto Rico	-	-	-	52	51
Qatar	44	38	38	36	36
Romania	52	49	49	51	48
Saudi Arabia	50	37	35	27	26
Singapore	04	05	03	02	04
Slovak Republic	46	44	42	44	52
Slovenia	30	26	27	28	32
South Africa	62	54	58	54	58
Spain	31	27	26	26	25
Sweden	02	02	05	03	03
Switzerland	01	01	01	01	01
Taiwan (Chinese Taipei)	16	18	18	19	16
Thailand	42	45	41	40	37
Turkiye	57	59	61	60	60
UAE	18	15	17	14	12
United Kingdom	13	12	13	10	11
USA	03	04	02	04	06
Venezuela	61	63	64	67	69

TECHNOLOGY

	2021	2022	2023	2024	2025
Argentina	62	62	63	65	68
Australia	18	15	13	18	22
Austria	32	36	35	32	31
Bahrain	-	23	30	33	26
Belgium	23	24	19	25	28
Botswana	63	59	62	57	55
Brazil	55	55	60	60	58
Bulgaria	51	51	56	49	53
Canada	15	14	13	13	09
Chile	35	41	38	39	41
China	20	18	22	15	15
Colombia	60	61	62	61	65
Croatia	50	42	42	45	50
Cyprus	53	52	53	51	46
Czech Republic	37	35	26	34	39
Denmark	09	07	06	05	05
Estonia	25	21	23	30	33
Finland	12	08	09	16	12
France	16	16	20	18	14
Germany	31	27	34	29	20
Ghana	-	-	-	66	60
Greece	46	47	47	48	47
Hong Kong SAR	01	02	02	03	03
Hungary	36	31	36	43	37
Iceland	10	11	08	12	08
India	44	43	50	53	52
Indonesia	49	45	39	40	48
Ireland	28	37	28	20	17
Italy	42	44	46	41	45
Japan	30	30	32	26	27
Jordan	43	50	48	52	51
Kazakhstan	40	40	41	46	42
Kenya	-	-	-	-	61
Korea Rep.	13	13	12	14	10
Kuwait	-	-	37	44	40
Latvia	34	34	34	32	33
Lithuania	29	32	33	28	21
Luxembourg	14	19	25	22	25
Malaysia	26	29	27	35	34
Mexico	57	56	58	62	59
Mongolia	61	60	61	55	63
Namibia	-	-	-	-	64
Netherlands	07	04	05	08	04
New Zealand	21	28	21	17	24
Nigeria	-	-	-	63	66
Norway	06	10	14	05	16
Oman	-	-	-	-	38
Peru	56	57	57	64	62
Philippines	54	49	51	56	54
Poland	41	46	44	37	49
Portugal	38	39	40	36	36
Puerto Rico	-	-	-	38	19
Qatar	19	17	16	19	13
Romania	47	48	49	50	44
Saudi Arabia	24	26	17	27	23
Singapore	03	01	01	01	02
Slovak Republic	45	53	54	59	56
Slovenia	39	38	45	47	43
South Africa	59	58	59	54	57
Spain	33	33	31	31	35
Sweden	08	05	11	10	10
Switzerland	11	12	10	04	07
Taiwan (Chinese Taipei)	02	06	03	07	11
Thailand	22	20	15	23	29
Turkiye	52	54	55	58	67
UAE	05	03	04	09	06
United Kingdom	17	25	29	21	18
USA	04	09	06	02	01
Venezuela	64	63	64	67	69

FUTURE READINESS

52	46	49	47	41
22	17	20	20	21
16	13	19	31	28
-	36	46	24	22
26	25	16	26	29
63	61	63	62	64
45	47	52	53	50
55	50	58	61	65
15	11	11	19	09
36	33	38	33	33
17	15	13	14	18
53	56	60	49	46
60	48	50	59	60
34	39	53	54	54
37	29	27	32	34
02	01	03	02	01
20	12	09	18	20
09	06	05	09	11
31	34	35	23	26
18	19	24	22	21
-	-	-	65	57
43	60	57	56	55
10	18	17	15	10
61	57	61	63	61
25	21	14	16	07
50	42	51	52	53
48	52	43	30	43
14	22	22	11	17
30	38	37	35	37
27	28	32	38	39
56	55	45	43	42
28	30	31	27	36
-	-	-	-	62
05	02	01	03	15
-	-	41	45	44
42	32	34	32	23
33	24	28	17	13
24	35	21	40	32
29	31	33	36	40
51	53	54	55	56
62	62	62	64	66
-	-	-	68	-
04	05	04	07	04
19	26	25	39	30
-	-	-	67	69
08	09	15	10	16
-	-	-	-	25
54	54	55	60	63
57	58	59	58	52
39	43	40	42	51
38	40	36	37	38
-	-	-	44	35
23	23	26	21	14
49	51	47	51	48
32	37	30	28	19
11	10	10	01	06
46	4	45	48	57
59	59	56	50	49
35	27	29	29	27
06	04	08	04	11
03	07	06	05	02
07	08	07	06	03
44	49	42	41	45
41	44	44	46	59
12	20	23	12	25
13	16	18	25	24
01	03	02	08	08
64	63	64	66	67

Sub-factor Rankings

KNOWLEDGE				TECHNOLOGY				FUTURE READINESS			
	Talent	Training & education	Scientific concentration	Regulatory framework	Capital	Technological framework		Adaptive attitudes	Business agility	IT integration	
Argentina	46	66	57	58	68	56		48	26	46	Argentina
Australia	11	30	18	18	37	21		23	53	23	Australia
Austria	21	11	15	30	34	31		35	31	14	Austria
Bahrain	08	61	39	32	26	25		12	21	40	Bahrain
Belgium	23	22	19	22	25	39		37	22	31	Belgium
Botswana	42	56	66	52	42	61		65	45	62	Botswana
Brazil	68	56	29	59	64	53		44	57	45	Brazil
Bulgaria	58	51	54	56	51	50		59	69	60	Bulgaria
Canada	03	01	14	16	12	22		16	12	05	Canada
Chile	40	46	56	45	46	36		25	49	30	Chile
China	28	34	03	23	07	17		22	06	35	China
Colombia	62	41	55	66	59	64		52	34	58	Colombia
Croatia	55	39	45	51	38	51		56	66	56	Croatia
Cyprus	54	42	35	49	54	42		55	62	43	Cyprus
Czech Republic	29	36	28	34	33	41		43	35	24	Czech Republic
Denmark	09	13	13	02	22	04		04	02	04	Denmark
Estonia	30	10	38	29	40	27		14	36	13	Estonia
Finland	14	12	11	03	20	12		21	18	02	Finland
France	27	28	17	08	12	28		38	28	12	France
Germany	32	08	07	17	17	34		28	27	11	Germany
Ghana	52	67	67	50	66	65		61	42	63	Ghana
Greece	47	57	30	48	49	49		45	85	47	Greece
Hong Kong SAR	05	03	16	12	11	01		01	07	29	Hong Kong SAR
Hungary	48	38	36	31	50	32		68	56	37	Hungary
Iceland	22	27	42	19	23	02		02	10	19	Iceland
India	53	55	31	54	18	59		58	48	53	India
Indonesia	50	65	53	53	10	63		48	24	54	Indonesia
Ireland	16	23	21	06	41	13		10	13	28	Ireland
Italy	45	47	23	40	53	46		32	32	42	Italy
Japan	63	14	05	43	29	09		36	60	17	Japan
Jordan	57	48	41	42	31	57		57	15	50	Jordan
Kazakhstan	36	04	61	27	55	52		33	23	48	Kazakhstan
Kenya	44	63	49	44	56	68		63	44	64	Kenya
Korea Rep.	49	07	01	38	27	15		05	14	20	Korea Rep.
Kuwait	20	50	52	46	36	35		47	37	41	Kuwait
Latvia	18	29	60	21	43	30		27	29	18	Latvia
Lithuania	10	19	32	15	35	20		18	09	21	Lithuania
Luxembourg	35	09	24	16	39	26		41	30	25	Luxembourg
Malaysia	31	18	40	41	30	19		50	43	34	Malaysia
Mexico	60	59	47	64	60	55		42	51	61	Mexico
Mongolia	65	49	65	68	63	54		64	68	66	Mongolia
Namibia	43	44	69	61	58	66		66	55	68	Namibia
Netherlands	06	25	12	05	03	06		03	08	09	Netherlands
New Zealand	24	33	33	26	28	24		19	46	32	New Zealand
Nigeria	66	68	58	55	57	69		69	52	67	Nigeria
Norway	17	17	20	09	19	18		17	20	10	Norway
Oman	33	31	62	35	24	45		26	17	39	Oman
Peru	67	53	64	60	65	60		53	61	65	Peru
Philippines	56	62	63	67	46	47		40	50	57	Philippines
Poland	51	40	26	57	52	37		51	64	38	Poland
Portugal	25	37	25	20	45	43		29	59	26	Portugal
Puerto Rico	38	60	50	39	13	11		31	39	36	Puerto Rico
Qatar	15	43	51	24	06	14		24	04	22	Qatar
Romania	41	54	48	33	61	38		39	54	49	Romania
Saudi Arabia	13	24	44	13	16	44		09	25	33	Saudi Arabia
Singapore	04	21	04	01	08	03		11	11	06	Singapore
Slovak Republic	59	45	46	65	62	48		62	63	59	Slovak Republic
Slovenia	39	26	27	47	44	40		54	47	51	Slovenia
South Africa	61	52	59	62	47	58		49	58	44	South Africa
Spain	26	32	22	36	32	33		30	38	16	Spain
Sweden	07	02	08	11	04	16		13	16	03	Sweden
Switzerland	02	05	06	07	15	05		07	03	07	Switzerland
Taiwan (Chinese Taipei)	34	06	10	25	05	08		15	01	08	Taiwan (Chinese Taipei)
Thailand	37	35	43	37	21	23		34	33	55	Thailand
Turkiye	64	64	37	63	67	62		60	67	52	Turkiye
UAE	01	16	34	04	09	10		06	19	01	UAE
United Kingdom	12	20	09	28	14	29		20	41	27	United Kingdom
USA	19	15	02	10	01	07		08	05	15	USA
Venezuela	69	69	68	69	69	67		67	40	69	Venezuela

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ARGENTINA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

The diagram illustrates the relationship between Overall, Factors, and Sub-Factors. The Overall score is 60, indicated by an upward-pointing triangle. The Factors are Knowledge (63, downward triangle), Technology (68, downward triangle), and Future readiness (41, downward triangle). The Sub-Factors are Talent (46), Training & education (66), Scientific concentration (57), Regulatory framework (58), Capital (68), Technological framework (56), Adaptive attitudes (46), Business agility (26), and IT integration (46). The direction of the triangle indicates the change in the score from the last year: ▲ improved or stable, ▼ declined.

Overall	Factors	Sub-Factors
60	Knowledge (63)	Talent (46)
		Training & education (66)
		Scientific concentration (57)
	Technology (68)	Regulatory framework (58)
		Capital (68)
		Technological framework (56)
	Future readiness (41)	Adaptive attitudes (46)
		Business agility (26)
		IT integration (46)

OVERALL	61	59	61	62	60
Knowledge	55	58	62	61	63
Technology	62	62	63	65	68
Future readiness	52	46	49	47	41

Year	Digital	Competitiveness
2021	61	59
2022	63	61
2023	60	58
2025	62	60

	LOW	MID	HIGH
Adaptive attitudes	50	49	55
Adaptive attitudes	50	49	55

THE AMERICAS (10 economies)

Year	Population > 20 million
2021	8
2022	7
2023	7
2024	8
2025	8

POPULATIONS > 20 MILLION (32 economies)

Year	Population > 20 million
2021	28
2022	27
2023	27
2024	27
2025	26

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent					
Training & education	62	61	61	62	46
Scientific concentration	46	49	60	60	66
	48	48	50	52	57
Talent					
Educational assessment PISA • Math	54	Rank	Rank	Rank	Rank
International experience	41	Employee training	Total public expenditure on education	3	6
Management of cities	57	Higher education achievement		3	
Digital/Technological skills	54	Pupil-teacher ratio (tertiary education)			
Foreign highly skilled personnel	42	Graduates in Sciences			6
Net flow of international students	23	Women with degrees			4
Female researchers	04	Computer science education index			6

TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework	Regulatory framework	57	61	57	48	58
	Capital	63	62	63	66	68
	Technological framework	56	55	56	57	56
Regulatory framework	Regulatory framework	Rank	Capital	Rank		Rank
	Starting a business	64	IT & media stock market capitalization	4		4
	Enforcing contracts	52	Funding for technological development	6		6
	Immigration laws	03	△ Banking and financial services	6		6
	Development & application of tech.	54	△ County credit rating	6		6
	Scientific research Registration	65	△ Venture capital	6		6
	Intellectual property rights	62	Investment in Telecommunications	6		6
	AI policies passed into law	52	AI private investment			

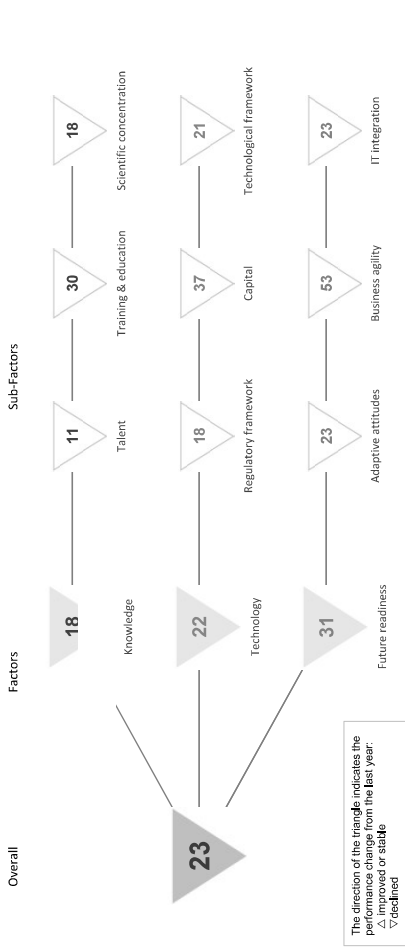
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	50	49	55	53	46
Business agility	43	37	38	32	26
IT integration	59	53	53	53	46
Business agility					
Adaptive attitudes	Rank	Rank			
E-Participation	53	Opportunities and threats			
Internet retailing	38	World robots distribution			
Tablet possession	35	Agility of companies			
Smartphone possession	43	Use of big data and analytics			
Attitudes toward globalization	56	Knowledge transfer			
Flexibility and adaptability	29	Entrepreneurial fear of failure			

AUSTRALIA

DIGITAL TRENDS - OVERALL

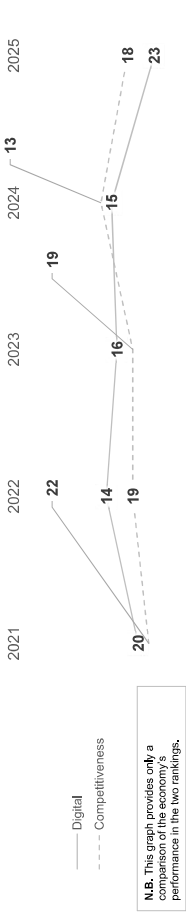
OVERALL PERFORMANCE (69 economies)



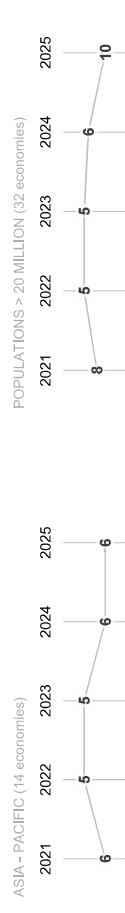
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



AUSTRALIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	08	07	08	09	11
Training & education	37	29	28	27	30
Scientific concentration	18	16	16	15	18
Talent	Rank 16	Rank 16	Rank 16	Rank 16	Rank 16
Educational assessment PISA - Math	59	59	59	59	59
Employee training	60	60	60	60	60
International experience	21	21	21	21	21
Total public expenditure on education	15	15	15	15	15
Higher education achievement	31	31	31	31	31
Management of cities	49	49	49	49	49
Digital/Technological skills	52	52	52	52	52
Pupil-teacher ratio (tertiary education)	13	13	13	13	13
Foreign highly skilled personnel	02	02	02	02	02
Graduates in Sciences	08	08	08	08	08
Net flow of international students	14	14	14	14	14
Women with degrees	05	05	05	05	05
Female researchers	13	13	13	13	13
Computer science education index	05	05	05	05	05
Scientific and technical employment	13	13	13	13	13

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	17	10	15	05	18
Capital	17	13	16	19	37
Technological framework	27	26	31	12	21
Regulatory framework	Rank 05	Rank 05	Rank 05	Rank 05	Rank 05
Starting a business	36	36	36	36	36
IT & media stock market capitalization	46	46	46	46	46
Funding for technological development	03	03	03	03	03
Enforcing contracts	19	19	19	19	19
Banking and financial services	28	28	28	28	28
Immigration laws	38	38	38	38	38
Country credit rating	01	01	01	01	01
Development & application of tech.	21	21	21	21	21
Venture capital	40	40	40	40	40
Scientific research legislation	45	45	45	45	45
Investment in Telecommunications	17	17	17	17	17
Intellectual property rights	34	34	34	34	34
AI policies passed into law	19	19	19	19	19

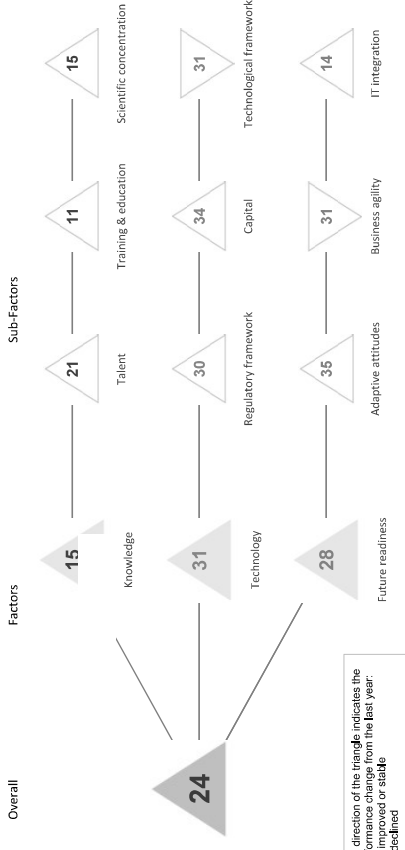
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	14	08	04	16	23
Business agility	55	40	42	38	53
IT integration	21	15	23	15	23
Adaptive attitudes	Rank 19	Rank 19	Rank 19	Rank 19	Rank 19
E-Participation	57	57	57	57	57
Opportunities and threats	31	31	31	31	31
Public-private partnerships	30	30	30	30	30
Workforce distribution	65	65	65	65	65
Agility of companies	05	05	05	05	05
Use of big data and analytics	32	32	32	32	32
Knowledge transfer	30	30	30	30	30
Entrepreneurial fear of failure	29	29	29	29	29

AUSTRIA

DIGITAL TRENDS - OVERALL

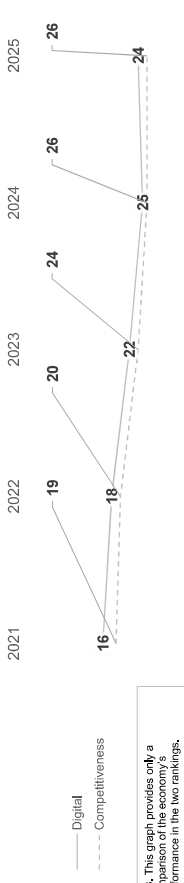
OVERALL PERFORMANCE (69 economies)



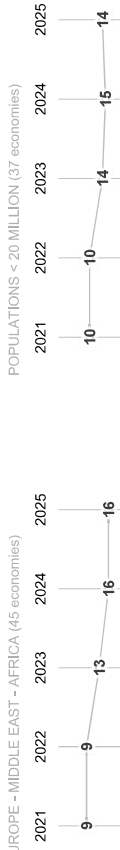
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



AUSTRIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent		15	16	20	23	21
Training & education		05	12	11	18	11
Scientific concentration		15	15	17	17	15
Talent	Rank					
Education assessment PISA - Math	16					
Employee training	03					
Total public expenditure on education	30					
Higher education achievement	34					
Digital/Technological skills	38					
Pupil-teacher ratio (tertiary education)	02					
Graduates in Sciences	10					
Women with degrees	35					
Robots in Education and R&D	11					
Female researchers	47					
Computer science education index	26					
Scientific and technical employment	16					
Scientific concentration						
Total expenditure on R&D (%)	08					
Total R&D personnel per capita	07					
R&D productivity by publication	50					
High-tech patent grants	20					
AI-related patent publications	17					
Robots in Education and R&D	11					
AI articles	16					

TECHNOLOGY

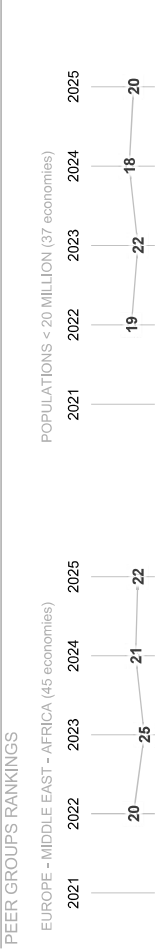
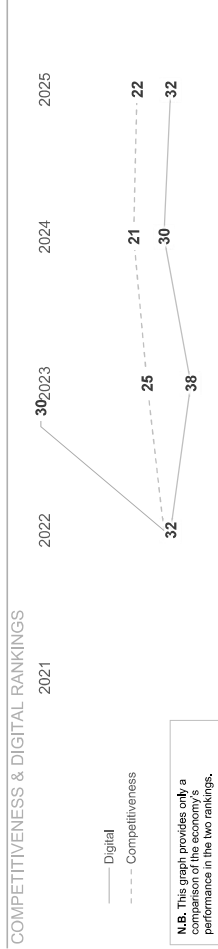
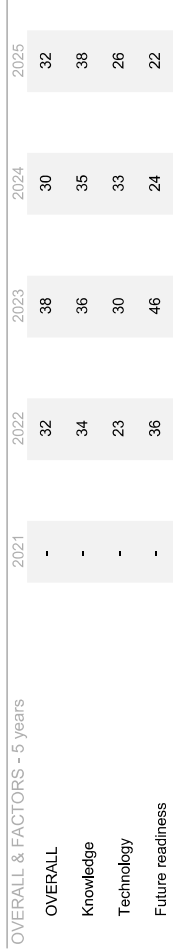
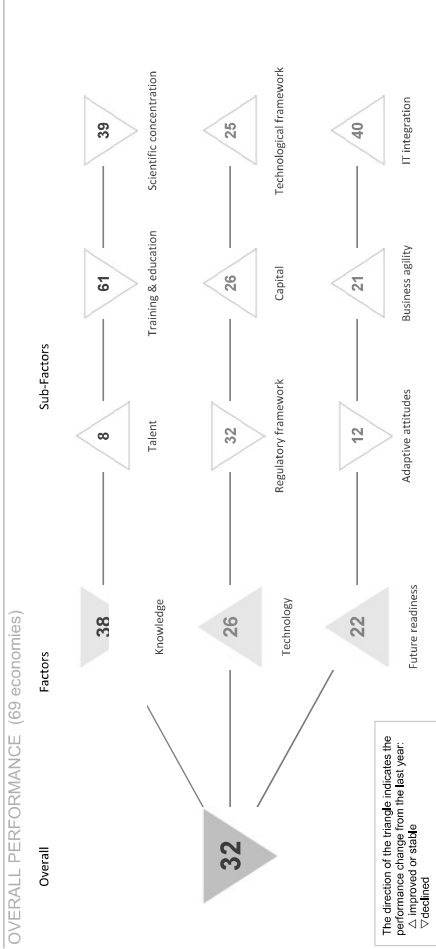
Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework		26	29	34	32	30
Capital		32	36	34	41	34
Technological framework		38	37	38	23	31
Regulatory framework	Rank					
IT & media stock market capitalization	45					
Funding for technological development	24					
Banking and financial services	29					
Country credit rating	13					
Venture capital	41					
Investment in Telecommunications	58					
AI private investment	09					
Technological framework						
Communications technology	27					
Mobile broadband subscribers	18					
Wireless broadband	24					
Internet users	21					
Internet bandwidth speed	44					
High-tech exports (%)	32					
Secure internet servers	24					

FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes		21	19	24	38	35
Business agility		18	21	22	28	31
IT integration		11	11	13	20	14
Adaptive attitudes	Rank					
Business agility	32					
Opportunities and threats	38					
Public-private partnerships	43					
Cyber security	05					
Software piracy	06					
Government cyber security capacity	36					
Privacy protection by law exists	43					

BAHRAIN

DIGITAL TRENDS - OVERALL



BAHRAIN

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	-	13	15	11	08
Training & education	-	48	55	59	61
Scientific concentration	-	31	34	31	39

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	-	Employee training	27	Total expenditure on R&D (%)	-
International experience	09	► Total public expenditure on education	62	Total R&D personnel per capita	-
Management of cities	09	Higher education achievement	59	R&D productivity by publication	-
Digital/Technological skills	08	Pupil-teacher ratio (tertiary education)	58	High-tech patent grants	44
Foreign highly skilled personnel	08	Graduates in Sciences	48	AI-related patent publications	-
Net flow of international students	36	► Women with degrees	04	Robots in Education and R&D	-
► Female researchers	05	► Computer science education index	60	AI articles	33
Scientific and technical employment	-				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	-	32	29	31	32
Capital	-	34	47	29	26
Technological framework	-	17	14	38	25

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	33	IT & media stock market capitalization	19	Communications technology	12
Enforcing contracts	42	Funding for technological development	14	Mobile broadband subscribers	08
► Immigration laws	01	Banking and financial services	06	Wireless broadband	15
Development & application of tech.	06	► Country credit rating	61	Internet users	01
Scientific research legislation	32	Venture capital	18	Internet bandwidth speed	33
Intellectual property rights	34	Investment in Telecommunications	25	► High-tech exports (%)	67
AI policies passed into law	60	AI private investment	-	Secure internet servers	46

FUTURE READINESS

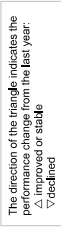
Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	-	23	49	07	12
Business agility	-	29	32	26	21
IT integration	-	46	50	41	40

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	17	Opportunities and threats	16	E-Government	18
Internet retailing	-	World robots distribution	-	Public-private partnerships	08
Tablet possession	27	Agility of companies	25	Cyber security	11
Smartphone possession	10	Use of big data and analytics	16	Software piracy	46
Attitudes toward globalization	16	Knowledge transfer	23	Government cyber security capacity	48
► Flexibility and adaptability	03	Entrepreneurial fear of failure	-	► Privacy protection by law exists	61

DIGITAL TRENDS - OVERALL

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

Overall	Factors
---------	---------



OVERALL I

Future readiness

2021



EUROPE - MIDDLE EAST - AFRICA (45 economies)



Sub-Factors

Leisure researchers	42
1. Leisure researchers	1
2. Leisure researchers	1
3. Leisure researchers	1
4. Leisure researchers	1
5. Leisure researchers	1
6. Leisure researchers	1
7. Leisure researchers	1
8. Leisure researchers	1
9. Leisure researchers	1
10. Leisure researchers	1
11. Leisure researchers	1
12. Leisure researchers	1
13. Leisure researchers	1
14. Leisure researchers	1
15. Leisure researchers	1
16. Leisure researchers	1
17. Leisure researchers	1
18. Leisure researchers	1
19. Leisure researchers	1
20. Leisure researchers	1
21. Leisure researchers	1
22. Leisure researchers	1
23. Leisure researchers	1
24. Leisure researchers	1
25. Leisure researchers	1
26. Leisure researchers	1
27. Leisure researchers	1
28. Leisure researchers	1
29. Leisure researchers	1
30. Leisure researchers	1
31. Leisure researchers	1
32. Leisure researchers	1
33. Leisure researchers	1
34. Leisure researchers	1
35. Leisure researchers	1
36. Leisure researchers	1
37. Leisure researchers	1
38. Leisure researchers	1
39. Leisure researchers	1
40. Leisure researchers	1
41. Leisure researchers	1
42. Leisure researchers	1

Sub-Factors

AI policies passed into law 15

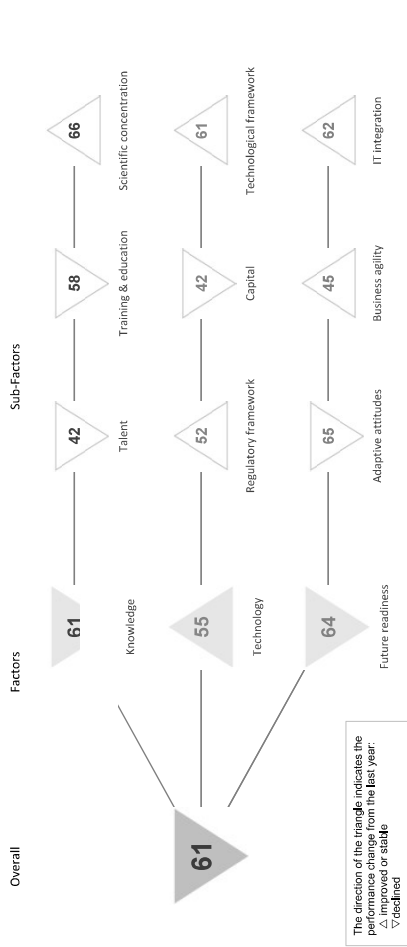
Sub-Factors

Flexibility and adaptability

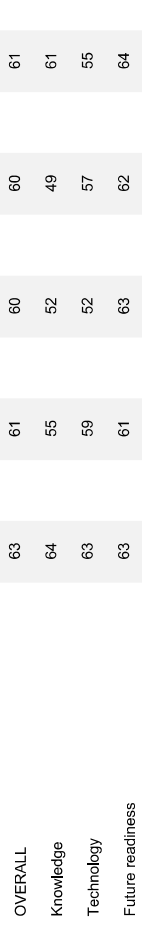
BOTSWANA

DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



BOTSWANA

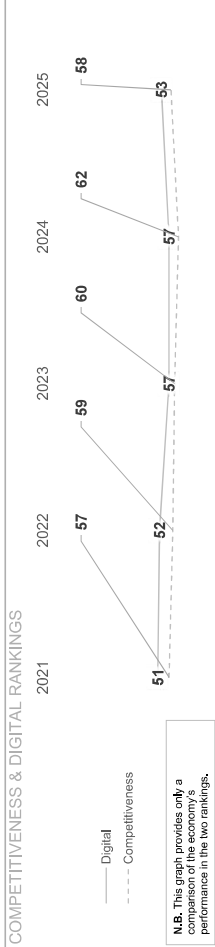
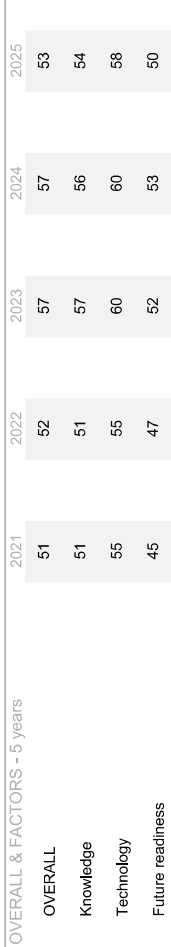
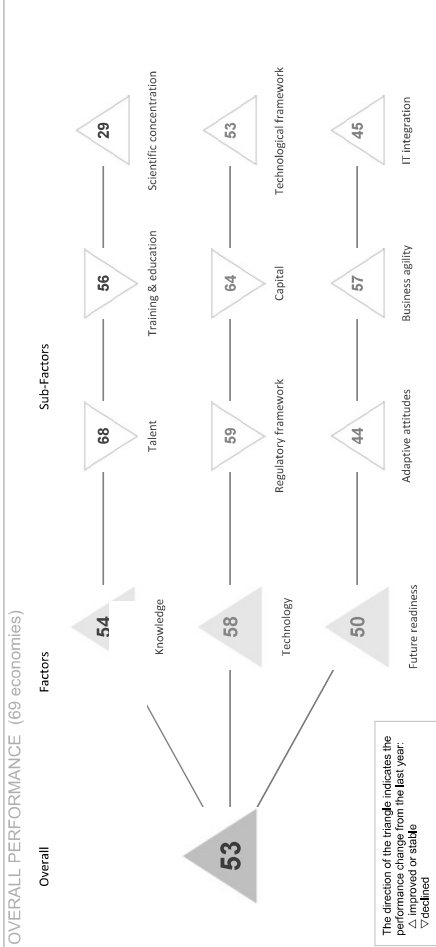
FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors					
	2021	2022	2023	2024	2025
Talent	53	42	37	31	42
Training & education	48	39	41	37	58
Scientific concentration	63	63	64	66	66
Talent	Training & education				
	Employee training	Rank			
Educational assessment	31	50			
International experience	Total public expenditure on education				
Management of cities	31	Higher education achievement			
Digital/technological skills	46	Pupil-teacher ratio (tertiary education)			
Foreign highly skilled personnel	11	Graduates in Sciences			
Net flow of international students	47	Women with degrees			
Female researchers	-	Computer science education index			
					Rank
					Scientific concentration
					Total expenditure on R&D (%)
					Total R&D personnel per capita
					R&D productivity by publication
					High-tech patent grants
					65
					AI-related patent publications
					Robots in Education and R&D
					58
					AI articles

BRAZIL

DIGITAL TRENDS - OVERALL



BRAZIL

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	63	62	64	66	68
Training & education	58	51	57	51	56
Scientific concentration	21	25	25	29	29

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	53	Employee training	51	Total expenditure on R&D (%)	35
► International experience	64	Total public expenditure on education	26	Total R&D personnel per capita	-
► Management of cities	64	Higher education achievement	56	► R&D productivity by publication	09
Digital/Technological skills	60	Pupil-teacher ratio (tertiary education)	48	High-tech patent grants	46
► Foreign highly skilled personnel	63	Graduates in Sciences	59	AI-related patent publications	31
Net flow of international students	49	Women with degrees	52	► Robots in Education and R&D	17
Female researchers	-	Computer science education index	31	AI articles	55
Scientific and technical employment	37				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	51	55	58	53	59
Capital	59	57	62	59	64
Technological framework	51	51	51	54	53

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	61	IT & media stock market capitalization	46	Communications technology	55
Enforcing contracts	41	Funding for technological development	62	Mobile broadband subscribers	53
Immigration laws	35	Banking and financial services	60	Wireless broadband	54
Development & application of tech.	58	Country credit rating	57	Internet users	52
Scientific research legislation	60	► Venture capital	64	Internet bandwidth speed	35
Intellectual property rights	60	Investment in Telecommunications	49	High-tech exports (%)	44
AI policies passed into law	44	AI private investment	16	Secure internet servers	45

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	40	43	51	47	44
Business agility	42	52	61	63	57
IT integration	49	43	45	50	45

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
► E-Participation	19	Opportunities and threats	47	E-Government	42
Internet retailing	45	Work robots distribution	20	Public-private partnerships	55
Tablet possession	56	Agility of companies	42	Cyber security	59
► Smartphone possession	19	Use of big data and analytics	57	Software piracy	36
Attitudes toward globalization	46	► Knowledge transfer	65	► Government cyber security capacity	26
Flexibility and adaptability	40	Entrepreneurial fear of failure	41	Privacy protection by law exists	44

BULGARIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	55	52	60	61	56
Capital	53	52	54	37	51
Technological framework	42	46	50	49	50

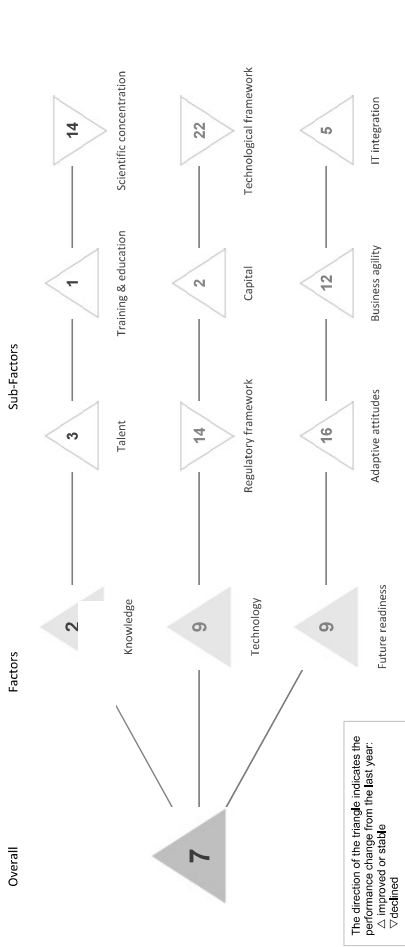
Regulatory framework		Rank	Capital		Rank	Technological framework	
Starting a business	Starting a business	48	▶ IT & media stock market capitalization	▶ IT & media stock market capitalization	16	Communications technology	42
	Enforcing contracts	31		Funding for technological development	55		43
	Immigration laws	61		Banking and financial services	62		17
Development & application of tech.	Development & application of tech.	60	Country credit rating	Country credit rating	44	Internet users	58
	Scientific research legislation	59		Venture capital	43		48
	Intellectual property rights	65		Investment in Telecommunications	23		39
AI policies passed into law		27	AI private investment		46	Secure internet servers	



CANADA

DIGITAL TRENDS - OVERALL

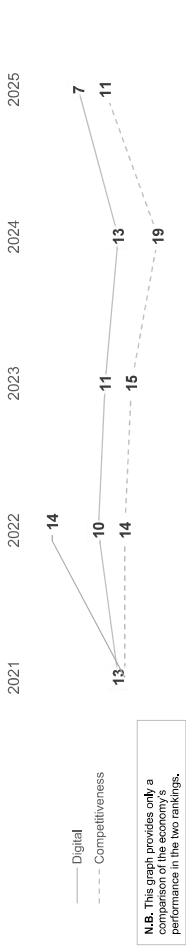
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years

	2021	2022	2023	2024	2025
OVERALL	13	10	11	13	07
Knowledge	07	03	04	06	02
Technology	15	14	13	13	09
Future readiness	15	11	11	19	09

COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS

THE AMERICAS (10 economies)



CANADA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	09	08	09	14	03
Training & education	10	03	02	03	01
Scientific concentration	05	04	05	06	14
Talent	Rank 09	Training & education	Rank 24	Scientific concentration	Rank 21
Educational assessment PISA - Math	09	Employee training	24	Total expenditure on R&D (%)	21
International experience	15	Total public expenditure on education	40	Total R&D personnel per capita	20
Management of cities	13	Higher education achievement	06	R&D productivity by publication	14
Digital/Technological skills	11	Pupil-teacher ratio (tertiary education)	07	High-tech patent grants	13
Foreign highly skilled personnel	09	Graduates in Sciences	12	AI-related patent publications	08
Net flow of international students	05	Women with degrees	02	Robots in Education and R&D	09
Female researchers	-	Computer science education index	09	AI articles	24
Scientific and technical employment	03				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	13	13	19	09	14
Capital	09	06	04	12	02
Technological framework	29	31	26	16	22
Regulatory framework	Rank 02	Capital	Rank 25	Technological framework	Rank 25
Starting a business	02	IT & media stock market capitalization	25	Communications technology	25
Enforcing contracts	53	Funding for technological development	04	Mobile broadband subscribers	07
Immigration laws	14	Banking and financial services	10	Wireless broadband	59
Development & application of tech.	07	Country credit rating	10	Internet users	26
Scientific research legislation	10	Venture capital	07	Internet bandwidth speed	06
Intellectual property rights	12	Investment in Telecommunications	16	High-tech exports (%)	33
AI policies passed into law	32	AI private investment	05	Secure internet servers	23

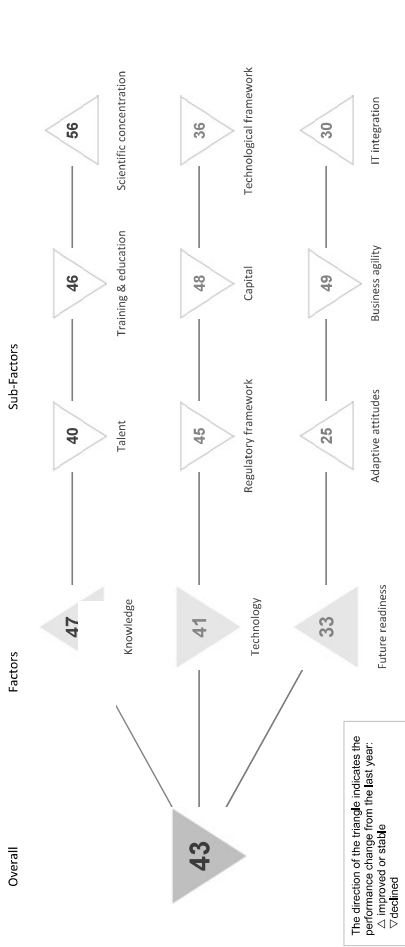
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	17	18	18	23	16
Business agility	20	19	24	29	12
IT integration	14	02	04	11	05
Adaptive attitudes	Rank 14	Business agility	Rank 14	IT integration	Rank 40
E-Participation	14	Opportunities and threats	14	E-Government	40
Internet retailing	08	World robots distribution	14	Public-private partnerships	10
Tablet possession	16	Agility of companies	20	Cyber security	10
Smartphone possession	50	Use of big data and analytics	04	Software piracy	13
Attitudes toward globalization	23	Knowledge transfer	03	Government cyber security capacity	04
Flexibility and adaptability	18	Entrepreneurial fear of failure	33	Privacy protection by law exists	24

CHILE

DIGITAL TRENDS - OVERALL

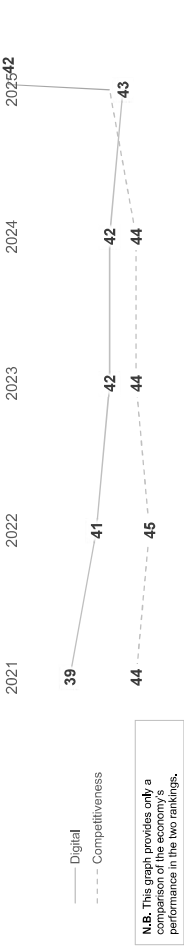
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



CHILE

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths

► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	36	39	41	38	40
Training & education	51	54	45	45	46
Scientific concentration	57	55	56	58	56
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	46	Employee training	59	Total R&D expenditure on R&D (%)	53
International experience	21	Total public expenditure on education	29	Total R&D personnel per capita	52
Management of cities	39	Higher education achievement	37	R&D productivity by publication	24
Digital/Technological skills	31	Pupil-teacher ratio (tertiary education)	-	High-tech patent grants	54
Foreign highly skilled personnel	14	Graduates in Sciences	38	AI-related patent publications	35
Net flow of international students	43	Women with degrees	40	Robots in Education and R&D	40
Female researchers	43	Computer science education index	45	AI articles	47
Scientific and technical employment	40				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	33	41	37	33	45
Capital	38	43	50	46	48
Technological framework	36	36	30	35	36
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	30	IT & media stock market capitalization	54	Communications technology	21
Enforcing contracts	37	Funding for technological development	54	Mobile broadband subscribers	38
Immigration laws	13	Banking and financial services	30	Wireless broadband	48
Development & application of tech.	46	Country credit rating	34	Internet users	24
Scientific research legislation	57	Venture capital	44	Internet bandwidth speed	11
Intellectual property rights	37	Investment in Telecommunications	11	High-tech exports (%)	41
AI policies passed into law	44	AI private investment	45	Secure internet servers	40

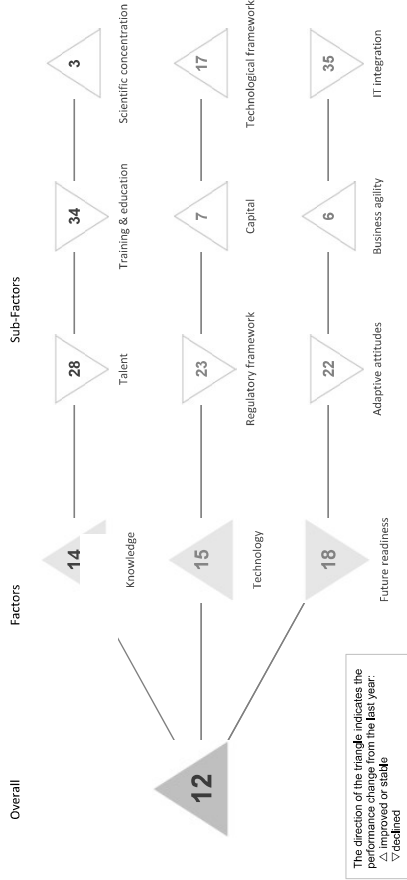
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	24	26	25	25	25
Business agility	54	43	52	40	49
IT integration	39	34	34	33	30
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	24	Opportunities and threats	34	E-Government	27
Internet retailing	37	Work robots distribution	48	Public-private partnerships	20
Tablet possession	23	Agility of companies	26	Cyber security	50
Smartphone possession	11	Use of big data and analytics	59	Software piracy	47
Attitudes toward globalization	05	Knowledge transfer	54	Government cyber security capacity	07
Flexibility and adaptability	56	Entrepreneurial fear of failure	28	Privacy protection by law exists	39

CHINA

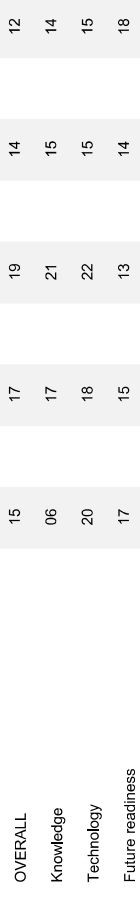
DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)

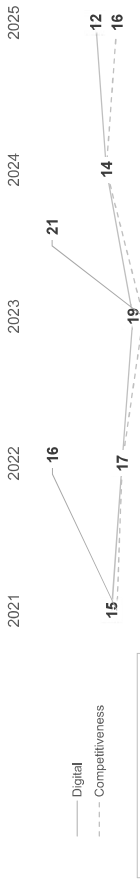


The direction of the triangle indicates the performance change from the last year.
▲ Improved or stable
▼ Declined

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



N.B. This graph provides only a partial view of the performance in the two rankings.

PEER GROUPS RANKINGS



CHINA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	12	12	14	10	28
Training & education	35	33	43	32	34
Scientific concentration	01	09	09	10	03
Talent	Rank 01	Rank 01	Rank 01	Rank 01	Rank 14
► Educational assessment PISA - Math	52	52	57	57	34
International experience	05	05	10	10	01
Management of cities	17	17	44	44	07
Digital/Technological skills	52	52	55	55	01
Foreign highly skilled personnel	53	53	55	55	01
Net flow of international students	55	55	55	55	01
Female researchers	55	55	55	55	01
Scientific and technical employment	41	41	41	41	49

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	15	16	20	04	23
Capital	27	27	26	20	07
Technological framework	28	24	20	25	17
Regulatory framework	Rank 16	Rank 16	Rank 16	Rank 16	Rank 13
Starting a business	05	05	18	18	01
Enforcing contracts	50	50	24	24	13
Immigration laws	22	22	28	28	60
Development & application of tech.	23	23	31	31	23
Scientific research legislation	39	39	33	33	14
Intellectual property rights	30	30	02	02	52
AI policies passed into law	30	30	02	02	52

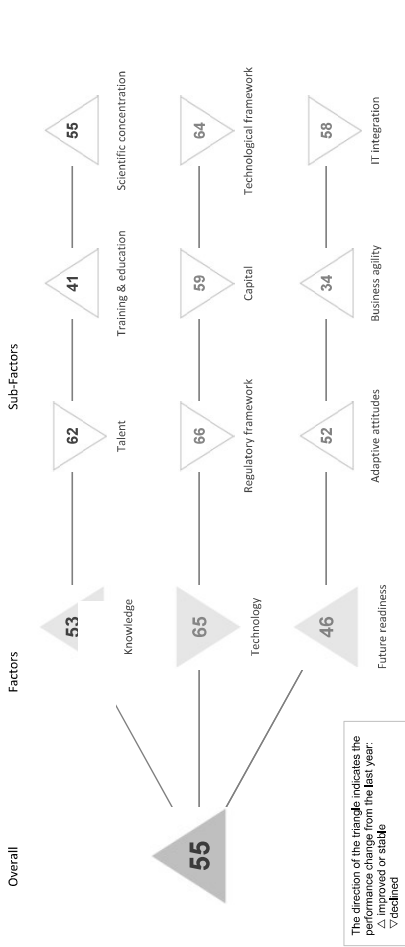
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	19	22	20	19	22
Business agility	03	03	04	08	06
IT integration	32	32	32	26	35
Adaptive attitudes	Rank 11	Rank 11	Rank 11	Rank 11	Rank 12
E-Participation	20	20	20	20	31
Internet retailing	40	40	40	40	14
Tablet possession	52	52	52	52	14
Smartphone possession	10	10	10	10	58
Attitudes toward globalization	20	20	20	20	02
Flexibility and adaptability	20	20	20	20	64

COLOMBIA

DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years

	2021	2022	2023	2024	2025
OVERALL	59	60	62	58	55
Knowledge	56	57	54	55	53
Technology	60	61	62	61	65
Future readiness	53	56	60	49	46

COMPETITIVENESS & DIGITAL RANKINGS



N.B. This graph provides only a partial overview of the performance in the two rankings.

PEER GROUPS RANKINGS

THE AMERICAS (10 economies)



COLOMBIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	57	58	57	56	62
Training & education	50	46	42	43	41
Scientific concentration	58	56	57	59	55
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	52	Employee training	22	Total expenditure on R&D (%)	54
International experience	49	► Total public expenditure on education	16	Total R&D personnel per capita	51
Management of cities	50	Higher education achievement	48	► R&D productivity by publication	17
Digital/Technological skills	51	Pupil-teacher ratio (tertiary education)	36	High-tech patent grants	55
Foreign highly skilled personnel	56	Graduates in Sciences	33	AI-related patent publications	35
Net flow of international students	56	Women with degrees	45	Robots in Education and R&D	37
Female researchers	29	Computer science education index	54	AI articles	50
Scientific and technical employment	43				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	61	59	62	59	66
Capital	49	56	57	57	59
Technological framework	59	61	62	60	64
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	40	IT & media stock market capitalization	57	Communications technology	56
► Enforcing contracts	68	Funding for technological development	56	► Mobile broadband subscribers	62
Immigration laws	40	Banking and financial services	59	► Wireless broadband	67
Development & application of tech.	52	Country credit rating	55	Internet users	61
► Scientific research legislation	61	Venture capital	58	Internet bandwidth speed	43
Intellectual property rights	51	► Investment in Telecommunications	03	High-tech exports (%)	50
AI policies passed into law	53	AI private investment	44	Secure internet servers	53

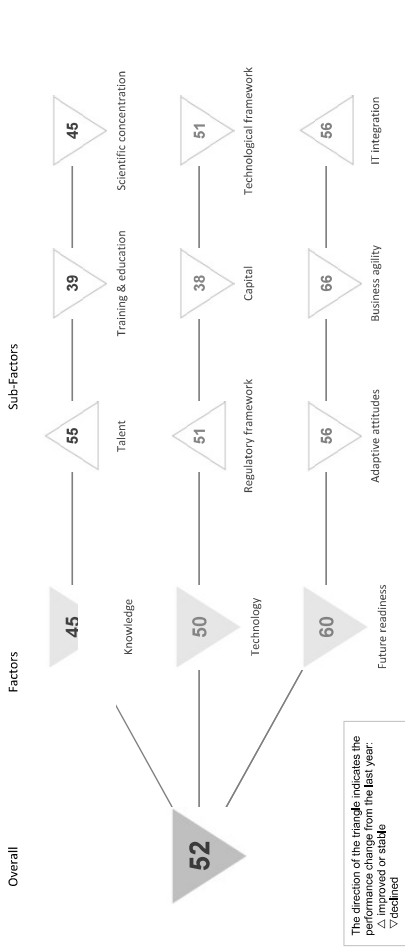
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	58	48	58	59	52
Business agility	47	54	59	36	34
IT integration	46	58	58	52	58
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	40	Opportunities and threats	51	E-Government	56
Internet retailing	53	Work robots distribution	45	Public-private partnerships	32
Tablet possession	60	Agility of companies	28	Cyber security	56
Smartphone possession	34	Use of big data and analytics	35	Software piracy	40
Attitudes toward globalization	24	Knowledge transfer	43	► Government cyber security capacity	68
Flexibility and adaptability	36	► Entrepreneurial fear of failure	04	► Privacy protection by law exists	05

CROATIA

DIGITAL TRENDS - OVERALL

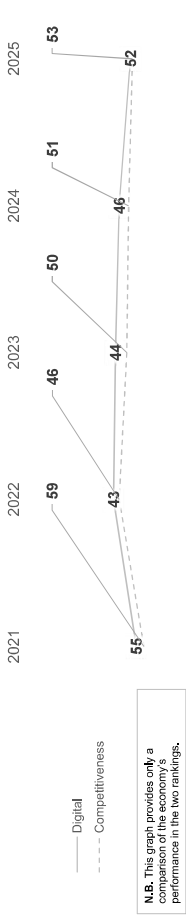
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



CROATIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	61	52	54	57	55
Training & education	42	34	36	38	39
Scientific concentration	34	34	32	38	45
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	35	Employee training	64	Total expenditure on R&D (%)	31
International experience	66	Total public expenditure on education	15	Total R&D personnel per capita	37
Management of cities	63	Higher education achievement	44	R&D productivity by publication	51
Digital/Technological skills	50	Pupil-teacher ratio (tertiary education)	15	High-tech patent grants	21
Foreign highly skilled personnel	66	Graduates in Sciences	16	AI-related patent publications	48
Net flow of international students	54	Women with degrees	42	Robots in Education and R&D	37
Female researchers	13	Computer science education index	51	AI articles	34
Scientific and technical employment	30				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	56	46	47	54	51
Capital	50	35	33	33	38
Technological framework	41	42	44	47	51
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	49	IT & media stock market capitalization	22	Communications technology	41
Enforcing contracts	23	Funding for technological development	52	Mobile broadband subscribers	31
Immigration laws	56	Banking and financial services	63	Wireless broadband	53
Development & application of tech.	66	Country credit rating	38	Internet users	54
Scientific research legislation	54	Venture capital	53	Internet bandwidth speed	59
Intellectual property rights	55	Investment in Telecommunications	04	High-tech exports (%)	40
AI policies passed into law	25	AI private investment	27	Secure internet servers	31

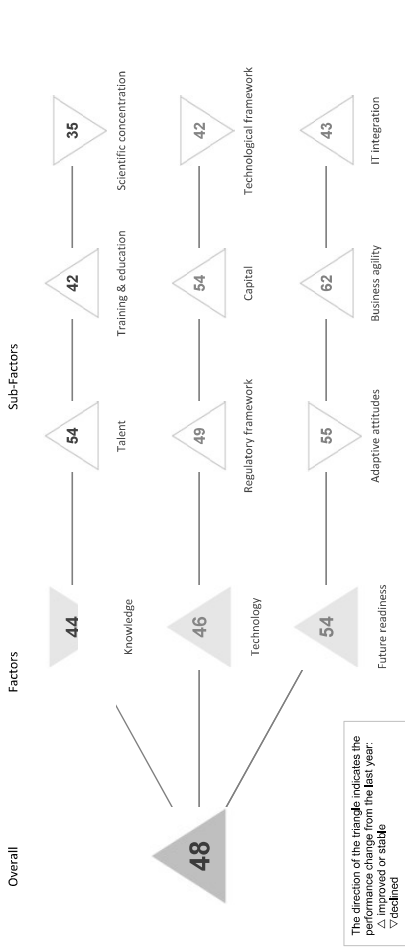
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	39	40	41	45	56
Business agility	64	58	57	62	66
IT integration	58	44	48	59	56
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	14	Opportunities and threats	65	E-Government	28
Internet retailing	50	Work robots distribution	45	Public-private partnerships	67
Tablet possession	32	Agility of companies	64	Cyber security	46
Smartphone possession	27	Use of big data and analytics	65	Software piracy	43
Attitudes toward globalization	68	Knowledge transfer	63	Government cyber security capacity	49
Flexibility and adaptability	67	Entrepreneurial fear of failure	26	Privacy protection by law exists	55

CYPRUS

DIGITAL TRENDS - OVERALL

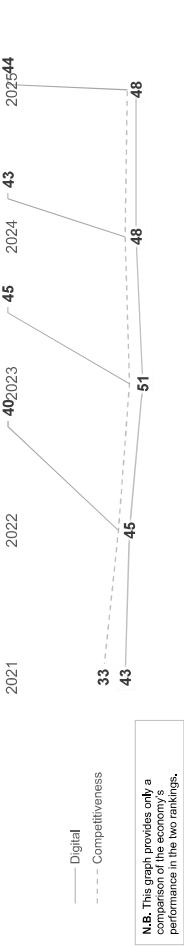
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



CYPRUS

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	56	53	55	63	54
Training & education	29	40	44	44	42
Scientific concentration	29	26	40	25	35
Talent	Rank 43	Rank 49	Rank 18	Rank 45	Rank 45
Educational assessment PISA - Math	39	59	09	55	54
International experience	59	59	55	61	39
Management of cities	55	31	15	33	04
Digital/Technological skills	31	62	26	06	
Foreign highly skilled personnel	62	26	06		
Net flow of international students	26	06			
Female researchers	06				
Scientific and technical employment					
Employee training					
Total public expenditure on education					
Higher education achievement					
Pupil-teacher ratio (tertiary education)					
Graduates in Sciences					
Women with degrees					
Computer science education index					
AI articles					

TECHNOLOGY

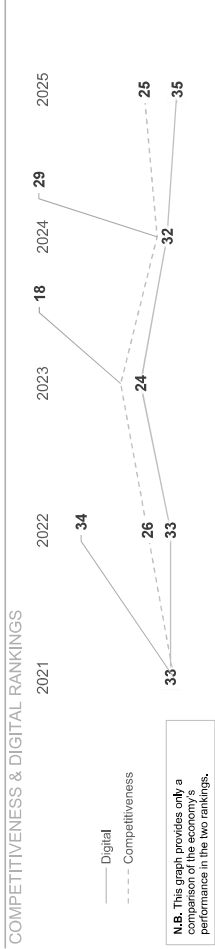
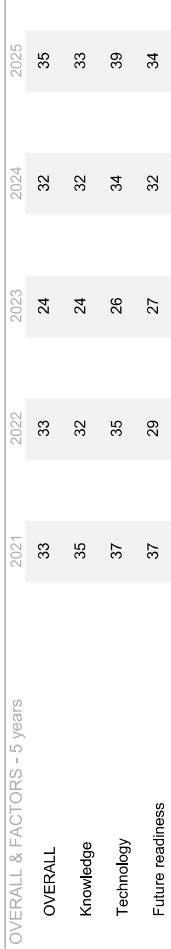
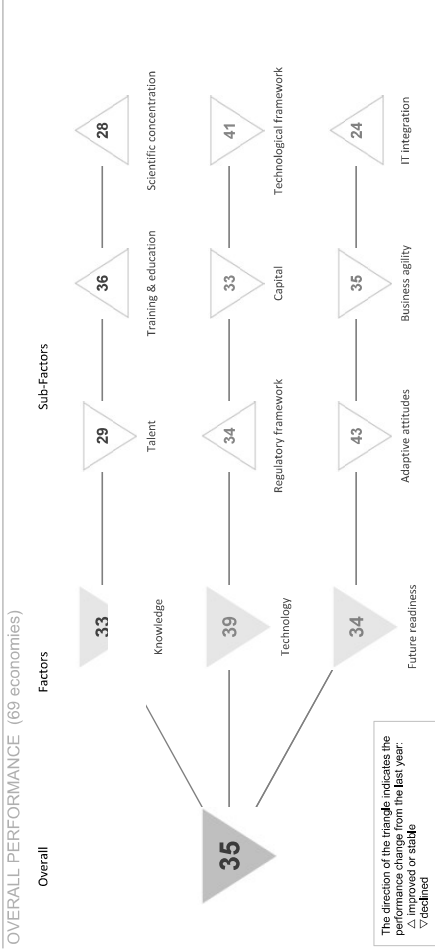
Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	47	50	53	60	49
Capital	54	54	56	58	54
Technological framework	52	49	49	36	42
Regulatory framework	Rank 28	Rank 41	Rank 48	Rank 48	Rank 48
Starting a business	63	53	58	58	21
Enforcing contracts	60	58	58	58	21
Immigration laws	53	42	62	51	23
Development & application of tech.	50	62	12	50	16
Scientific research legislation	45	12	50	50	50
Intellectual property rights	25	50	50	50	50
AI policies passed into law					

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	27	36	46	40	55
Business agility	50	53	63	66	62
IT integration	33	29	39	47	43
Adaptive attitudes	Rank 43	Rank 59	Rank 64	Rank 64	Rank 64
E-Participation	-	-	-	-	-
Internet retailing	-	-	-	-	-
Tablet possession	-	-	-	-	-
Smartphone possession	-	-	-	-	-
Attitudes toward globalization	55	55	55	55	55
Flexibility and adaptability	50	39	39	39	39

CZECH REPUBLIC

DIGITAL TRENDS - OVERALL



CZECH REPUBLIC

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	28	22	17	26	29
Training & education	45	38	33	36	36
Scientific concentration	30	29	27	32	28
Talent	16	16	16	16	16
Educational assessment PISA - Math	11	11	11	11	11
Employee training	20	20	20	20	20
Total public expenditure on education	37	37	37	37	37
Higher education achievement	49	49	49	49	49
Digital/Technological skills	27	27	27	27	27
Pupil-teacher ratio (tertiary education)	32	32	32	32	32
Graduates in Sciences	27	27	27	27	27
Women with degrees	46	46	46	46	46
Computer science education index	36	36	36	36	36
Net flow of international students	10	10	10	10	10
Female researchers	54	54	54	54	54
Scientific and technical employment	25	25	25	25	25
Scientific concentration	20	20	20	20	20
Total R&D personnel per capita	19	19	19	19	19
R&D productivity by publication	37	37	37	37	37
High-tech patent grants	32	32	32	32	32
AI-related patent publications	41	41	41	41	41
Robots in Education and R&D	15	15	15	15	15
AI articles	42	42	42	42	42

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	44	37	33	38	34
Capital	29	26	13	22	33
Technological framework	32	30	28	39	41
Regulatory framework	59	59	59	59	59
IT & media stock market capitalization	23	23	23	23	23
Funding for technological development	29	29	29	29	29
Banking and financial services	42	42	42	42	42
Country credit rating	23	23	23	23	23
Venture capital	17	17	17	17	17
Investment in Telecommunications	50	50	50	50	50
AI private investment	49	49	49	49	49
Development & application of tech.	44	44	44	44	44
Scientific research legislation	20	20	20	20	20
Intellectual property rights	47	47	47	47	47
AI policies passed into law	15	15	15	15	15
Communications technology	50	50	50	50	50
Mobile broadband subscribers	35	35	35	35	35
Wireless broadband	28	28	28	28	28
Internet users	48	48	48	48	48
Internet bandwidth speed	49	49	49	49	49
High-tech exports (%)	21	21	21	21	21
Secure internet servers	13	13	13	13	13

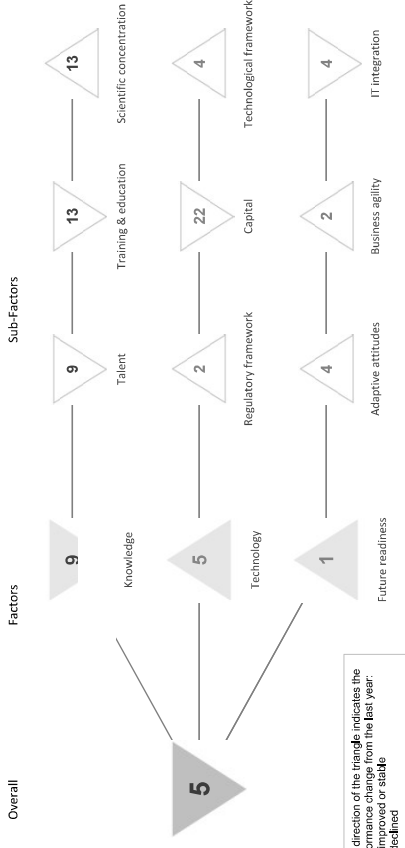
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	35	31	34	34	43
Business agility	32	24	12	27	35
IT integration	36	36	30	30	24
Adaptive attitudes	56	56	56	56	56
E-Participation	37	37	37	37	37
Opportunities and threats	16	16	16	16	16
World robots distribution	52	52	52	52	52
Agility of companies	25	25	25	25	25
Use of big data and analytics	36	36	36	36	36
Knowledge transfer	47	47	47	47	47
Entrepreneurial fear of failure	-	-	-	-	-
IT integration	46	46	46	46	46
E-Government	45	45	45	45	45
Public-private partnerships	23	23	23	23	23
Cyber security	19	19	19	19	19
Software piracy	21	21	21	21	21
Government cyber security capacity	07	07	07	07	07
Privacy protection by law exists	-	-	-	-	-

DENMARK

DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)



DENMARK

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ▾ Overall Top Weaknesses

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent		05	05	05	05	09
Training & education		04	07	12	12	13
Scientific concentration		17	17	20	14	13
Talent		Rank	Training & education		Rank	Rank
Educational assessment PISA - Math	12	Employee training		02	11	11
International experience	10	Total public expenditure on education		25	11	03
Management of cities	07	Higher education achievement		25	18	47
Digital/Technological skills	07	Pupil-teacher ratio (tertiary education)		18	35	35
Foreign highly skilled personnel	12	Graduates in Sciences		25	18	18
Net flow of international students	12	Women with degrees		23	25	25
Female researchers	35	Computer science education index		28	05	05
Scientific and technical employment	19					

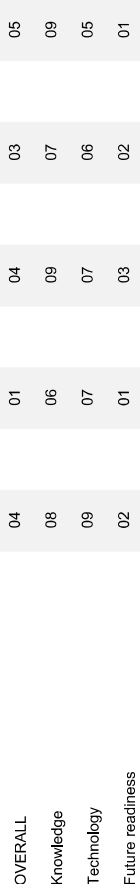
TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework		04	06	10	07	02
Capital		13	14	10	09	22
Technological framework		06	06	06	08	04
Regulatory framework		Rank	Capital		Rank	Rank
Starting a business	25	IT & media stock market capitalization		55	11	11
Enforcing contracts	13	Funding for technological development		12	48	48
Immigration laws	25	Banking and financial services		09	12	12
Development & application of tech.	09	Country credit rating		01	09	09
Scientific research legislation	06	Venture capital		12	03	03
Intellectual property rights	05	Investment in Telecommunications		21	29	29
AI policies passed into law	08	AI private investment		26	01	01

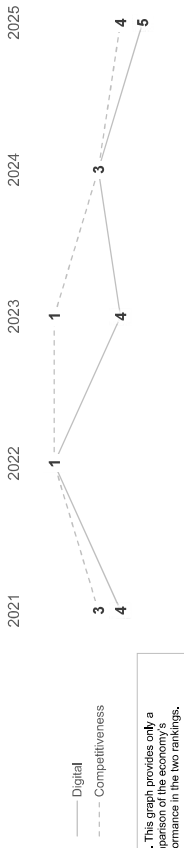
FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes		04	05	08	04	04
Business agility		07	01	06	03	02
IT integration		01	01	02	02	04
Adaptive attitudes		Rank	Business agility		Rank	Rank
E-Participation	01	Opportunities and threats		05	01	01
Internet retailing	07	Work robots distribution		29	13	13
Tablet possession	38	Agility of companies		04	19	19
Smartphone possession	44	Use of big data and analytics		02	08	08
Attitudes toward globalization	01	Knowledge transfer		03	23	23
Flexibility and adaptability	10	Entrepreneurial fear of failure		-	14	14

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



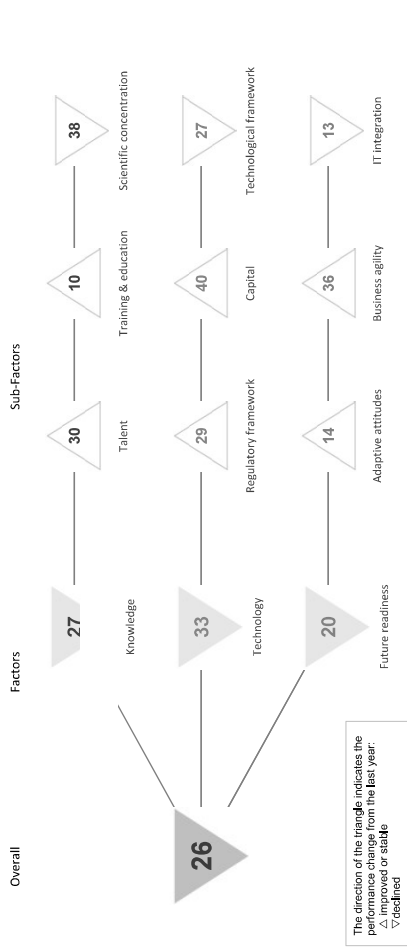
PEER GROUPS RANKINGS



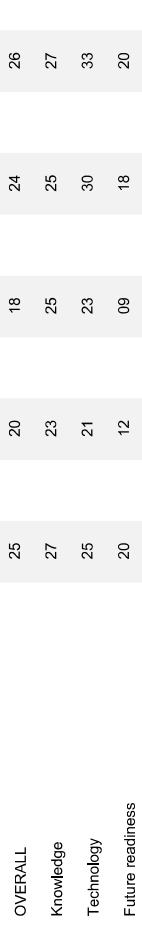
ESTONIA

DIGITAL TRENDS - OVERALL

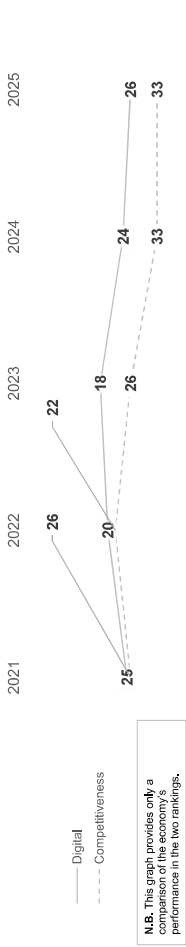
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



ESTONIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent	Training & education	29	30	28	33	30
	Scientific concentration	08	05	08	11	10
	Rank	45	43	43	36	38
Talent	Educational assessment PISA - Math	07				
	Employee training	14				
	Rank	14				
Total R&D expenditure on R&D (%)	Total public expenditure on education	08				
	Higher education achievement	35				
	Rank	08				
Digital/Technological skills	Pupil-teacher ratio (tertiary education)	11				
	Graduates in Sciences	22				
	Rank	11				
Foreign highly skilled personnel	Women with degrees	18				
	Computer science education index	32				
	Rank	18				
Net flow of international students	Female researchers	22				
	Scientific and technical employment	28				
	Rank	22				
AI-related patent publications	AI articles	17				
	Robots in Education and R&D	49				
	Rank	17				

TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework	IT & media stock market capitalization	28	30	18	29	29
	Funding for technological development	33	29	35	43	40
	Rank	20	21	13	20	27
Capital	Banking and financial services	22				
	Country credit rating	27				
	Rank	22				
Enforcing contracts	Development & application of tech.	25				
	Scientific research legislation	47				
	Rank	62				
Immigration laws	Investment in Telecommunications	41				
	High-tech exports (%)	31				
	Rank	27				
Wireless broadband	AI private investment	40				
	Secure internet servers	10				
	Rank	12				

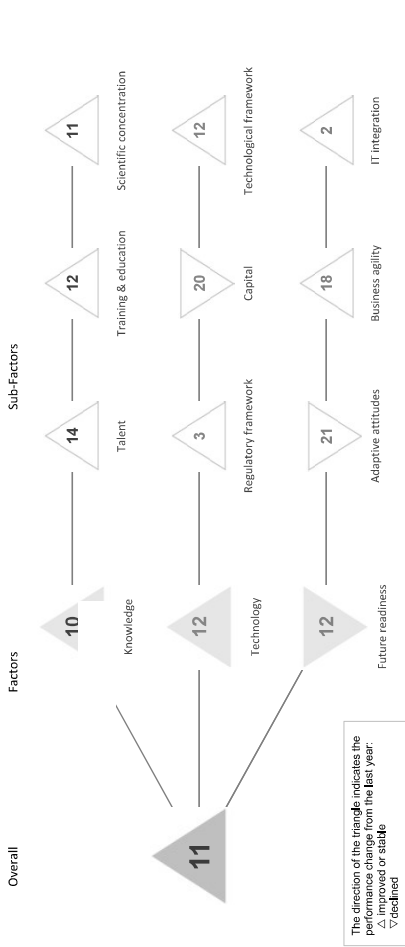
FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes	Opportunities and threats	25	14	09	17	14
	Workforce robots distribution	25	20	23	37	36
	Rank	25	07	05	10	13
Business agility	Agility of companies	15				
	Use of big data and analytics	47				
	Rank	15				
IT integration	Knowledge transfer	45				
	Entrepreneurial fear of failure	21				
	Rank	47				

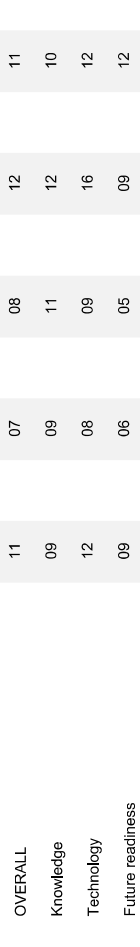
FINLAND

DIGITAL TRENDS - OVERALL

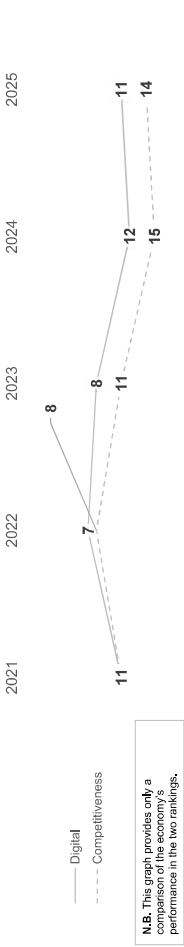
OVERALL PERFORMANCE (69 economies)



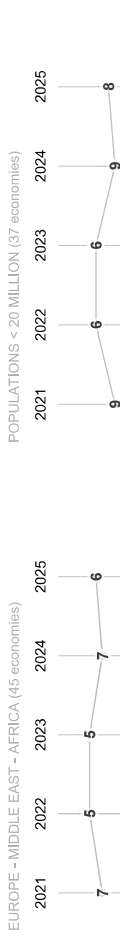
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



FINLAND

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	10	09	11	16	14
Training & education	19	17	19	17	12
Scientific concentration	10	10	13	12	11
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	20	► Employee training	05	Total expenditure on R&D (%)	10
International experience	25	Total public expenditure on education	07	Total R&D personnel per capita	08
Management of cities	08	► Higher education achievement	43	► R&D productivity by publication	53
► Digital/Technological skills	05	Pupil-teacher ratio (tertiary education)	43	High-tech patent grants	10
► Foreign highly skilled personnel	47	Graduates in Sciences	13	AI-related patent publications	14
Net flow of international students	13	Women with degrees	19	Roots in Education and R&D	26
Female researchers	41	Computer science education index	14	AI articles	11
Scientific and technical employment	08				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	11	05	03	19	03
Capital	10	05	07	14	20
Technological framework	14	12	11	18	12
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	17	IT & media stock market capitalization	15	► Communications technology	02
Enforcing contracts	33	Funding for technological development	10	Mobile broadband subscribers	39
Immigration laws	26	Banking and financial services	14	Wireless broadband	08
Development & application of tech.	10	Country credit rating	14	Internet users	27
Scientific research legislation	05	Venture capital	22	Internet bandwidth speed	31
► Intellectual property rights	02	► Investment in Telecommunications	62	► High-tech exports (%)	45
AI policies passed into law	09	AI private investment	34	Secure internet servers	06

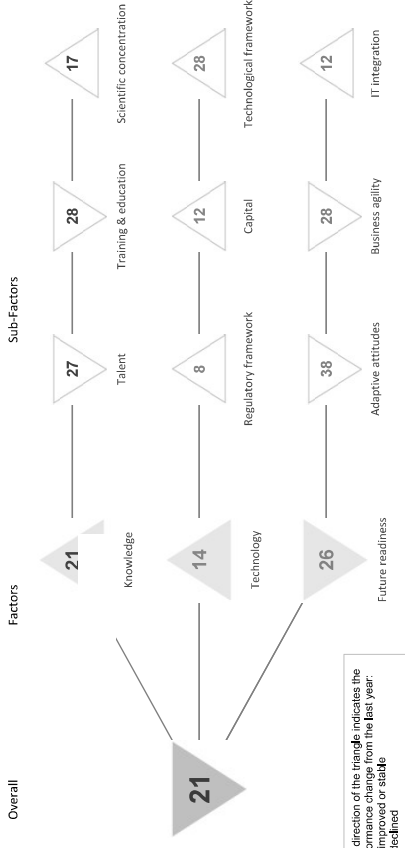
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	07	03	03	10	21
Business agility	21	16	21	24	18
IT integration	02	03	03	04	02
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	18	Opportunities and threats	36	E-Government	09
Internet retailing	14	Work robots distribution	35	Public-private partnerships	09
Tablet possession	33	Agility of companies	23	► Cyber security	03
Smartphone possession	24	Use of big data and analytics	05	Software piracy	13
Attitudes toward globalization	14	Knowledge transfer	09	Government cyber security capacity	39
Flexibility and adaptability	41	Entrepreneurial fear of failure	19	Privacy protection by law exists	36

FRANCE

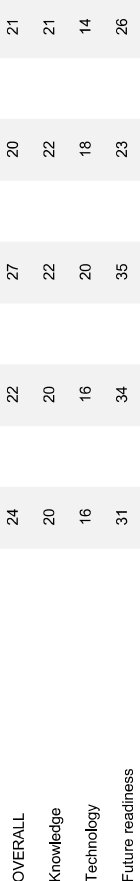
DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)

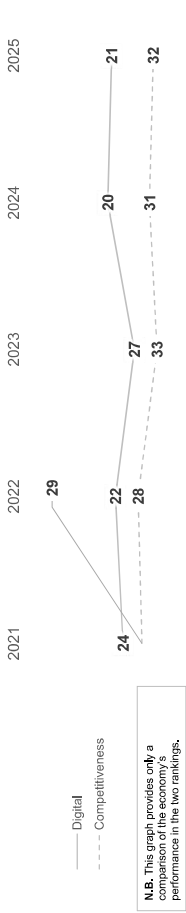


The direction of the triangle indicates the performance change from the last year.
▲ Improved or stable
▼ Declined

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



N.B. This graph provides only a comparison of the two rankings.

PEER GROUPS RANKINGS



FRANCE

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	23	23	24	25	27
Training & education	27	27	29	21	28
Scientific concentration	12	13	14	20	17
Talent	27	27	27	27	27
Educational assessment PISA - Math	37	37	37	37	37
International experience	24	24	24	24	24
Management of cities	30	30	30	30	30
Digital/Technological skills	21	21	21	21	21
Foreign highly skilled personnel	24	24	24	24	24
Net flow of international students	51	51	51	51	51
Female researchers	10	10	10	10	10
Scientific and technical employment	10	10	10	10	10
Training & education	23	23	24	25	27
Employee training	27	27	29	21	28
Total public expenditure on education	12	13	14	20	17
Higher education achievement	39	39	39	39	39
Pupil-teacher ratio (tertiary education)	26	26	26	26	26
Graduates in Sciences	27	27	27	27	27
Women with degrees	11	11	11	11	11
Computer science education index	11	11	11	11	11
Scientific concentration	16	16	16	16	16
Total expenditure on R&D (%)	24	24	24	24	24
Total R&D personnel per capita	18	18	18	18	18
R&D productivity by publication	17	17	17	17	17
High-tech patent grants	07	07	07	07	07
AI-related patent publications	05	05	05	05	05
Roots in Education and R&D	44	44	44	44	44
AI articles	44	44	44	44	44

TECHNOLOGY

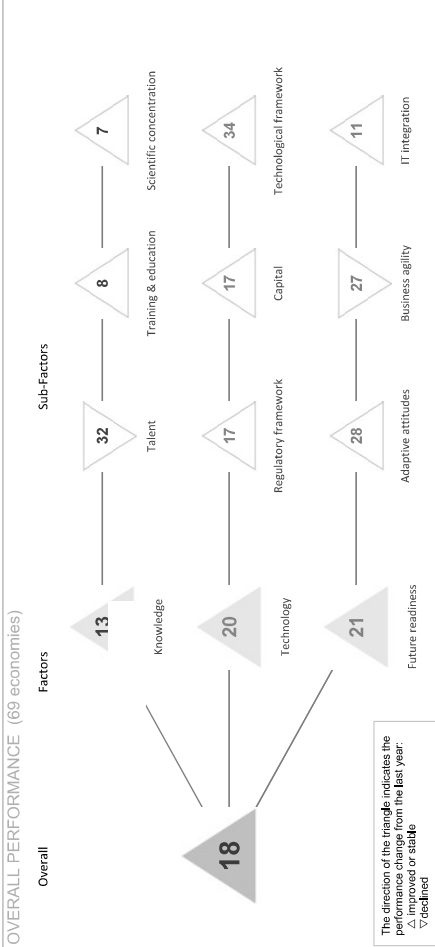
Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	10	15	21	15	08
Capital	21	19	28	21	12
Technological framework	17	20	19	31	28
Regulatory framework	20	20	20	20	20
Starting a business	15	15	15	15	15
Funding for technological development	26	26	26	26	26
Enforcing contracts	15	15	15	15	15
Immigration laws	15	15	15	15	15
Development & application of tech.	36	36	36	36	36
Scientific research legislation	24	24	24	24	24
Intellectual property rights	25	25	25	25	25
AI policies passed into law	03	03	03	03	03
IT & media stock market capitalization	31	31	31	31	31
Mobile broadband subscribers	34	34	34	34	34
Wireless broadband	41	41	41	41	41
Internet users	23	23	23	23	23
Internet bandwidth speed	04	04	04	04	04
High-tech exports (%)	19	19	19	19	19
Secure internet servers	20	20	20	20	20

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	48	41	43	35	38
Business agility	33	38	41	23	28
IT integration	22	21	24	16	12
Adaptive attitudes	28	28	28	28	28
E-Participation	21	21	21	21	21
Internet retailing	19	19	19	19	19
Tablet possession	32	32	32	32	32
Smartphone possession	60	60	60	60	60
Attitudes toward globalization	63	63	63	63	63
Flexibility and adaptability	13	13	13	13	13
Business agility	44	44	44	44	44
Opportunities and threats	08	08	08	08	08
Work robots distribution	38	38	38	38	38
Agility of companies	32	32	32	32	32
Use of big data and analytics	26	26	26	26	26
Knowledge transfer	13	13	13	13	13
Entrepreneurial fear of failure	10	10	10	10	10

GERMANY

DIGITAL TRENDS - OVERALL



GERMANY

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025	Rank
Talent	21	20	26	29	32	08
Training & education	17	15	14	10	08	08
Scientific concentration	06	07	07	13	07	07
Talent	25	25	25	25	25	25
Educational assessment PISA - Math	24	24	24	24	24	24
Employee training	39	39	39	39	39	39
Total public expenditure on education	45	45	45	45	45	45
Higher education achievement	04	04	04	04	04	04
Pupil-teacher ratio (tertiary education)	05	05	05	05	05	05
Graduates in Sciences	44	44	44	44	44	44
Women with degrees	04	04	04	04	04	04
Computer science education index	04	04	04	04	04	04
Net flow of international students	14	14	14	14	14	14
Female researchers	52	52	52	52	52	52
Scientific and technical employment	24	24	24	24	24	24

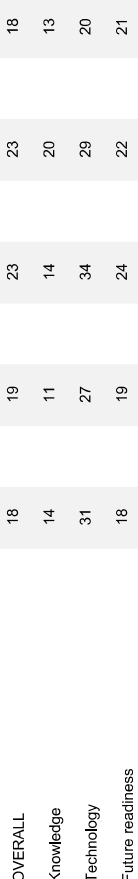
TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025	Rank
Regulatory framework	25	20	32	22	17	17
Capital	23	16	21	25	17	17
Technological framework	43	43	47	43	34	34
Regulatory framework	53	53	53	53	53	53
Starting a business	12	12	12	12	12	12
Funding for technological development	36	36	36	36	36	36
Banking and financial services	51	51	51	51	51	51
Country credit rating	31	31	31	31	31	31
Venture capital	03	03	03	03	03	03
Investment in Telecommunications	02	02	02	02	02	02
AI private investment	07	07	07	07	07	07
Regulatory framework	53	53	53	53	53	53
IT & media stock market capitalization	08	08	08	08	08	08
Mobile broadband subscribers	33	33	33	33	33	33
Wireless broadband	45	45	45	45	45	45
Internet users	32	32	32	32	32	32
Internet bandwidth speed	37	37	37	37	37	37
High-tech exports (%)	26	26	26	26	26	26
Secure internet servers	08	08	08	08	08	08

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025	Rank
Adaptive attitudes	23	27	28	32	28	28
Business agility	15	15	20	19	27	27
IT integration	20	19	18	18	11	11
Adaptive attitudes	03	03	03	03	03	03
E-Participation	13	13	13	13	13	13
Work robots distribution	30	30	30	30	30	30
Agility of companies	53	53	53	53	53	53
Use of big data and analytics	26	26	26	26	26	26
Knowledge transfer	62	62	62	62	62	62
Entrepreneurial fear of failure	22	22	22	22	22	22
IT integration	12	12	12	12	12	12
E-Government	44	44	44	44	44	44
Public-private partnerships	28	28	28	28	28	28
Cyber security	08	08	08	08	08	08
Software piracy	13	13	13	13	13	13
Government cyber security capacity	35	35	35	35	35	35
Privacy protection by law exists	22	22	22	22	22	22

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



N.B. This graph provides only a partial overview of the performance in the two rankings.

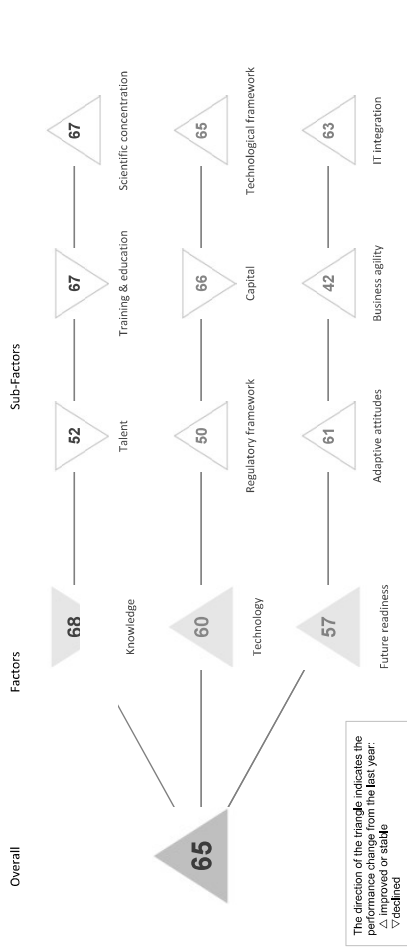
PEER GROUPS RANKINGS



GHANA

DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)



GHANA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025	Rank
Talent						
Training & education	-	-	-	47	52	52
Scientific concentration	-	-	-	65	67	67
				67	67	67
Talent						
Educational assessment PISA - Math	-					52
Employee training						64
Total public expenditure on education						64
Higher education achievement						56
R&D productivity by publication						58
High-tech patent grants						63
AI-related patent publications						60
Roots in Education and R&D						63
AI articles						63

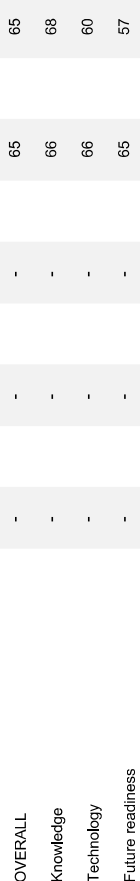
TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025	Rank
Regulatory framework	-	-	-	57	50	50
Capital	-	-	-	65	66	66
Technological framework	-	-	-	65	65	65
Regulatory framework						
IT & media stock market capitalization						50
Funding for technological development						53
Banking and financial services						67
Country credit rating						60
Venture capital						46
Investment in Telecommunications						38
AI private investment						68

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025	Rank
Adaptive attitudes	-	-	-	64	61	61
Business agility	-	-	-	55	42	42
IT integration	-	-	-	64	63	63
Adaptive attitudes						
E-Participation						33
Opportunities and threats						25
World robots distribution						54
Agility of companies						36
Use of big data and analytics						41
Knowledge transfer						28
Entrepreneurial fear of failure						61

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



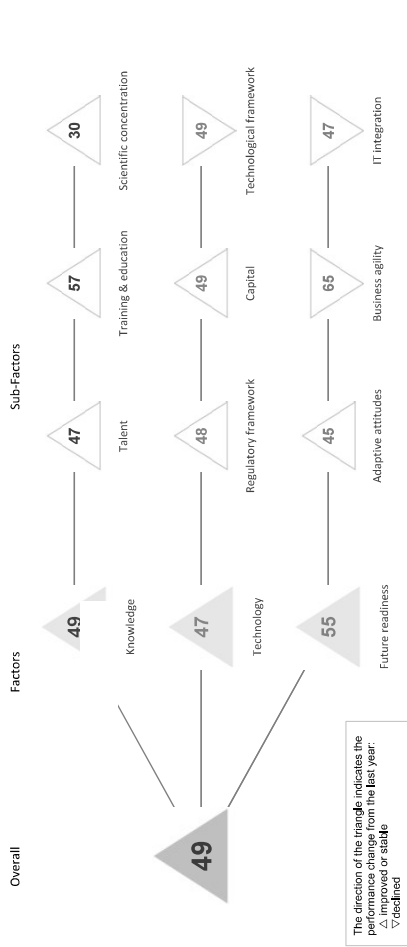
PEER GROUPS RANKINGS



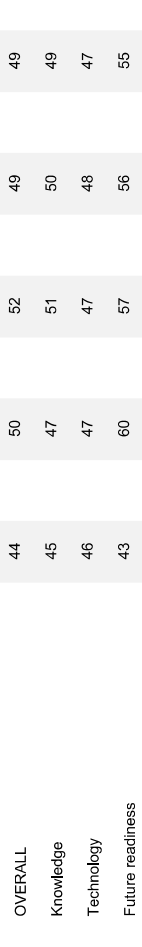
GREECE

DIGITAL TRENDS - OVERALL

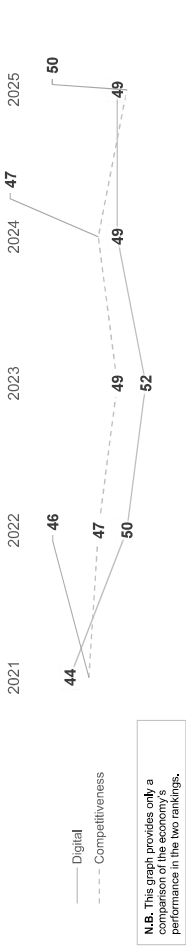
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



GREECE

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	42	49	53	54	47
Training & education	55	59	59	58	57
Scientific concentration	35	33	31	35	30

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	39	Employee training	54	Total expenditure on R&D (%)	28
International experience	53	Total public expenditure on education	47	Total R&D personnel per capita	27
Management of cities	56	Higher education achievement	32	R&D productivity by publication	34
Digital/Technological skills	48	► Pupil-teacher ratio (tertiary education)	62	High-tech patent grants	47
Foreign highly skilled personnel	58	Graduates in Sciences	23	AI-related patent publications	26
Net flow of international students	55	Women with degrees	36	Robotics in Education and R&D	40
Female researchers	23	Computer science education index	22	AI articles	23
► Scientific and technical employment	12				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	43	42	46	50	48
Capital	52	46	37	51	49
Technological framework	50	50	52	48	49

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
► Starting a business	06	IT & media stock market capitalization	21	Communications technology	52
► Enforcing contracts	64	Funding for technological development	40	Mobile broadband subscribers	22
Immigration laws	53	► Banking and financial services	61	► Wireless broadband	16
Development & application of tech.	47	Country credit rating	52	Internet users	51
Scientific research legislation	49	Venture capital	49	Internet bandwidth speed	58
Intellectual property rights	53	► Investment in Telecommunications	18	High-tech exports (%)	34
► AI policies passed into law	20	AI private investment	37	Secure internet servers	39

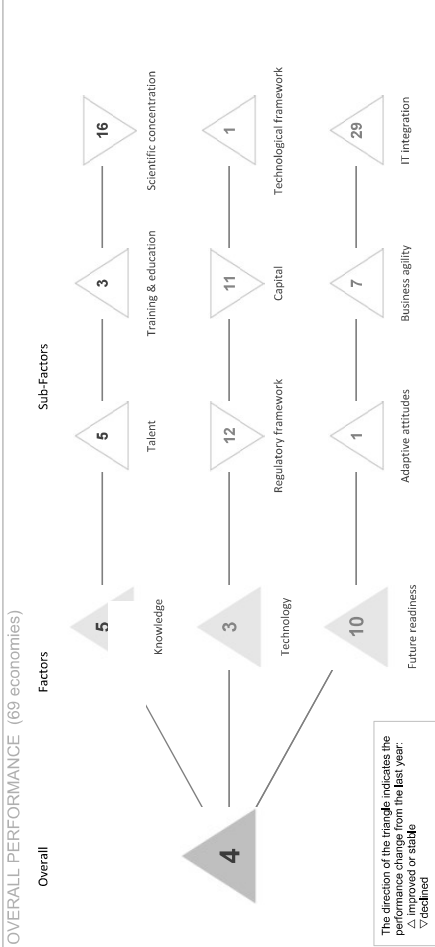
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	43	60	61	57	45
Business agility	51	61	60	60	65
IT integration	41	41	43	44	47

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	47	Opportunities and threats	58	E-Government	32
Internet retailing	31	Work robots distribution	44	Public-private partnerships	51
Tablet possession	26	Agility of companies	48	Cyber security	52
Smartphone possession	58	► Use of big data and analytics	62	Software piracy	55
Attitudes toward globalization	48	Knowledge transfer	57	Government cyber security capacity	30
Flexibility and adaptability	37	Entrepreneurial fear of failure	45	Privacy protection by law exists	41

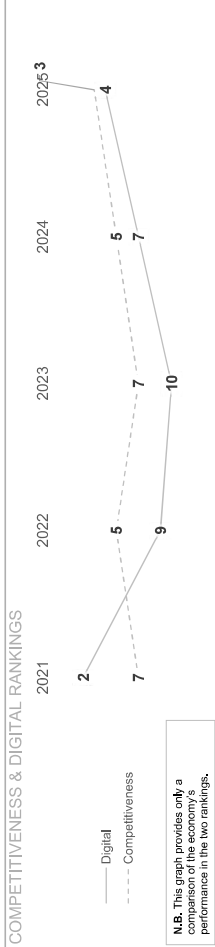
HONG KONG SAR

DIGITAL TRENDS - OVERALL



OVERALL & FACTORS - 5 years

	2021	2022	2023	2024	2025
OVERALL	02	09	10	07	04
Knowledge	05	07	06	05	05
Technology	01	02	02	03	03
Future readiness	10	18	17	15	10



HONG KONG SAR

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	06	10	06	08	05
Training & education	01	02	05	04	03
Scientific concentration	14	18	08	08	16
Talent	Rank 04	Rank 04	Rank 04	Rank 18	Rank 36
Educational assessment PISA - Math	06	10	06	08	05
Employee training	01	02	05	04	03
International experience	03	03	03	03	03
Management of cities	03	03	03	03	03
Digital/Technological skills	14	14	14	14	14
Pupil-teacher ratio (tertiary education)	14	14	14	14	14
High-tech patent grants	14	14	14	14	14
AI-related patent publications	14	14	14	14	14
Graduates in Sciences	14	14	14	14	14
Women with degrees	14	14	14	14	14
Robots in Education and R&D	14	14	14	14	14
AI articles	14	14	14	14	14
Scientific concentration	Rank 04	Rank 04	Rank 04	Rank 18	Rank 36
Total expenditure on R&D (%)	06	10	06	08	05
Total R&D personnel per capita	01	02	05	04	03
R&D productivity by publication	14	14	14	14	14
High-tech patent grants	14	14	14	14	14
AI-related patent publications	14	14	14	14	14
Graduates in Sciences	14	14	14	14	14
Women with degrees	14	14	14	14	14
Robots in Education and R&D	14	14	14	14	14
AI articles	14	14	14	14	14

TECHNOLOGY

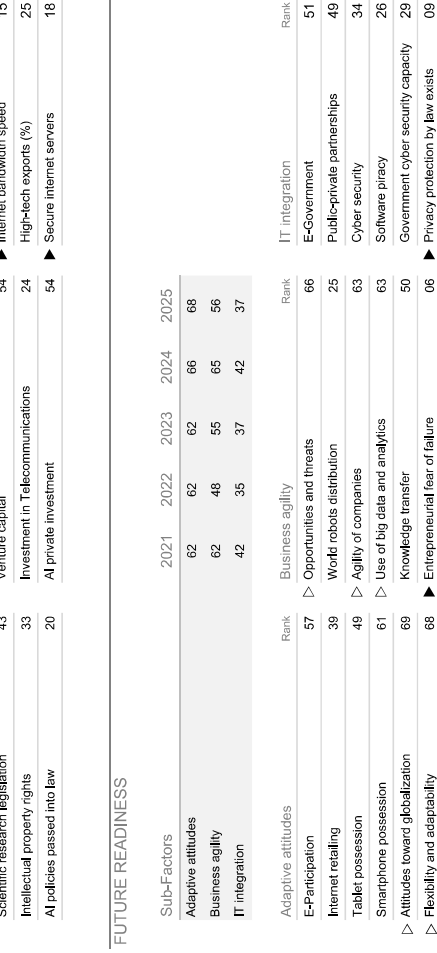
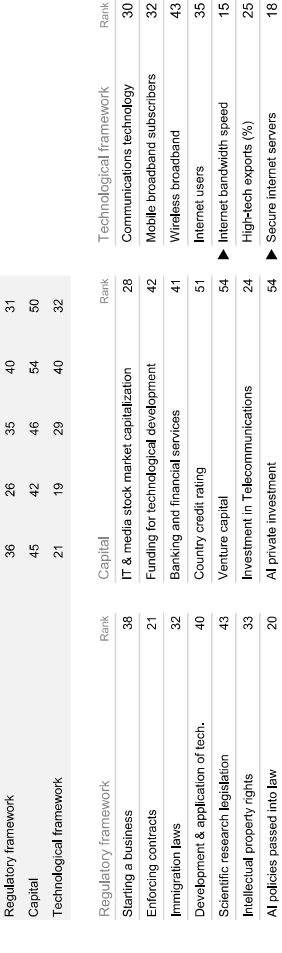
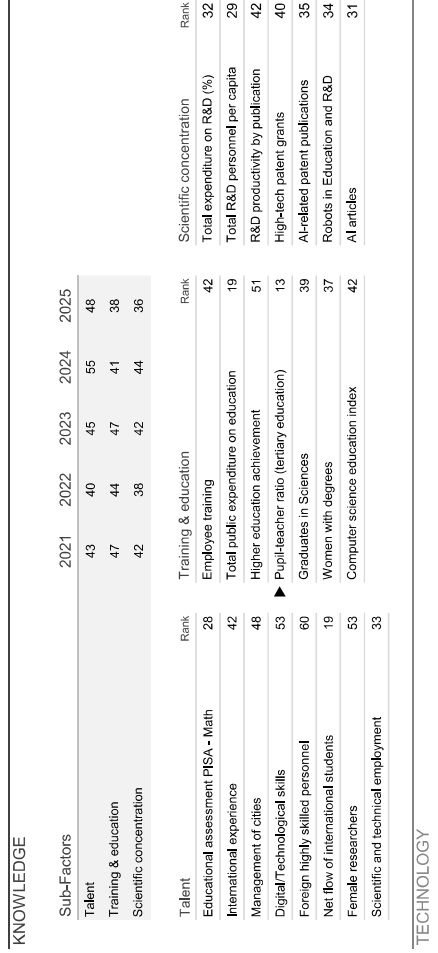
Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	06	09	06	08	12
Capital	07	08	14	07	11
Technological framework	01	01	01	01	01
Regulatory framework	Rank 04	Rank 04	Rank 04	Rank 04	Rank 06
Starting a business	04	04	04	04	04
IT & media stock market capitalization	04	04	04	04	04
Funding for technological development	09	09	09	09	09
Mobile broadband subscribers	09	09	09	09	09
Wireless broadband	09	09	09	09	09
Internet users	09	09	09	09	09
Internet bandwidth speed	09	09	09	09	09
High-tech exports (%)	09	09	09	09	09
Secure internet servers	09	09	09	09	09
AI private investment	09	09	09	09	09

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	03	09	05	03	01
Business agility	09	11	16	12	07
IT integration	17	45	47	36	29
Adaptive attitudes	Rank 12	Rank 12	Rank 12	Rank 12	Rank 12
E-Participation	03	09	05	03	01
Opportunities and threats	03	09	05	03	01
Internet retailing	09	11	16	12	07
Work robots distribution	09	11	16	12	07
Agility of companies	09	11	16	12	07
Tablet possession	09	11	16	12	07
Smartphone possession	09	11	16	12	07
Use of big data and analytics	09	11	16	12	07
Knowledge transfer	09	11	16	12	07
Entrepreneurial fear of failure	09	11	16	12	07

HUNGARY

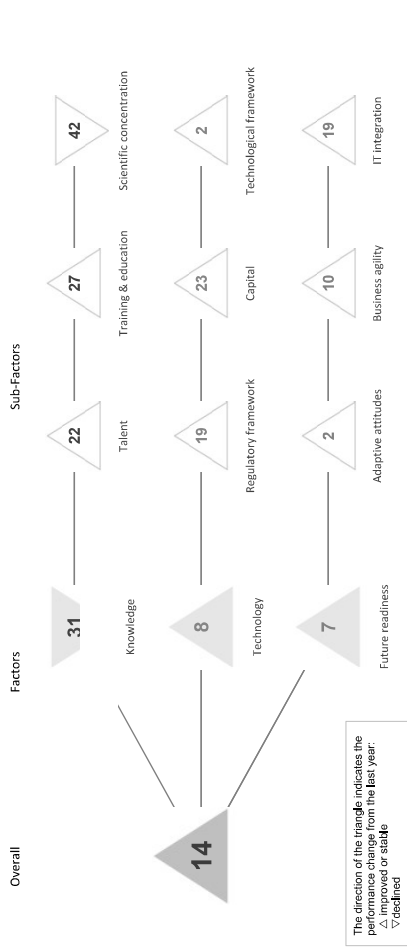
FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES



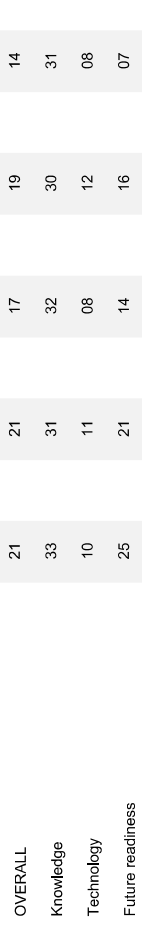
ICELAND

DIGITAL TRENDS - OVERALL

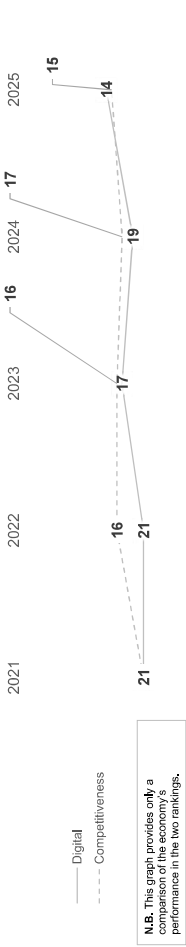
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



ICELAND

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent						
Training & education		35	24	32	35	22
Scientific concentration		22	26	26	30	27
		39	45	37	30	42
Talent	Rank					
Educational assessment PISA - Math	36					
Employee training	33					
International experience	48					
Total public expenditure on education	04					
Management of cities	32					
Higher education achievement	33					
R&D productivity by publication	62					
Digital/Technological skills	03					
Pupil-teacher ratio (tertiary education)	27					
Foreign highly skilled personnel	26					
Graduates in Sciences	57					
Women with degrees	12					
Roots in Education and R&D	48					
Net flow of international students	57					
Female researchers	16					
Computer science education index	27					
Scientific and technical employment	21					
Scientific concentration						
Total expenditure on R&D (%)	13					
Total R&D personnel per capita	09					
High-tech patent grants	49					
AI-related patent publications	48					
Roots in Education and R&D	53					
AI articles	07					

TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework		14	11	11	20	19
Capital		26	17	27	24	23
Technological framework		03	05	04	02	02
Regulatory framework	Rank					
IT & media stock market capitalization	-					
Funding for technological development	15					
Enforcing contracts	25					
Banking and financial services	03					
Immigration laws	04					
Development & application of tech.	12					
Country credit rating	29					
Venture capital	14					
Scientific research legislation	17					
Intellectual property rights	09					
Investment in Telecommunications	55					
AI policies passed into law	53					
AI private investment	41					
Technological framework						
Communications technology	05					
Mobile broadband subscribers	04					
Wireless broadband	14					
Internet users	04					
Internet bandwidth speed	01					
High-tech exports (%)	08					
Secure internet servers	12					

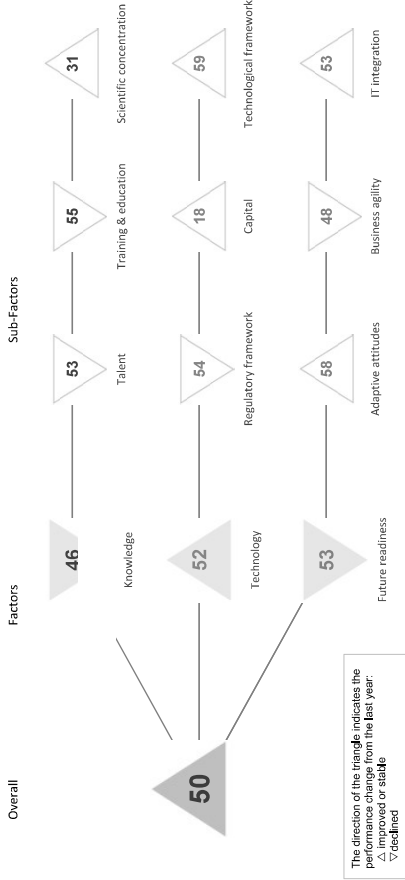
FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes		31	21	11	02	02
Business agility		16	12	13	16	10
IT integration		27	30	31	34	19
Adaptive attitudes	Rank					
Business agility	06					
Opportunities and threats	06					
E-Government	05					
Public-private partnerships	48					
Internet retailing	23					
World robots distribution	52					
Tablet possession	-					
Agility of companies	03					
Use of big data and analytics	09					
Smartphone possession	01					
Knowledge transfer	16					
Attitudes toward globalization	09					
Entrepreneurial fear of failure	-					
Flexibility and adaptability	01					
IT integration						
E-Government	05					
Public-private partnerships	48					
Cyber security	13					
Software piracy	34					
Government cyber security capacity	24					
Privacy protection by law exists	37					

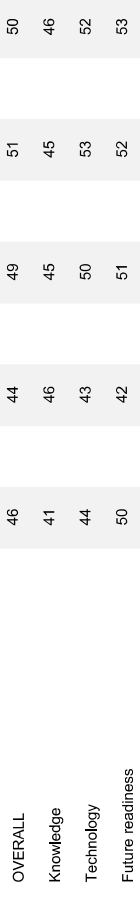
INDIA

DIGITAL TRENDS - OVERALL

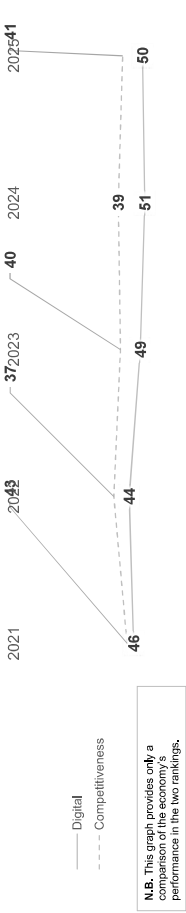
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



INDIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent					
Training & education	38	34	34	30	53
Scientific concentration	43	56	48	52	55
	47	50	52	53	31
Talent					
Educational assessment PISA - Math					
Employee training					
Total public expenditure on education					
Higher education achievement					
R&D productivity by publication					
Digital/Technological skills					
Pupil-teacher ratio (tertiary education)					
Graduates in Sciences					
Women with degrees					
Robots in Education and R&D					
AI articles					
Female researchers					
Computer science education index					
Scientific and technical employment					

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	52	48	52	49	54
Capital	04	01	23	39	18
Technological framework	62	58	60	63	59
Regulatory framework					
Starting a business					
IT & media stock market capitalization					
Funding for technological development					
Enforcing contracts					
Banking and financial services					
Immigration laws					
Development & application of tech.					
Country credit rating					
Venture capital					
Scientific research legislation					
Investment in Telecommunications					
Intellectual property rights					
AI policies passed into law					
Secure internet servers					
Wireless broadband					
Internet users					
Internet bandwidth speed					
High-tech exports (%)					
Secure internet servers					

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	55	56	60	62	58
Business agility	36	25	30	34	48
IT integration	51	48	52	57	53
Adaptive attitudes					
E-Participation					
Opportunities and threats					
Internet retailing					
World robots distribution					
Tablet possession					
Agility of companies					
Use of big data and analytics					
Smartphone possession					
Knowledge transfer					
Entrepreneurial fear of failure					
Flexibility and adaptability					
IT integration					
E-Government					
Public-private partnerships					
Cyber security					
Software piracy					
Government cyber security capacity					
Privacy protection by law exists					

INDONESIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

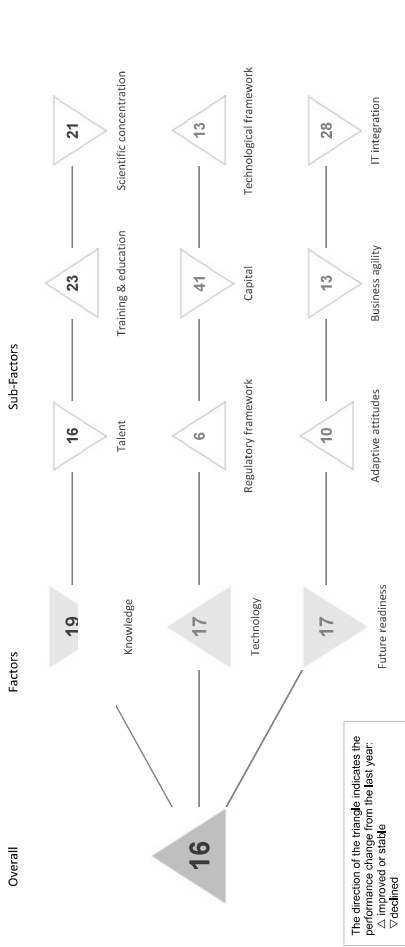
Sub-Factors						
	2021	2022	2023	2024	2025	
Regulatory framework	50	49	45	45	53	
Capital	25	18	03	01	10	
Technological framework	55	56	57	59	63	
Regulatory framework	Rank	Capital			Rank	
Starting a business	63	► IT & media stock market capitalization			14	
Enforcing contracts	62	Funding for technological development			35	Technological framework
Immigration laws	18	► Banking and financial services			17	Communications technology
Development & application of tech.	29	Country credit rating			48	Mobile broadband subscribers
Scientific research legislation	53	Venture capital			20	Wireless broadband
Intellectual property rights	54	► Investment in Telecommunications			01	Internet users
AI policies passed into law	37	▲ Private investment			35	Internet bandwidth speed
						High-tech exports (%)
						Secure internet servers



IRELAND

DIGITAL TRENDS - OVERALL

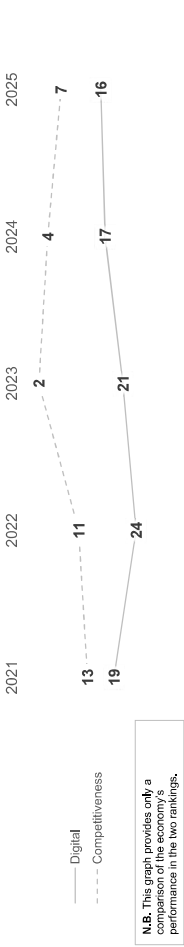
OVERALL PERFORMANCE (69 economies)



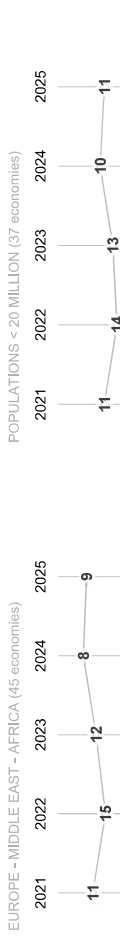
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



IRELAND

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors					
Talent	18	19	16	12	16
Training & education	32	31	24	25	23
Scientific concentration	26	24	24	18	21
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	11	Employee training	09	Total expenditure on R&D (%)	25
International experience	12	Total public expenditure on education	60	Total R&D personnel per capita	25
Management of cities	52	Higher education achievement	08	R&D productivity by publication	45
Digital/Technological skills	26	Pupil-teacher ratio (tertiary education)	47	High-tech patent grants	06
Foreign highly skilled personnel	10	Graduates in Sciences	18	AI-related patent publications	19
Net flow of international students	27	Women with degrees	07	Robots in Education and R&D	27
Female researchers	31	Computer science education index	15	AI articles	12
Scientific and technical employment	14				

TECHNOLOGY

Sub-Factors					
Regulatory framework	19	22	09	16	06
Capital	35	44	42	40	41
Technological framework	34	38	35	19	13
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	12	IT & media stock market capitalization	59	Communications technology	35
Enforcing contracts	51	Funding for technological development	16	Mobile broadband subscribers	36
Immigration laws	07	Banking and financial services	31	Wireless broadband	52
Development & application of tech.	17	Country credit rating	17	Internet users	15
Scientific research legislation	04	Venture capital	08	Internet bandwidth speed	28
Intellectual property rights	19	Investment in Telecommunications	60	High-tech exports (%)	07
AI policies passed into law	10	AI private investment	25	Secure internet servers	07

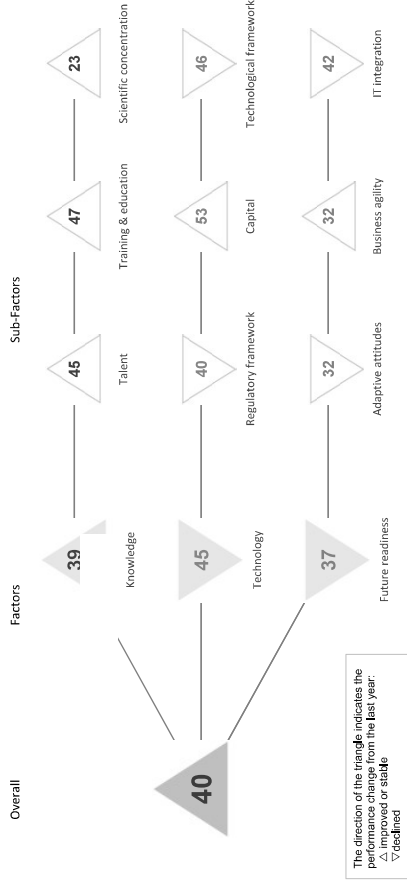
FUTURE READINESS

Sub-Factors					
Adaptive attitudes	12	11	19	11	10
Business agility	14	18	15	11	13
IT integration	19	38	35	24	28
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	14	Opportunities and threats	07	E-Government	20
Internet retailing	05	World robots distribution	40	Public-private partnerships	28
Tablet possession	41	Agility of companies	12	Cyber security	26
Smartphone possession	57	Use of big data and analytics	20	Software piracy	18
Attitudes toward globalization	11	Knowledge transfer	05	Government cyber security capacity	59
Flexibility and adaptability	02	Entrepreneurial fear of failure	38	Privacy protection by law exists	17

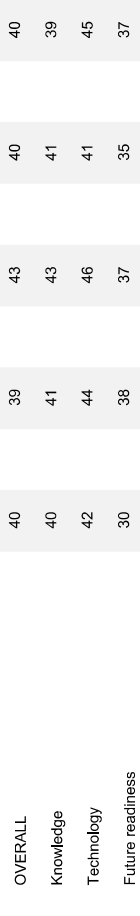
ITALY

DIGITAL TRENDS - OVERALL

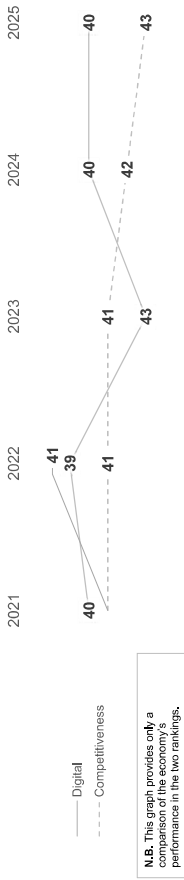
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



ITALY

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths

► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	40	43	46	50	45
Training & education	60	58	58	48	47
Scientific concentration	25	23	23	23	23
Talent	Rank	Rank	Rank	Rank	Rank
Educational assessment PISA - Math	31	31	31	31	31
Employee training	56	56	56	56	56
Total public expenditure on education	48	48	48	48	48
Higher education achievement	50	50	50	50	50
R&D productivity by publication	08	08	08	08	08
Digital/Technological skills	56	56	56	56	56
Pupil-teacher ratio (tertiary education)	50	50	50	50	50
Graduates in Sciences	29	29	29	29	29
AI-related patent publications	16	16	16	16	16
Net flow of international students	40	40	40	40	40
Women with degrees	51	51	51	51	51
Roots in Education and R&D	13	13	13	13	13
Female researchers	33	33	33	33	33
Computer science education index	10	10	10	10	10
AI articles	26	26	26	26	26
Scientific and technical employment	11	11	11	11	11

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	42	38	41	35	40
Capital	48	41	48	53	53
Technological framework	44	44	45	44	46
Regulatory framework	Rank	Rank	Rank	Rank	Rank
IT & media stock market capitalization	38	38	38	38	38
Funding for technological development	48	48	48	48	48
Mobile broadband subscribers	29	29	29	29	29
Wireless broadband	18	18	18	18	18
Country credit rating	49	49	49	49	49
Internet users	44	44	44	44	44
Internet bandwidth speed	45	45	45	45	45
Investment in Telecommunications	38	38	38	38	38
High-tech exports (%)	42	42	42	42	42
Secure internet servers	30	30	30	30	30
AI policies passed into law	04	04	04	04	04

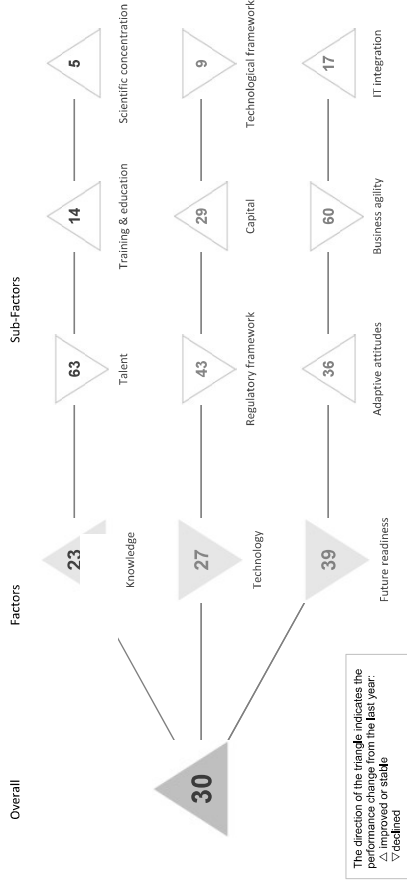
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	36	32	31	27	32
Business agility	19	30	33	39	32
IT integration	38	40	41	38	42
Adaptive attitudes	Rank	Rank	Rank	Rank	Rank
E-Participation	49	49	49	49	49
Opportunities and threats	19	19	19	19	19
Public-private partnerships	43	43	43	43	43
World robots distribution	06	06	06	06	06
Cyber security	49	49	49	49	49
Agility of companies	32	32	32	32	32
Use of big data and analytics	54	54	54	54	54
Smartphone possession	19	19	19	19	19
Knowledge transfer	44	44	44	44	44
Government cyber security capacity	42	42	42	42	42
Privacy protection by law exists	03	03	03	03	03
Entrepreneurial fear of failure	37	37	37	37	37

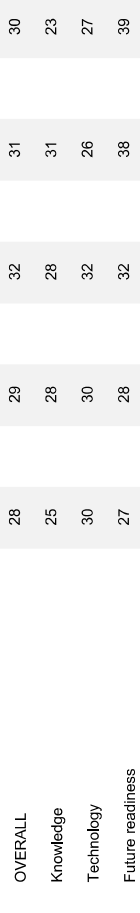
JAPAN

DIGITAL TRENDS - OVERALL

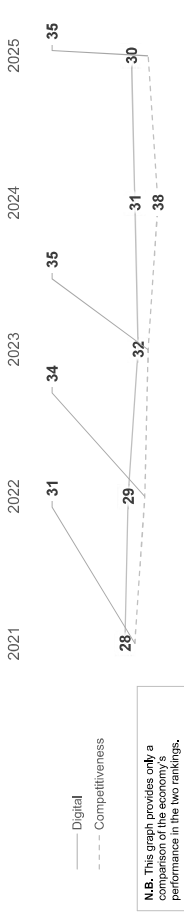
OVERALL PERFORMANCE (69 economies)



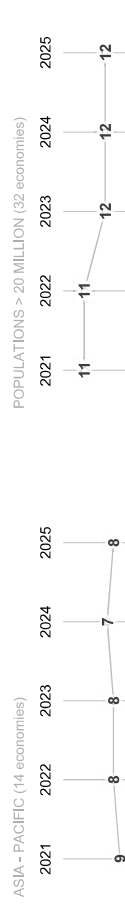
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



JAPAN

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	47	50	49	53	63
Training & education	21	21	21	20	14
Scientific concentration	13	14	15	24	05
Talent	Rank 05	Rank 05	Rank 05	Rank 05	Rank 06
Educational assessment PISA - Math	69	69	69	69	69
Employee training	38	38	38	38	38
Total public expenditure on education	56	56	56	56	56
Higher education achievement	07	07	07	07	07
R&D productivity by publication	19	19	19	19	19
Digital/Technological skills	65	65	65	65	65
Pupil-teacher ratio (tertiary education)	03	03	03	03	03
Graduates in Sciences	-	-	-	-	-
High-tech patent grants	04	04	04	04	04
AI-related patent publications	04	04	04	04	04
Robots in Education and R&D	06	06	06	06	06
Female researchers	31	31	31	31	31
Computer science education index	13	13	13	13	13
Scientific and technical employment	39	39	39	39	39

TECHNOLOGY

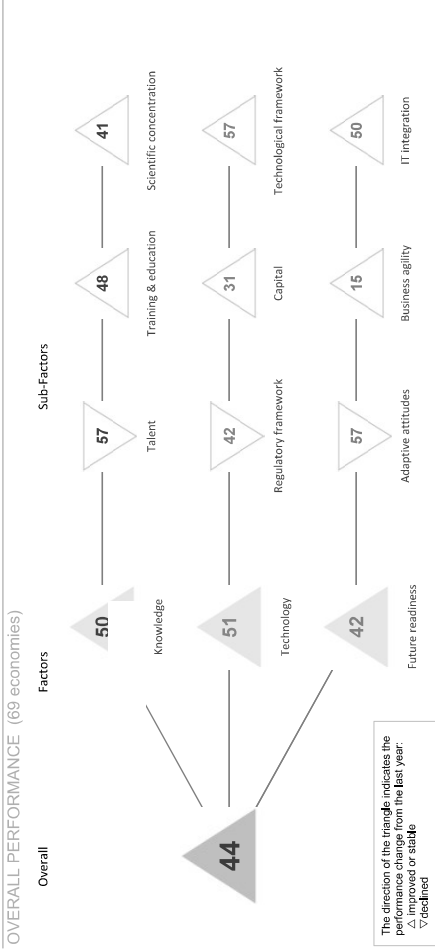
Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	48	47	50	39	43
Capital	37	32	36	38	29
Technological framework	08	08	07	06	09
Regulatory framework	Rank 45	Rank 45	Rank 45	Rank 45	Rank 45
Starting a business	12	12	12	12	12
IT & media stock market capitalization	37	37	37	37	37
Funding for technological development	37	37	37	37	37
Mobile broadband subscribers	05	05	05	05	05
Wireless broadband	02	02	02	02	02
Internet users	45	45	45	45	45
Internet bandwidth speed	16	16	16	16	16
High-tech exports (%)	30	30	30	30	30
Secure internet servers	29	29	29	29	29

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	18	20	22	37	36
Business agility	53	62	56	58	60
IT integration	23	18	16	17	17
Adaptive attitudes	Rank 01	Rank 01	Rank 01	Rank 01	Rank 01
E-Participation	69	69	69	69	69
Opportunities and threats	02	02	02	02	02
Work robots distribution	69	69	69	69	69
Agility of companies	67	67	67	67	67
Use of big data and analytics	49	49	49	49	49
Knowledge transfer	40	40	40	40	40
Entrepreneurial fear of failure	13	13	13	13	13

JORDAN

DIGITAL TRENDS - OVERALL



JORDAN

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	34	41	38	43	57
Training & education	33	41	50	49	48
Scientific concentration	62	62	63	65	41
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	57	Employee training	31	Total expenditure on R&D (%)	-
International experience	20	Total public expenditure on education	52	Total R&D personnel per capita	-
Management of cities	33	Higher education achievement	-	R&D productivity by publication	-
Digital/Technological skills	35	Pupil-teacher ratio (tertiary education)	60	High-tech patent grants	51
Foreign highly skilled personnel	20	Graduates in Sciences	35	AI-related patent publications	-
Net flow of international students	37	Women with degrees	47	Robots in Education and R&D	-
Female researchers	58	Computer science education index	34	AI articles	27
Scientific and technical employment	42				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	38	45	42	41	42
Capital	41	45	44	42	31
Technological framework	53	53	54	62	57
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	52	IT & media stock market capitalization	51	Communications technology	54
Enforcing contracts	56	Funding for technological development	21	Mobile broadband subscribers	65
Immigration laws	23	Banking and financial services	26	Wireless broadband	66
Development & application of tech.	39	Country credit rating	60	Internet users	31
Scientific research legislation	15	Venture capital	11	Internet bandwidth speed	47
Intellectual property rights	29	Investment in Telecommunications	10	High-tech exports (%)	63
AI policies passed into law	60	AI private investment	-	Secure internet servers	67

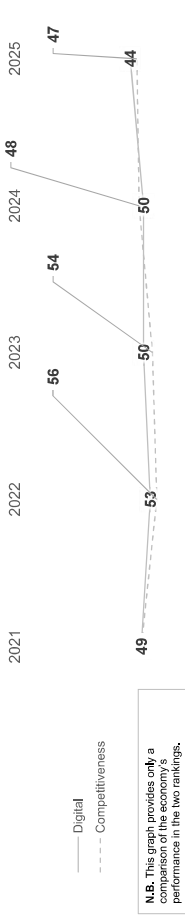
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	61	61	53	56	57
Business agility	28	34	29	22	15
IT integration	54	52	46	54	50
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	55	Opportunities and threats	20	E-Government	59
Internet retailing	56	World robots distribution	-	Public-private partnerships	19
Tablet possession	62	Agility of companies	18	Cyber security	24
Smartphone possession	19	Use of big data and analytics	21	Software piracy	47
Attitudes toward globalization	36	Knowledge transfer	21	Government cyber security capacity	11
Flexibility and adaptability	32	Entrepreneurial fear of failure	25	Privacy protection by law exists	62

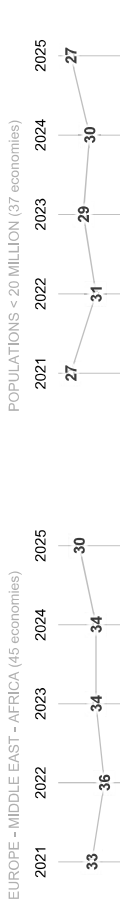
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS

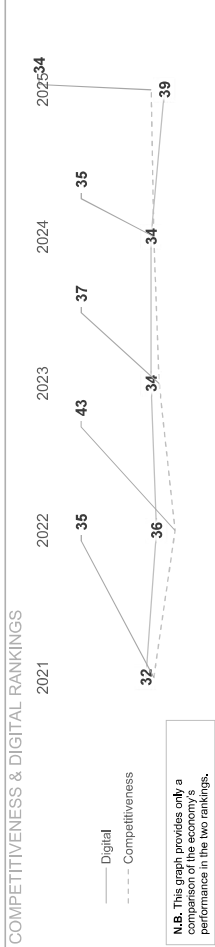
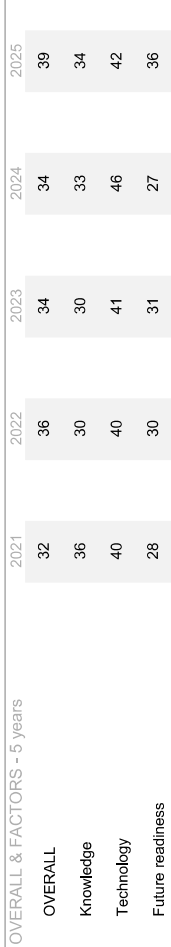
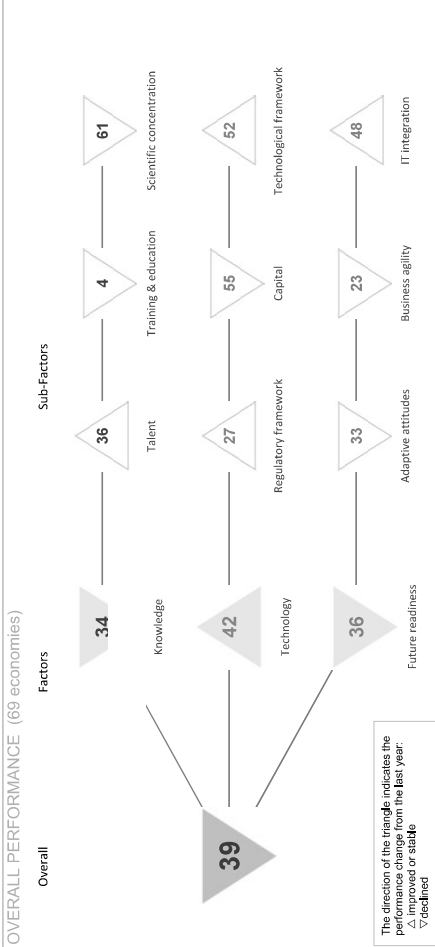


PEER GROUPS RANKINGS



KAZAKHSTAN

DIGITAL TRENDS - OVERALL



KAZAKHSTAN

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	45	46	47	44	36
Training & education	14	01	01	02	04
Scientific concentration	54	51	49	49	61

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	41	Employee training	11	Total expenditure on R&D (%)	60
International experience	36	Total public expenditure on education	34	Total R&D personnel per capita	50
Management of cities	29	► Higher education achievement	01	R&D productivity by publication	20
Digital/Technological skills	44	Pupil-teacher ratio (tertiary education)	37	► High-tech patent grants	62
Foreign highly skilled personnel	33	Graduates in Sciences	20	AI-related patent publications	45
Net flow of international students	59	► Women with degrees	01	Robots in Education and R&D	-
► Female researchers	03	Computer science education index	58	AI articles	54
Scientific and technical employment	47				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	22	21	22	28	27
Capital	51	50	53	52	55
Technological framework	47	47	48	52	52

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	11	IT & media stock market capitalization	-	Communications technology	40
► Enforcing contracts	04	Funding for technological development	23	► Mobile broadband subscribers	61
Immigration laws	17	Banking and financial services	37	Wireless broadband	60
Development & application of tech.	23	Country credit rating	46	Internet users	30
Scientific research legislation	27	Venture capital	35	Internet bandwidth speed	60
Intellectual property rights	38	► Investment in Telecommunications	68	► High-tech exports (%)	09
► AI policies passed into law	66	AI private investment	57	Secure internet servers	44

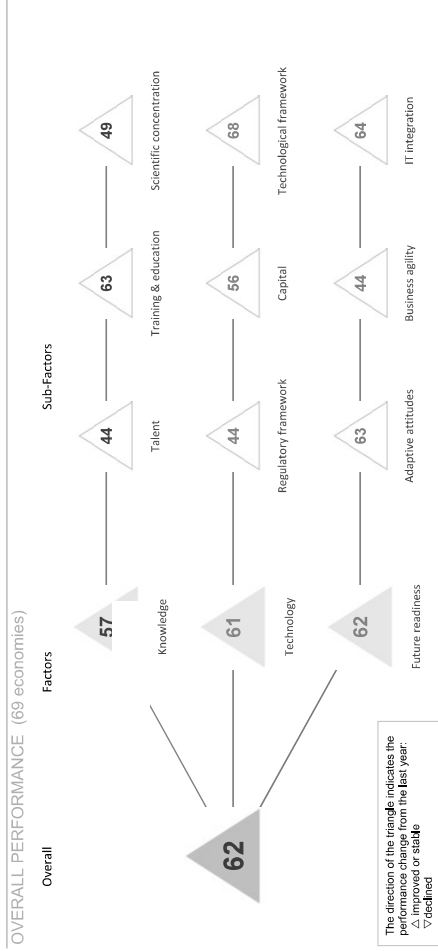
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	32	34	29	30	33
Business agility	06	06	05	05	23
IT integration	44	56	54	56	48

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	23	Opportunities and threats	18	E-Government	23
Internet retailing	43	Work robots distribution	-	Public-private partnerships	17
Tablet possession	53	Agility of companies	14	Cyber security	43
Smartphone possession	13	Use of big data and analytics	12	► Software piracy	61
Attitudes toward globalization	19	Knowledge transfer	25	Government cyber security capacity	35
Flexibility and adaptability	21	Entrepreneurial fear of failure	43	Privacy protection by law exists	59

KENYA

DIGITAL TRENDS - OVERALL



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



N.B. This graph provides only a comparison of the economy's performance in the two rankings.

PEER GROUPS RANKINGS

EUROPE - MIDDLE EAST - AFRICA (45 economies)



KENYA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors					
Talent		2021	2022	2023	2025
Talent		-	-	-	44
Training & education		-	-	-	63
Scientific concentration		-	-	-	49
Talent	Rank	Training & education			
Employee training	43				
Total public expenditure on education	50				
Higher education achievement	41				
Pupil-teacher ratio (tertiary education)	57				
Graduates in Sciences	51				
Women with degrees	62				
Computer science education index	60				
Talent	Rank	PISA - Math			
Educational assessment	30				
International experience	55				
Management of cities	18				
Digital/technological skills	35				
Foreign highly skilled personnel	48				
Net flow of international students	26				
Female researchers	67				
	Rank	Scientific concentration			
Total expenditure on R&D (%)	62				
Total R&D personnel per capita	62				
R&D productivity by publication	04				
High-tech patent grants	57				
AI-related patent publications	-				
Robots in Education and R&D	-				
AI articles	67				

TECHNOLOGY

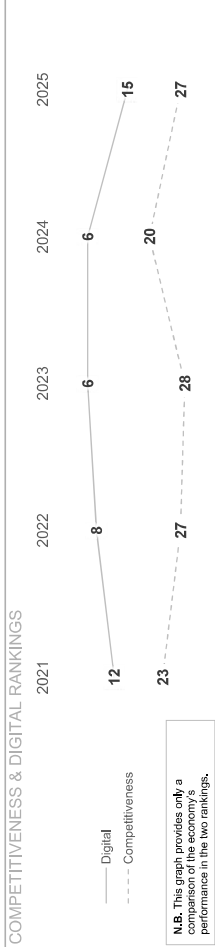
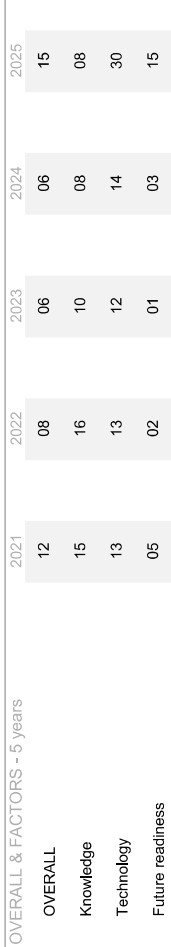
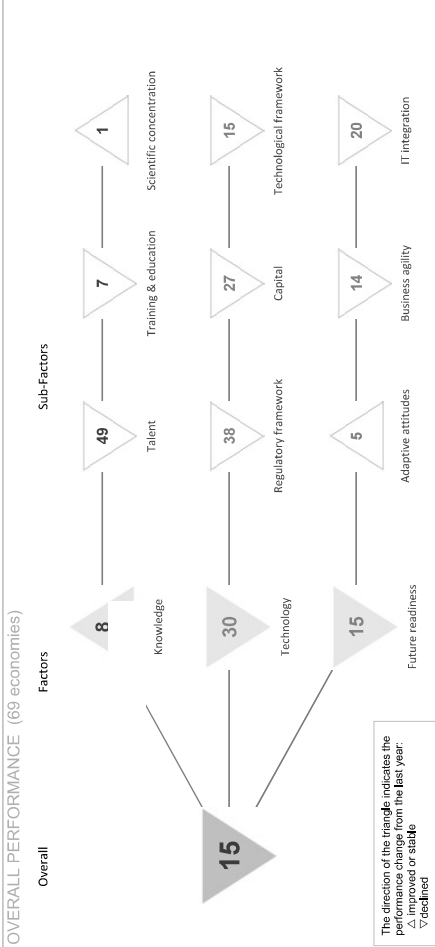
Sub-Factors	Sub-Factors				
	2021	2022	2023	2024	2025
Regulatory framework	-	-	-	-	44
Capital	-	-	-	-	56
Technological framework	-	-	-	-	68
Regulatory framework	Rank	Rank			
Starting a business	57	IT & media stock market capitalization			
Enforcing contracts	50	Funding for technological development			
Immigration laws	19	Banking and financial services			
Development & application of tech.	33	Country credit rating			
Scientific research legislation	28	Venture capital			
Intellectual property rights	42	Investment in Telecommunications			
AI policies passed into law	40	AI private investment			
Technological framework	Rank	Rank			
Communications technology	44	Communications technology			
Mobile broadband subscribers	63	Mobile broadband subscribers			
Wireless broadband	65	Wireless broadband			
Internet users	68	Internet users			
Internet bandwidth speed	68	Internet bandwidth speed			
High-tech exports (%)	60	High-tech exports (%)			
Secure internet servers	64	Secure internet servers			

FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes		-	-	-	-	63
Business agility		-	-	-	-	44
IT integration		-	-	-	-	64
Adaptive attitudes		Rank	Business agility			Rank
E-Participation		59	Opportunities and threats			26
Internet retailing		60	World robots distribution			-
Tablet possession		59	Agility of companies			49
Smartphone possession		60	Use of big data and analytics			51
Attitudes toward globalization		21	Knowledge transfer			39
Flexibility and adaptability		11	Entrepreneurial fear of failure			-
			IT integration			Rank
			E-Government			62
			Public-private partnerships			30
			Cyber security			53
			Software piracy			61
			Government cyber security capacity			56
			Privacy protection by law exists			48

KOREA REP.

DIGITAL TRENDS - OVERALL



KOREA REP.

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	26	33	31	19	49
Training & education	16	16	06	05	07
Scientific concentration	03	03	02	04	01

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	06	Employee training	40	Total expenditure on R&D (%)	01
International experience	58	Total public expenditure on education	36	Total R&D personnel per capita	04
Management of cities	28	Higher education achievement	05	R&D productivity by publication	06
Digital/Technological skills	59	Pupil-teacher ratio (tertiary education)	25	High-tech patent grants	04
Foreign highly skilled personnel	61	Graduates in Sciences	09	AI-related patent publications	03
Net flow of international students	34	Women with degrees	16	Robotics in Education and R&D	04
Female researchers	57	Computer science education index	07	AI articles	28
Scientific and technical employment	29				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	23	23	26	18	38
Capital	16	15	24	17	27
Technological framework	07	07	08	09	15

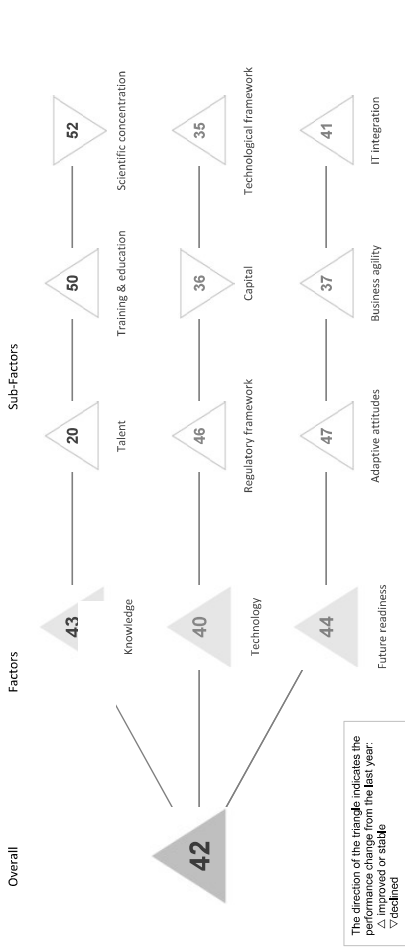
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	18	IT & media stock market capitalization	03	Communications technology	24
Enforcing contracts	02	Funding for technological development	49	Mobile broadband subscribers	11
Immigration laws	63	Banking and financial services	55	Wireless broadband	31
Development & application of tech.	55	Country credit rating	17	Internet users	11
Scientific research legislation	44	Venture capital	46	Internet bandwidth speed	12
Intellectual property rights	52	Investment in Telecommunications	30	High-tech exports (%)	11
AI policies passed into law	32	AI private investment	10	Secure internet servers	42

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	02	01	01	06	05
Business agility	05	02	03	02	14
IT integration	16	14	12	06	20

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	03	Opportunities and threats	52	E-Government	04
Internet retailing	02	Work robots distribution	03	Public-private partnerships	59
Tablet possession	47	Agility of companies	46	Cyber security	40
Smartphone possession	08	Use of big data and analytics	37	Software piracy	19
Attitudes toward globalization	35	Knowledge transfer	40	Government cyber security capacity	05
Flexibility and adaptability	33	Entrepreneurial fear of failure	02	Privacy protection by law exists	10

OVERALL PERFORMANCE (69 economies)



KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent						
Training & education		-	-	43	36	20
Scientific concentration		-	-	53	61	50
		-	-	35	39	52
Talent	Rank					
Educational assessment PISA - Math	33					
Employee training	28					
International experience	06					
Management of cities	63					
Digital/Technological skills	-					
Pupil-teacher ratio (tertiary education)	-					
Foreign highly skilled personnel	34					
Graduates in Sciences	-					
Women with degrees	56					
Net flow of international students	-					
Female researchers	08					
Computer science education index	49					
Scientific and technical employment	-					
Scientific concentration	Rank					
Total expenditure on R&D (%)	61					
Total R&D personnel per capita	15					
R&D productivity by publication	22					
High-tech patent grants	-					
AI-related patent publications	52					
Robots in Education and R&D	53					
AI articles	38					

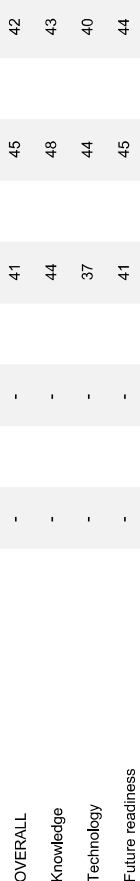
TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework		-	-	44	52	46
Capital		-	-	40	35	36
Technological framework		-	-	25	46	35
Regulatory framework	Rank					
Starting a business	37					
IT & media stock market capitalization	27					
Funding for technological development	20					
Enforcing contracts	45					
Banking and financial services	16					
Immigration laws	43					
Development & application of tech.	24					
Counrty credit rating	25					
Venture capital	24					
Scientific research legislation	39					
Intellectual property rights	43					
Investment in Telecommunications	69					
AI policies passed into law	60					
AI private investment	-					
Technological framework	Rank					
Communications technology	34					
Mobile broadband subscribers	10					
Wireless broadband	35					
Internet users	05					
Internet bandwidth speed	30					
High-tech exports (%)	64					
Secure internet servers	62					

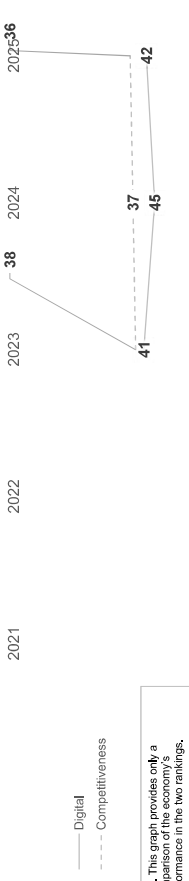
FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes		-	-	36	48	47
Business agility		-	-	47	41	37
IT integration		-	-	40	51	41
Adaptive attitudes	Rank					
E-Participation	63					
Opportunities and threats	43					
Internet retailing	41					
World robots distribution	57					
Agility of companies	39					
Tablet possession	14					
Use of big data and analytics	19					
Smartphone possession	27					
Knowledge transfer	28					
Attitudes toward globalization	34					
Flexibility and adaptability	35					
Entrepreneurial fear of failure	31					
IT integration	Rank					
E-Government	55					
Public-private partnerships	24					
Cyber security	12					
Software piracy	51					
Government cyber security capacity	09					
Privacy protection by law exists	66					

OVERALL & FACTORS - 5 years



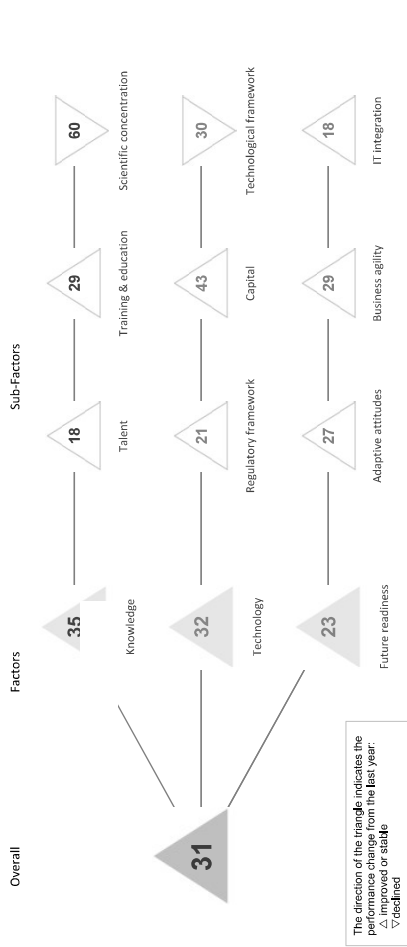
COMPETITIVENESS & DIGITAL RANKINGS



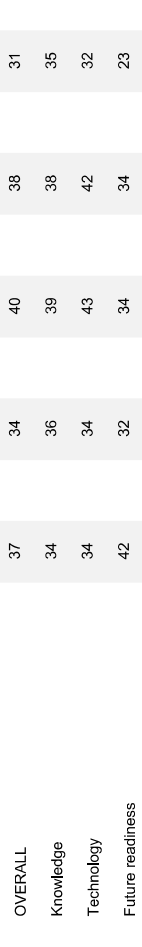
PEER GROUPS RANKINGS



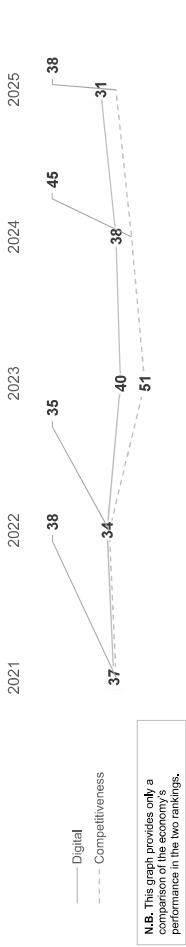
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	24	25	44	32	18
Training & education	30	28	31	33	29
Scientific concentration	51	52	54	51	60
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	21	Employee training	25	Total expenditure on R&D (%)	42
International experience	26	► Total public expenditure on education	09	Total R&D personnel per capita	40
Management of cities	21	Higher education achievement	30	► R&D productivity by publication	56
Digital/Technological skills	16	Pupil-teacher ratio (tertiary education)	14	High-tech patent grants	43
Foreign highly skilled personnel	44	Graduates in Sciences	50	AI-related patent publications	45
Net flow of international students	20	Women with degrees	25	► Robots in Education and R&D	50
► Female researchers	06	Computer science education index	43	AI articles	41
Scientific and technical employment	36				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	34	36	43	43	21
Capital	46	39	52	56	43
Technological framework	18	22	27	27	30
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	15	IT & media stock market capitalization	40	► Communications technology	10
Enforcing contracts	14	Funding for technological development	22	Mobile broadband subscribers	30
► Immigration laws	58	► Banking and financial services	52	Wireless broadband	23
Development & application of tech.	15	Country credit rating	36	Internet users	33
Scientific research legislation	26	Venture capital	30	Internet bandwidth speed	38
Intellectual property rights	28	Investment in Telecommunications	48	High-tech exports (%)	24
AI policies passed into law	20	AI private investment	-	Secure internet servers	35

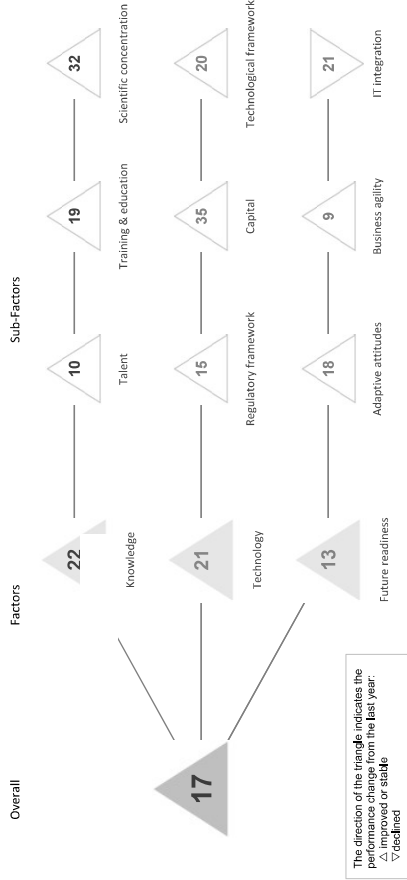
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	51	44	35	31	27
Business agility	48	31	49	45	29
IT integration	37	23	21	25	18
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	32	Opportunities and threats	30	E-Government	26
Internet retailing	33	► Work robots distribution	51	Public-private partnerships	38
Tablet possession	21	Agility of companies	22	Cyber security	15
Smartphone possession	27	► Use of big data and analytics	13	Software piracy	40
Attitudes toward globalization	25	Knowledge transfer	29	► Government cyber security capacity	08
Flexibility and adaptability	19	Entrepreneurial fear of failure	32	Privacy protection by law exists	21

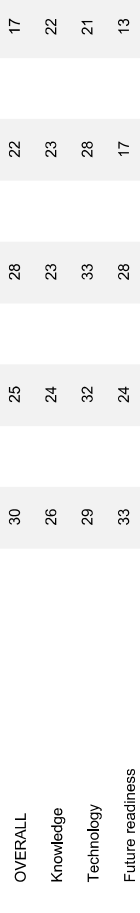
LITHUANIA

DIGITAL TRENDS - OVERALL

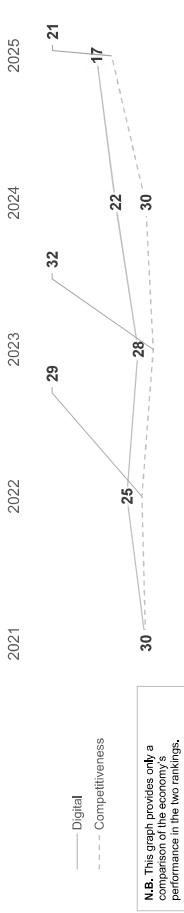
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



LITHUANIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	25	27	25	21	10
Training & education	15	13	15	24	19
Scientific concentration	37	37	33	33	32
Talent	25	27	25	21	10
Educational assessment PISA - Math	12	12	12	12	12
Employee training	20	20	20	20	20
Total public expenditure on education	13	13	13	13	13
Higher education achievement	09	09	09	09	09
Pupil-teacher ratio (tertiary education)	31	31	31	31	31
Graduates in Sciences	13	13	13	13	13
Women with degrees	48	48	48	48	48
Computer science education index	48	48	48	48	48
Female researchers	11	11	11	11	11
Scientific and technical employment	26	26	26	26	26

TECHNOLOGY

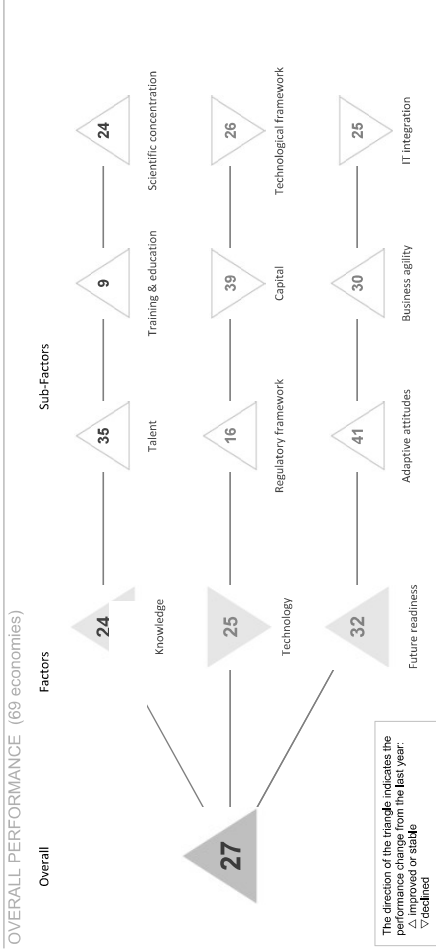
Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	32	28	28	25	15
Capital	30	37	39	36	35
Technological framework	30	32	33	32	20
Regulatory framework	19	19	19	19	19
Starting a business	07	07	07	07	07
Funding for technological development	36	36	36	36	36
Banking and financial services	36	36	36	36	36
Country credit rating	32	32	32	32	32
Venture capital	33	33	33	33	33
Investment in Telecommunications	59	59	59	59	59
High-tech exports (%)	36	36	36	36	36
Secure internet servers	11	11	11	11	11

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	47	38	37	21	18
Business agility	24	17	18	13	09
IT integration	34	26	28	19	21
Adaptive attitudes	24	24	24	24	24
E-Participation	01	01	01	01	01
Opportunities and threats	43	43	43	43	43
Workforce robots distribution	01	01	01	01	01
Agility of companies	06	06	06	06	06
Use of big data and analytics	37	37	37	37	37
Knowledge transfer	34	34	34	34	34
Entrepreneurial fear of failure	23	23	23	23	23

LUXEMBOURG

DIGITAL TRENDS - OVERALL



LUXEMBOURG

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	33	35	40	37	35
Training & education	20	20	18	13	09
Scientific concentration	38	42	48	28	24

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	21	Employee training	30	Total expenditure on R&D (%)	39
International experience	07	Total public expenditure on education	23	Total R&D personnel per capita	16
Management of cities	12	Higher education achievement	12	R&D productivity by publication	59
Digital/Technological skills	36	► Pupil-teacher ratio (tertiary education)	01	High-tech patent grants	28
► Foreign highly skilled personnel	04	Graduates in Sciences	28	AI-related patent publications	28
► Net flow of international students	63	Women with degrees	17	Robots in Education and R&D	-
Female researchers	50	Computer science education index	19	AI articles	02
Scientific and technical employment	22				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	08	18	17	21	16
Capital	08	24	29	34	39
Technological framework	25	27	34	17	26

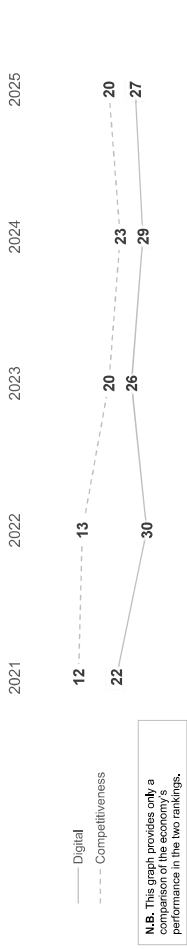
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	34	IT & media stock market capitalization	10	Communications technology	23
Enforcing contracts	17	Funding for technological development	32	Mobile broadband subscribers	19
Immigration laws	09	► Banking and financial services	64	Wireless broadband	29
Development & application of tech.	37	► Country credit rating	01	Internet users	07
Scientific research legislation	18	Venture capital	39	Internet bandwidth speed	27
Intellectual property rights	20	► Investment in Telecommunications	63	► High-tech exports (%)	53
AI policies passed into law	15	AI private investment	29	Secure internet servers	15

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	38	47	23	60	41
Business agility	22	36	27	42	30
IT integration	12	17	10	23	25

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	53	Opportunities and threats	23	E-Government	38
Internet retailing	-	World robots distribution	-	Public-private partnerships	37
Tablet possession	-	Agility of companies	28	Cyber security	35
Smartphone possession	-	Use of big data and analytics	42	Software piracy	04
Attitudes toward globalization	39	Knowledge transfer	31	Government cyber security capacity	41
Flexibility and adaptability	38	Entrepreneurial fear of failure	12	Privacy protection by law exists	30

COMPETITIVENESS & DIGITAL RANKINGS



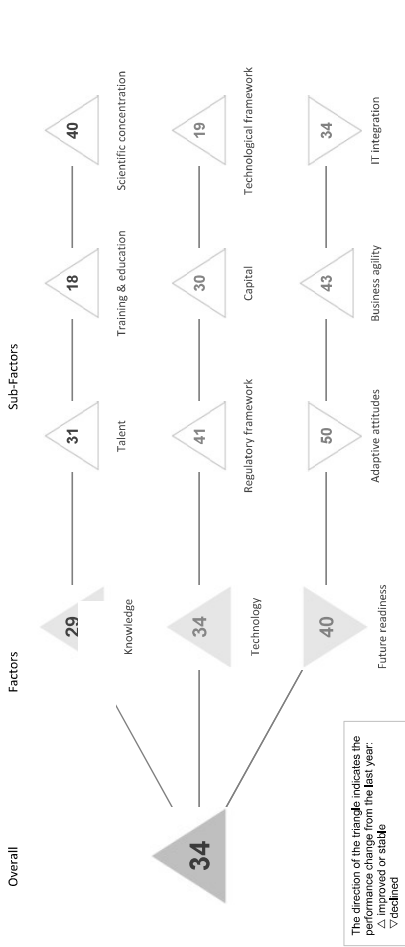
PEER GROUPS RANKINGS



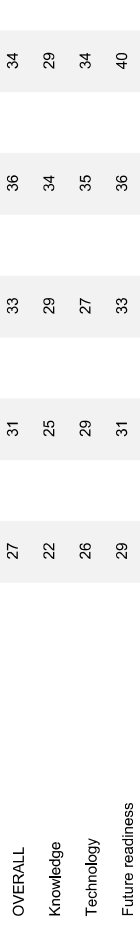
MALAYSIA

DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



MALAYSIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent		30	36	30	41	31
Training & education		09	10	17	22	18
Scientific concentration		32	35	36	40	40
Talent	Rank					
Training & education	47					
Employee training	32					
Educational assessment PISA - Math	17					
International experience	30					
Management of cities	40					
Digital/Technological skills	24					
Pupil-teacher ratio (tertiary education)	02					
High-tech patent grants	31					
Foreign highly skilled personnel	21					
Graduates in Sciences	21					
Women with degrees	21					
Net flow of international students	10					
Female researchers	51					
Computer science education index						
Scientific and technical employment						
Scientific concentration						
Total expenditure on R&D (%)	40					
Total R&D personnel per capita	43					
R&D productivity by publication	23					
AI-related patent publications	36					
AI-related patent publications	33					
Roots in Education and R&D	32					
AI articles	43					

TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework		35	40	36	44	41
Capital		31	33	32	31	30
Technological framework		15	16	16	34	19
Regulatory framework	Rank					
IT & media stock market capitalization	17					
Communications technology	51					
Funding for technological development	28					
Mobile broadband subscribers	16					
Banking and financial services	20					
Wireless broadband	26					
Country credit rating	40					
Internet users	10					
Venture capital	25					
Investment in Telecommunications	44					
High-tech exports (%)	05					
Secure internet servers	43					
AI policies passed into law						

FUTURE READINESS

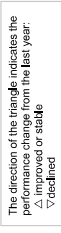
Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes		29	30	27	33	50
Business agility		27	35	37	47	43
IT integration		31	31	33	31	34
Adaptive attitudes	Rank					
E-Participation	43					
Opportunities and threats	40					
Public-private partnerships	23					
Agility of companies	34					
Use of big data and analytics	43					
Knowledge transfer	46					
Entrepreneurial fear of failure	-					

DIGITAL TRENDS - OVERALL

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths

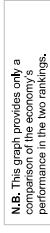
Overall	Factors
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0.99	0.99
0.98	0.98
0.97	0.97
0.96	0.96
0.95	0.95
0.94	0.94
0.93	0.93
0.92	0.92
0.91	0.91
0.90	0.90
0.89	0.89
0.88	0.88
0.87	0.87
0.86	0.86
0.85	0.85
0.84	0.84
0.83	0.83
0.82	0.82
0.81	0.81
0.80	0.80
0.79	0.79
0.78	0.78
0.77	0.77
0.76	0.76
0.75	0.75
0.74	0.74
0.73	0.73
0.72	0.72
0.71	0.71
0.70	0.70
0.69	0.69
0.68	0.68
0.67	0.67
0.66	0.66
0.65	0.65
0.64	0.64
0.63	0.63
0.62	0.62
0.61	0.61
0.60	0.60
0.59	0.59
0.58	0.58
0.57	0.57
0.56	0.56
0.55	0.55
0.54	0.54
0.53	0.53
0.52	0.52
0.51	0.51
0.50	0.50
0.49	0.49
0.48	0.48
0.47	0.47
0.46	0.46
0.45	0.45
0.44	0.44
0.43	0.43
0.42	0.42
0.41	0.41
0.40	0.40
0.39	0.39
0.38	0.38
0.37	0.37
0.36	0.36
0.35	0.35
0.34	0.34
0.33	0.33
0.32	0.32
0.31	0.31
0.30	0.30
0.29	0.29
0.28	0.28
0.27	0.27
0.26	0.26
0.25	0.25
0.24	0.24
0.23	0.23
0.22	0.22
0.21	0.21
0.20	0.20
0.19	0.19
0.18	0.18
0.17	0.17
0.16	0.16
0.15	0.15
0.14	0.14
0.13	0.13
0.12	0.12
0.11	0.11
0.10	0.10
0.09	0.09
0.08	0.08
0.07	0.07
0.06	0.06
0.05	0.05
0.04	0.04
0.03	0.03
0.02	0.02
0.01	0.01



OVERALL I

Future readiness	51	53	54	55	56
1	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00	0.00
42	0.00	0.00	0.00	0.00	0.00
43	0.00	0.00	0.00	0.00	0.00
44	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00
46	0.00	0.00	0.00	0.00	0.00
47	0.00	0.00	0.00	0.00	0.00
48	0.00	0.00	0.00	0.00	0.00
49	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00

2021



THE AMERICAS (10 economies)



Female researchers	39	Computer science education index	55	AI articles	60
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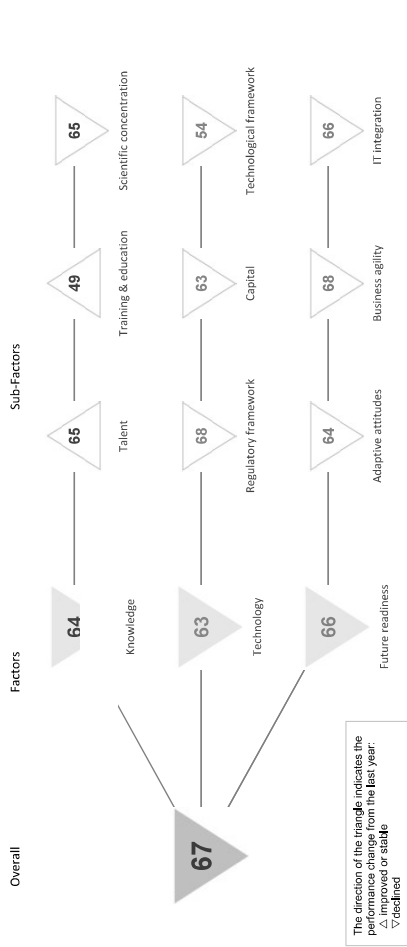
AI policies passed into law	48	AI private investment	28	Secure internet servers	60
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Flexibility and adaptability	46	Entrepreneurial fear of failure	24	Privacy protection by law exists	54
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MONGOLIA

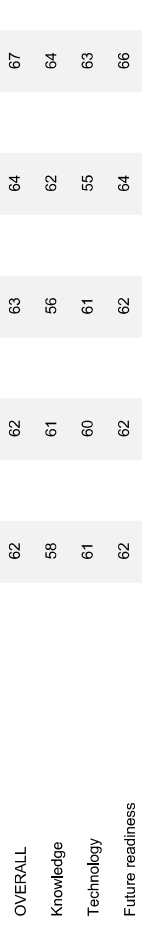
DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)

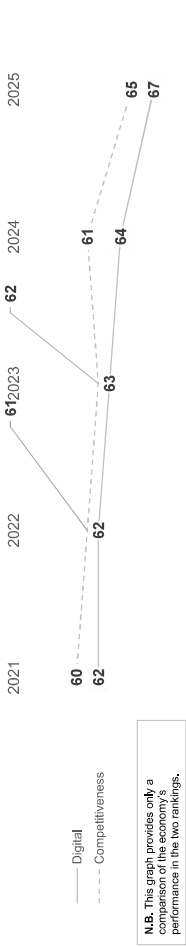


The direction of the triangle indicates the performance change from the last year.
▲ Improved or stable
▼ Declined

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



MONGOLIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025		
Talent		60	60	63	65	65	Rank	
Training & education		39	47	37	53	49		
Scientific concentration		61	61	61	62	65		
Talent	Rank	Training & education				Rank	Scientific concentration	
Educational assessment PISA - Math	42	Employee training				35	Total expenditure on R&D (%)	
International experience	67	Total public expenditure on education				38	Total R&D personnel per capita	
Management of cities	68	Higher education achievement				26	R&D productivity by publication	
Digital/Technological skills	65	Pupil-teacher ratio (tertiary education)				52	High-tech patent grants	
Foreign highly skilled personnel	62	Graduates in Sciences				56	AI-related patent publications	
Net flow of international students	61	Women with degrees				22	Robots in Education and R&D	
Female researchers	01	Computer science education index				60	AI articles	
Scientific and technical employment	55							

TECHNOLOGY

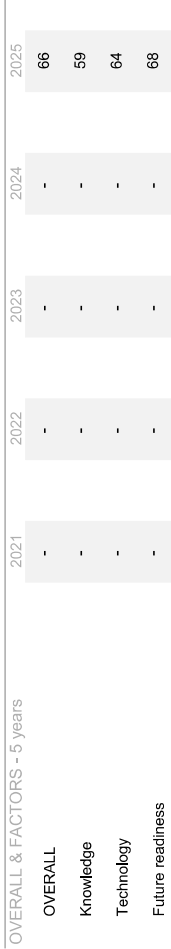
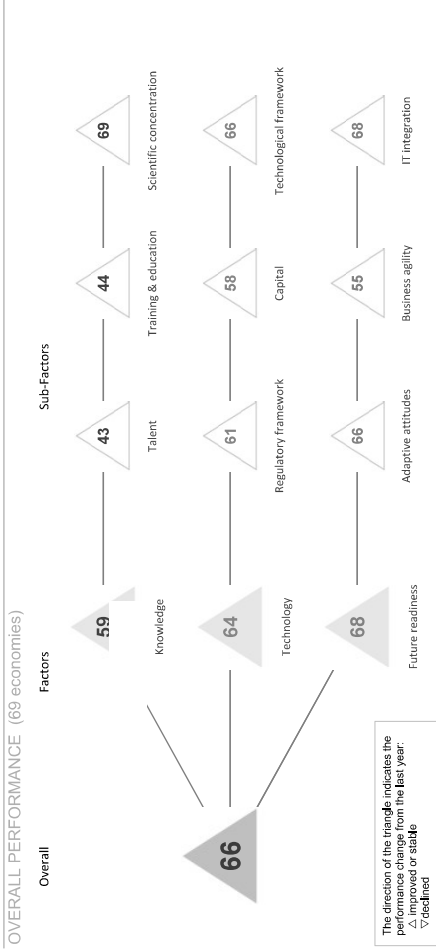
Sub-Factors		2021	2022	2023	2024	2025		
Regulatory framework	Regulatory framework	58	60	61	64	68	Rank	Technological framework
	Capital	62	59	61	55	63		
Technological framework	Technological framework	60	57	58	50	54	Rank	Communications technology
	Regulatory framework	43	Capital			-		
Technological framework	Starting a business	47	IT & media stock market capitalization			68	Rank	Mobile broadband subscribers
	Enforcing contracts	65	Funding for technological development			66		
	Immigration laws	69	Banking and financial services			66		
	Development & application of tech.	68	Country credit rating			63		
	Scientific research legislation	68	Venture capital			68		
	Intellectual property rights	68	Investment in Telecommunications			05		
	AI policies passed into law	66	AI private investment			-		
	Secure internet servers	50	Secure internet servers			-		

FUTURE READINESS

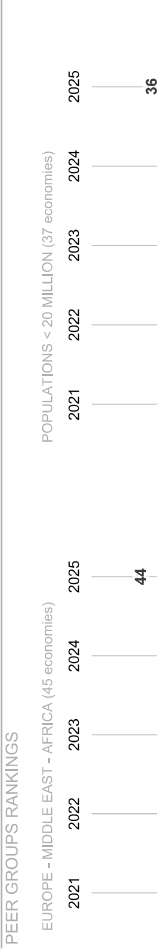
Sub-Factors		2021	2022	2023	2024	2025		
Adaptive attitudes		37	51	44	51	64	Rank	
Business agility		63	63	64	67	68		
IT integration		62	62	62	65	66		
Adaptive attitudes		Rank	Business agility			Rank	IT integration	
E-Participation	32	Opportunities and threats			67	E-Government		
Internet retailing	59	World robots distribution			-	△ Public-private partnerships		
Tablet possession	-	Agility of companies			66	△ Cyber security		
Smartphone possession	62	Use of big data and analytics			66	Software piracy		
Attitudes toward globalization	64	Knowledge transfer			69	Government cyber security capacity		
Flexibility and adaptability	41	Entrepreneurial fear of failure			-	Privacy protection by law exists		
								56

NAMIBIA

DIGITAL TRENDS - OVERALL



N.B. This graph provides only a comparison of the economy's performance in the two rankings.



NAMIBIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	-	-	-	-	43
Training & education	-	-	-	-	44
Scientific concentration	-	-	-	-	69
Talent	Rank	Rank	Rank	Rank	Rank
Educational assessment PISA - Math	-	-	-	-	53
Employee training	-	-	-	-	01
Total public expenditure on education	-	-	-	-	57
International experience	62	62	62	62	61
Management of cities	60	60	60	60	58
High-tech patent grants	41	41	41	41	-
R&D productivity by publication	61	61	61	61	-
AI-related patent publications	-	-	-	-	-
Roots in Education and R&D	-	-	-	-	-
AI articles	56	56	56	56	56

TECHNOLOGY

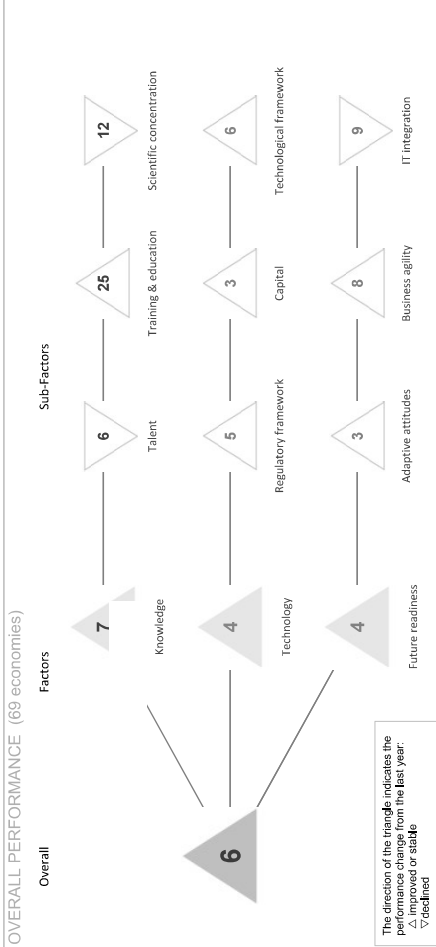
Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	-	-	-	-	61
Capital	-	-	-	-	58
Technological framework	-	-	-	-	66
Regulatory framework	Rank	Rank	Rank	Rank	Rank
IT & media stock market capitalization	-	-	-	-	60
Communications technology	60	60	60	60	64
Mobile broadband subscribers	38	38	38	38	38
Wireless broadband	65	65	65	65	65
Internet users	69	69	69	69	69
Internet bandwidth speed	34	34	34	34	68
High-tech exports (%)	-	-	-	-	61
Secure internet servers	-	-	-	-	-

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	-	-	-	-	66
Business agility	-	-	-	-	55
IT integration	-	-	-	-	68
Adaptive attitudes	Rank	Rank	Rank	Rank	Rank
E-Participation	64	64	64	64	64
Internet retailing	-	-	-	-	66
Tablet possession	-	-	-	-	65
Smartphone possession	50	50	50	50	64
Attitudes toward globalization	59	59	59	59	65
Flexibility and adaptability	65	65	65	65	65

NETHERLANDS

DIGITAL TRENDS - OVERALL



NETHERLANDS

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent					
Training & education	04	04	03	04	06
Scientific concentration	28	25	23	26	25
	16	12	12	11	12
Talent					
Educational assessment PISA - Math	10				16
Employee training					22
► International experience	04				16
Management of cities	17				22
Digital/Technological skills	12				45
Pupil-teacher ratio (tertiary education)	07				26
Foreign highly skilled personnel	06				21
Net flow of international students	49				13
Female researchers	05				
Scientific and technical employment					

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	07	07	02	13	05
Capital	03	03	02	06	03
Technological framework	10	10	10	13	06
Regulatory framework					
Starting a business	13				02
► Enforcing contracts	48				13
Immigration laws	21				13
Development & application of tech.	13				01
Scientific research legislation	09				15
Intellectual property rights	04				54
AI policies passed into law	06				12
Regulatory framework					
IT & media stock market capitalization	02				04
Funding for technological development	13				23
Banking and financial services	13				40
Country credit rating	01				14
Venture capital	15				10
Investment in Telecommunications	54				18
AI private investment	12				03
Technological framework					
Communications technology	04				04
Mobile broadband subscribers	23				23
Wireless broadband	40				14
Internet users	10				10
Internet bandwidth speed	18				18
High-tech exports (%)	03				03
Secure internet servers					

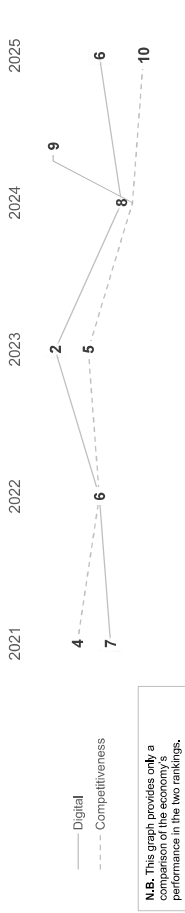
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	06	02	06	09	03
Business agility	08	08	08	14	08
IT integration	06	09	07	08	09
Adaptive attitudes					
E-Participation	11				10
Internet retailing	11				19
Tablet possession	09				06
Smartphone possession	27				17
► Attitudes toward globalization	03				07
Flexibility and adaptability	16				10
Business agility					
Opportunities and threats	10				10
Work robots distribution	19				15
Agility of companies	06				22
Use of big data and analytics	17				13
Knowledge transfer	07				38
Entrepreneurial fear of failure	10				05
IT integration					
E-Government	10				10
Public-private partnerships	15				15
Cyber security	22				22
Software piracy	13				13
Government cyber security capacity	38				38
Privacy protection by law exists	05				05

OVERALL & FACTORS - 5 years

	2021	2022	2023	2024	2025
OVERALL	07	06	02	08	06
Knowledge	11	08	07	09	07
Technology	07	04	05	08	04
Future readiness	04	05	04	07	04

COMPETITIVENESS & DIGITAL RANKINGS

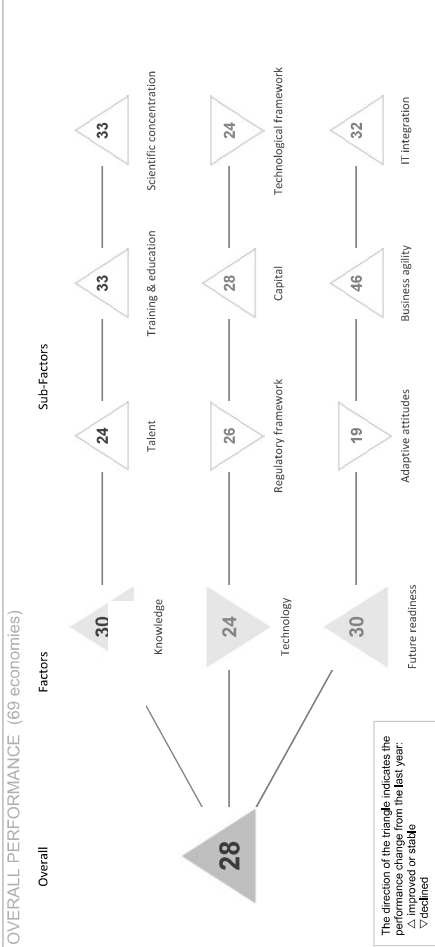


PEER GROUPS RANKINGS



NEW ZEALAND

DIGITAL TRENDS - OVERALL



NEW ZEALAND

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	14	32	33	46	24
Training & education	36	32	32	35	33
Scientific concentration	33	32	30	34	33

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	24	► Employee training	47	Total expenditure on R&D (%)	29
► International experience	60	Total public expenditure on education	12	Total R&D personnel per capita	22
Management of cities	45	Higher education achievement	29	R&D productivity by publication	41
Digital/Technological skills	28	Pupil-teacher ratio (tertiary education)	34	High-tech patent grants	38
Foreign highly skilled personnel	30	Graduates in Sciences	32	AI-related patent publications	21
► Net flow of international students	08	Women with degrees	28	Robotics in Education and R&D	45
Female researchers	-	Computer science education index	20	AI articles	32
► Scientific and technical employment	09				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	24	33	24	11	26
Capital	22	30	19	32	28
Technological framework	23	25	24	15	24

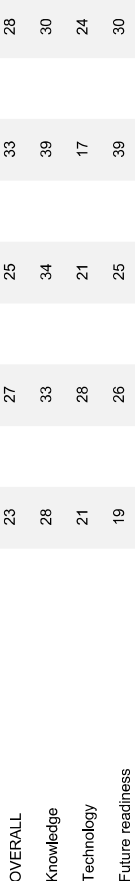
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
► Starting a business	01	IT & media stock market capitalization	32	Communications technology	38
Enforcing contracts	19	Funding for technological development	44	Mobile broadband subscribers	15
Immigration laws	27	Banking and financial services	18	Wireless broadband	10
Development & application of tech.	28	Country credit rating	11	Internet users	17
Scientific research legislation	34	Venture capital	26	Internet bandwidth speed	22
Intellectual property rights	16	Investment in Telecommunications	32	High-tech exports (%)	38
AI policies passed into law	36	AI private investment	43	Secure internet servers	37

FUTURE READINESS

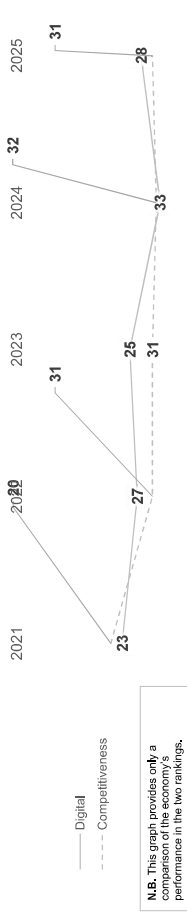
Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	16	15	12	14	19
Business agility	30	49	40	64	46
IT integration	18	27	22	43	32

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	11	Opportunities and threats	42	E-Government	16
Internet retailing	17	Work robots distribution	41	Public-private partnerships	42
► Tablet possession	06	► Agility of companies	47	Cyber security	36
Smartphone possession	40	Use of big data and analytics	40	► Software piracy	02
Attitudes toward globalization	20	Knowledge transfer	27	► Government cyber security capacity	46
► Flexibility and adaptability	48	Entrepreneurial fear of failure	-	Privacy protection by law exists	45

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



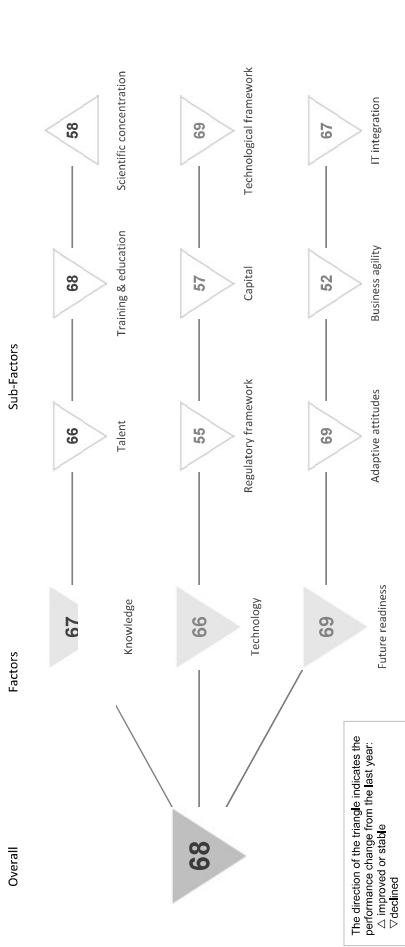
PEER GROUPS RANKINGS



NIGERIA

DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



N.B. This graph provides only a comparison of the economy's performance in the two rankings.

PEER GROUPS RANKINGS



NIGERIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors					
	2021	2022	2023	2024	2025
Talent	-	-	-	49	66
Training & education	-	-	-	66	68
Scientific concentration	-	-	-	63	58
Talent	Rank	Rank	Rank	Rank	Rank
Educational assessment PISA - Math	47	47	47	47	47
International experience	47	47	47	47	47
Management of cities	54	54	54	54	54
Digital/Technological skills	64	64	64	64	64
Foreign highly skilled personnel	45	45	45	45	45
Net flow of international students	48	48	48	48	48
Female researchers	48	48	48	48	48
Scientific and technical employment	58	58	58	58	58
Training & education	Rank	Rank	Rank	Rank	Rank
Employee training	57	57	57	57	57
Total public expenditure on education	68	68	68	68	68
Higher education achievement	29	29	29	29	29
R&D productivity by publication	29	29	29	29	29
High-tech patent grants	52	52	52	52	52
AI-related patent publications	52	52	52	52	52
Robots in Education and R&D	61	61	61	61	61
AI articles	68	68	68	68	68

TECHNOLOGY

Sub-Factors					
	2021	2022	2023	2024	2025
Regulatory framework	-	-	-	51	55
Capital	-	-	-	28	57
Technological framework	-	-	-	67	69
Regulatory framework	Rank	Rank	Rank	Rank	Rank
Starting a business	44	44	44	44	44
Enforcing contracts	44	44	44	44	44
Immigration laws	41	41	41	41	41
Development & application of tech.	59	59	59	59	59
Scientific research legislation	48	48	48	48	48
Intellectual property rights	66	66	66	66	66
AI policies passed into law	44	44	44	44	44
Capital	Rank	Rank	Rank	Rank	Rank
IT & media stock market capitalization	11	11	11	11	11
Funding for technological development	64	64	64	64	64
Banking and financial services	65	65	65	65	65
Country credit rating	64	64	64	64	64
Venture capital	63	63	63	63	63
Investment in Telecommunications	19	19	19	19	19
AI private investment	51	51	51	51	51
Technological framework	Rank	Rank	Rank	Rank	Rank
Communications technology	68	68	68	68	68
Mobile broadband subscribers	60	60	60	60	60
Wireless broadband	68	68	68	68	68
Internet users	67	67	67	67	67
Internet bandwidth speed	65	65	65	65	65
High-tech exports (%)	59	59	59	59	59
Secure internet servers	69	69	69	69	69

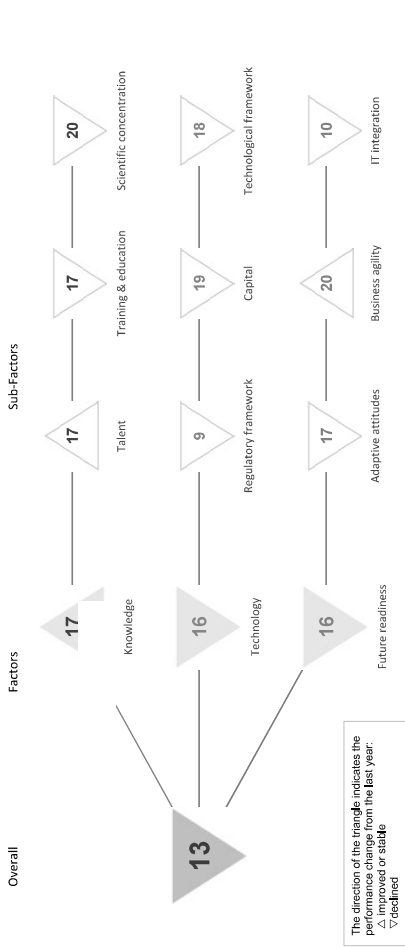
FUTURE READINESS

Sub-Factors					
	2021	2022	2023	2024	2025
Adaptive attitudes	-	-	-	67	69
Business agility	-	-	-	50	52
IT integration	-	-	-	66	67
Adaptive attitudes	Rank	Rank	Rank	Rank	Rank
E-Participation	62	62	62	62	62
Internet retailing	62	62	62	62	62
Tablet possession	58	58	58	58	58
Smartphone possession	64	64	64	64	64
Attitudes toward globalization	57	57	57	57	57
Flexibility and adaptability	52	52	52	52	52
Business agility	Rank	Rank	Rank	Rank	Rank
Opportunities and threats	56	56	56	56	56
World robots distribution	-	-	-	-	-
Agility of companies	57	57	57	57	57
Use of big data and analytics	38	38	38	38	38
Knowledge transfer	59	59	59	59	59
Entrepreneurial fear of failure	-	-	-	-	-
IT integration	Rank	Rank	Rank	Rank	Rank
E-Government	66	66	66	66	66
Public-private partnerships	50	50	50	50	50
Cyber security	61	61	61	61	61
Software piracy	63	63	63	63	63
Government cyber security capacity	60	60	60	60	60
Privacy protection by law exists	25	25	25	25	25

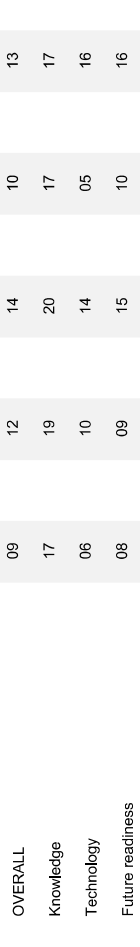
NORWAY

DIGITAL TRENDS - OVERALL

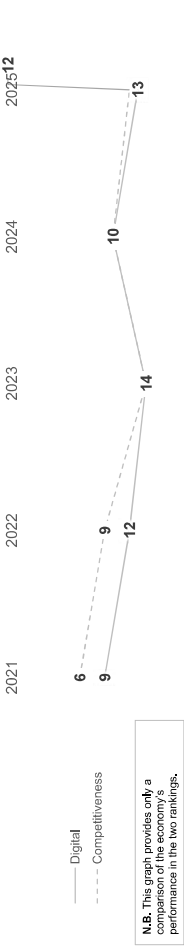
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



NORWAY

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent	Rank	16	18	21	22	17
Training & education	Rank	11	14	16	15	17
Scientific concentration	Rank	22	22	22	16	20
Talent		Rank	Scientific concentration			
Educational assessment PISA - Math	Rank	32	Employee training			
International experience	Rank	18	Total public expenditure on education			
Management of cities	Rank	22	Higher education achievement			
Digital/Technological skills	Rank	06	Pupil-teacher ratio (tertiary education)			
Foreign highly skilled personnel	Rank	22	Graduates in Sciences			
Net flow of international students	Rank	45	Women with degrees			
Female researchers	Rank	28	Computer science education index			
Scientific and technical employment	Rank	17	AI articles			
Total expenditure on R&D (%)		07	Total R&D personnel per capita			
R&D productivity by publication		35	R&D productivity by publication			
High-tech patent grants		14	High-tech patent grants			
AI-related patent publications		05	Robots in Education and R&D			
Robots in Education and R&D		26	AI articles			
AI articles		36	AI articles			
AI articles		11	AI articles			
AI articles		24	AI articles			
AI articles		06	AI articles			

TECHNOLOGY

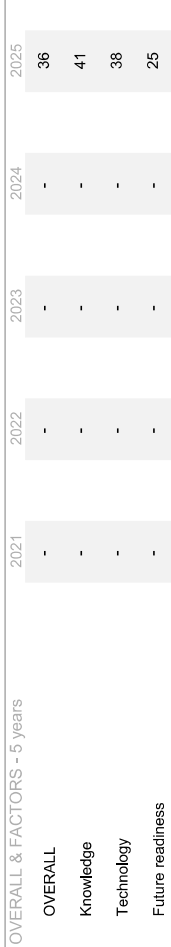
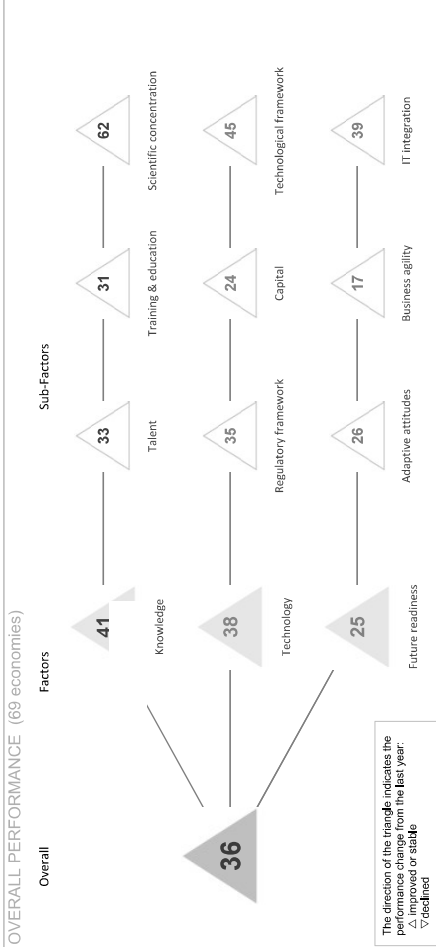
Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework	Rank	01	04	13	06	09
Capital	Rank	06	04	20	05	19
Technological framework	Rank	12	14	21	10	18
Regulatory framework		Rank	Capital			
Starting a business	Rank	14	IT & media stock market capitalization			
Enforcing contracts	Rank	03	Funding for technological development			
Immigration laws	Rank	20	Banking and financial services			
Development & application of tech.	Rank	11	Country credit rating			
Scientific research legislation	Rank	11	Venture capital			
Intellectual property rights	Rank	20	Investment in Telecommunications			
AI policies passed into law	Rank	48	AI private investment			
Technological framework		Rank	Technological framework			
Communications technology	Rank	30	Communications technology			
Mobile broadband subscribers	Rank	08	Mobile broadband subscribers			
Wireless broadband	Rank	33	Wireless broadband			
Internet users	Rank	01	Internet users			
Internet bandwidth speed	Rank	13	Internet bandwidth speed			
High-tech exports (%)	Rank	47	High-tech exports (%)			
Secure internet servers	Rank	23	Secure internet servers			

FUTURE READINESS

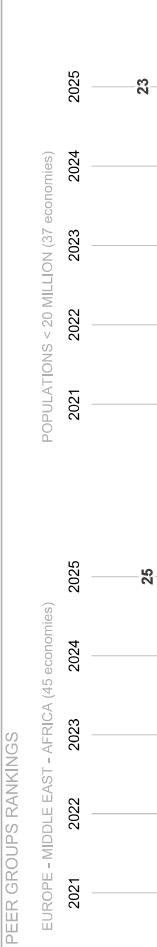
Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes	Rank	08	06	15	12	17
Business agility	Rank	11	13	26	20	20
IT integration	Rank	08	12	17	09	10
Adaptive attitudes		Rank	Business agility			
E-Participation	Rank	19	Opportunities and threats			
Internet retailing	Rank	09	Work robots distribution			
Tablet possession	Rank	03	Agility of companies			
Smartphone possession	Rank	22	Use of big data and analytics			
Attitudes toward globalization	Rank	42	Knowledge transfer			
Flexibility and adaptability	Rank	31	Entrepreneurial fear of failure			
IT integration		Rank	IT integration			
E-Government	Rank	28	E-Government			
Public-private partnerships	Rank	39	Public-private partnerships			
Cyber security	Rank	19	Cyber security			
Software piracy	Rank	24	Software piracy			
Government cyber security capacity	Rank	18	Government cyber security capacity			
Privacy protection by law exists	Rank	11	Privacy protection by law exists			

OMAN

DIGITAL TRENDS - OVERALL



N.B. This graph provides only a comparison of the economy's performance in the two rankings.



OMAN

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE					
Sub-Factors					
Talent	Rank	2021	2022	2023	2024
Training & education	Rank	-	-	-	33
Scientific concentration	Rank	-	-	-	31
Scientific concentration	Rank	-	-	-	62
Talent	Rank	2021	2022	2023	2024
Educational assessment PISA - Math	Rank	-	-	-	17
Employee training	Rank	-	-	-	33
International experience	Rank	-	-	-	28
Management of cities	Rank	-	-	-	19
Digital/Technological skills	Rank	-	-	-	38
Foreign highly skilled personnel	Rank	-	-	-	06
Graduates in Sciences	Rank	-	-	-	06
Women with degrees	Rank	-	-	-	-
Net flow of international students	Rank	-	-	-	-
Female researchers	Rank	-	-	-	37
Computer science education index	Rank	-	-	-	60
Scientific and technical employment	Rank	-	-	-	48
Scientific concentration	Rank	2021	2022	2023	2024
Total expenditure on R&D (%)	Rank	-	-	-	56
Total R&D personnel per capita	Rank	-	-	-	-
R&D productivity by publication	Rank	-	-	-	46
High-tech patent grants	Rank	-	-	-	52
AI-related patent publications	Rank	-	-	-	52
Robots in Education and R&D	Rank	-	-	-	-
AI articles	Rank	-	-	-	39

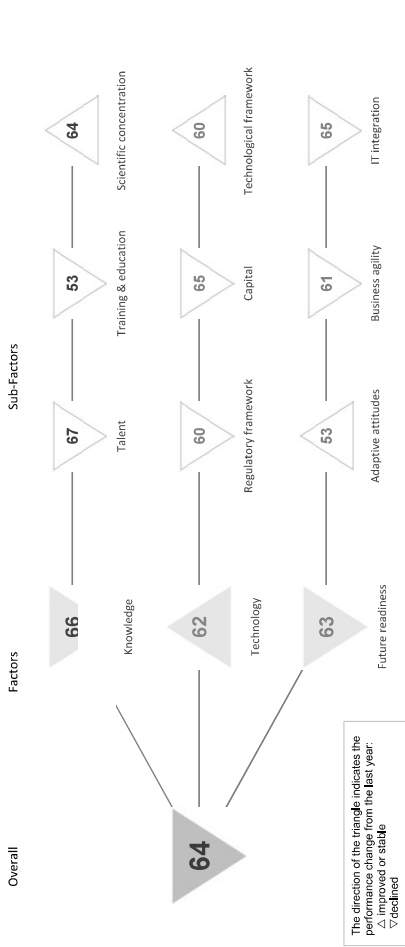
TECHNOLOGY					
Sub-Factors					
Regulatory framework	Rank	2021	2022	2023	2024
Capital	Rank	-	-	-	35
Technological framework	Rank	-	-	-	24
Technological framework	Rank	-	-	-	45
Regulatory framework	Rank	2021	2022	2023	2024
IT & media stock market capitalization	Rank	-	-	-	25
Funding for technological development	Rank	-	-	-	23
Banking and financial services	Rank	-	-	-	23
Country credit rating	Rank	-	-	-	56
Venture capital	Rank	-	-	-	27
Investment in Telecommunications	Rank	-	-	-	14
High-tech exports (%)	Rank	-	-	-	56
Secure internet servers	Rank	-	-	-	65
Technological framework	Rank	2021	2022	2023	2024
Communications technology	Rank	-	-	-	29
Mobile broadband subscribers	Rank	-	-	-	06
Wireless broadband	Rank	-	-	-	49
Internet users	Rank	-	-	-	22
Internet bandwidth speed	Rank	-	-	-	52
High-tech exports (%)	Rank	-	-	-	56
Secure internet servers	Rank	-	-	-	65

FUTURE READINESS					
Sub-Factors					
Adaptive attitudes	Rank	2021	2022	2023	2024
Business agility	Rank	-	-	-	26
IT integration	Rank	-	-	-	17
IT integration	Rank	-	-	-	39
Adaptive attitudes	Rank	2021	2022	2023	2024
E-Participation	Rank	-	-	-	31
Workforce distribution	Rank	-	-	-	12
Agility of companies	Rank	-	-	-	04
Use of big data and analytics	Rank	-	-	-	29
Knowledge transfer	Rank	-	-	-	22
Entrepreneurial fear of failure	Rank	-	-	-	03
Business agility	Rank	2021	2022	2023	2024
Opportunities and threats	Rank	-	-	-	31
Workforce distribution	Rank	-	-	-	12
Agility of companies	Rank	-	-	-	04
Use of big data and analytics	Rank	-	-	-	29
Knowledge transfer	Rank	-	-	-	22
Entrepreneurial fear of failure	Rank	-	-	-	03
IT integration	Rank	2021	2022	2023	2024
E-Government	Rank	-	-	-	36
Public-private partnerships	Rank	-	-	-	12
Cyber security	Rank	-	-	-	04
Software piracy	Rank	-	-	-	54
Government cyber security capacity	Rank	-	-	-	50
Privacy protection by law exists	Rank	-	-	-	57

PERU

DIGITAL TRENDS - OVERALL

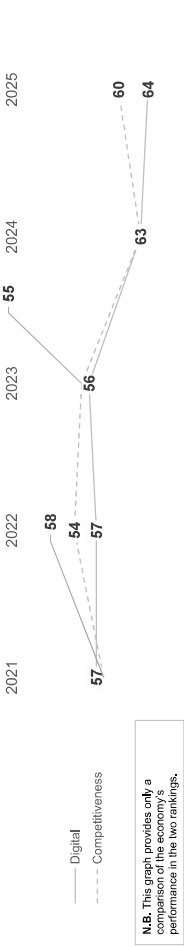
OVERALL PERFORMANCE (69 economies)



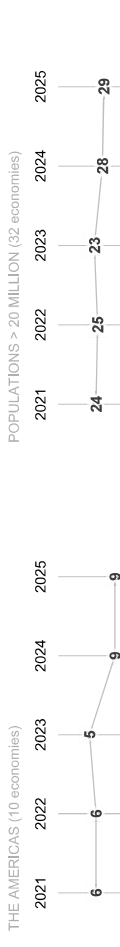
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



PERU

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent		59	59	59	64	67
Training & education		41	37	38	47	53
Scientific concentration		60	60	62	64	64
Talent		50	50	50	50	50
Educational assessment PISA - Math		51	51	51	51	51
International experience		66	66	66	66	66
Management of cities		63	63	63	63	63
Digital/Technological skills		48	48	48	48	48
Foreign highly skilled personnel		45	45	45	45	45
Net flow of international students		38	38	38	38	38
Female researchers		45	45	45	45	45
Scientific and technical employment		53	53	53	53	53
Employee training		67	67	67	67	67
Total public expenditure on education		45	45	45	45	45
Higher education achievement		28	28	28	28	28
Pupil-teacher ratio (tertiary education)		45	45	45	45	45
Graduates in Sciences		-	-	-	-	-
Women with degrees		38	38	38	38	38
Computer science education index		57	57	57	57	57
Total expenditure on R&D (%)		-	-	-	-	-
Total R&D personnel per capita		-	-	-	-	-
R&D productivity by publication		-	-	-	-	-
High-tech patent grants		63	63	63	63	63
AI-related patent publications		52	52	52	52	52
Robots in Education and R&D		43	43	43	43	43
AI articles		51	51	51	51	51

TECHNOLOGY

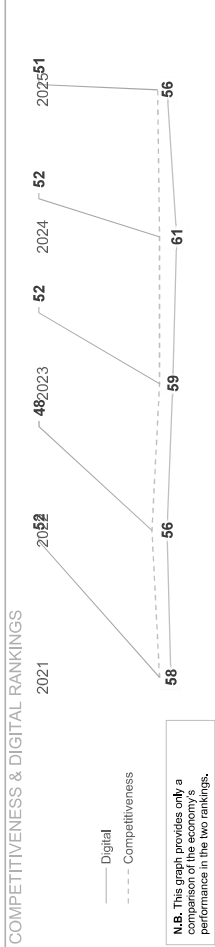
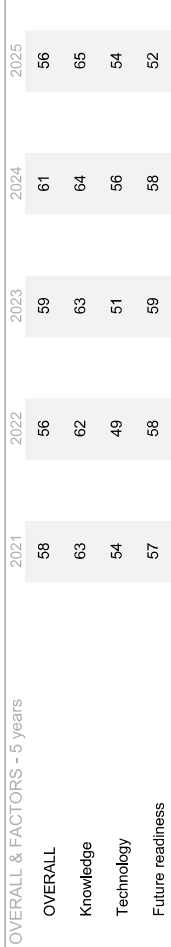
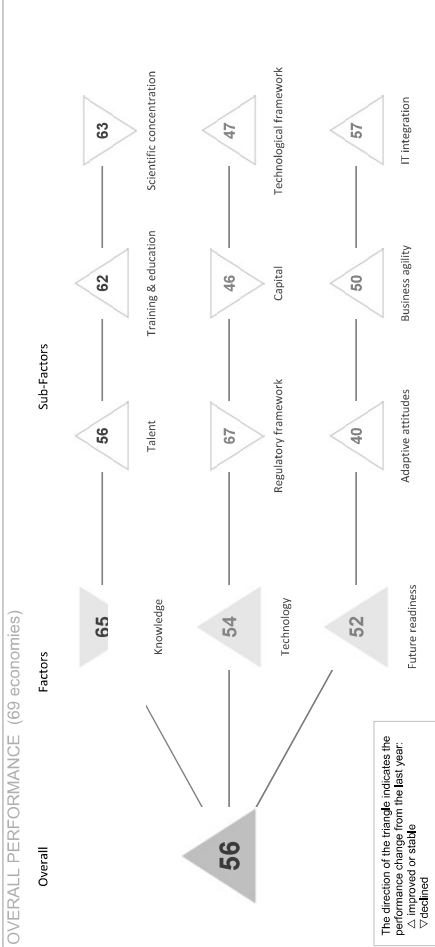
Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework		49	51	51	58	60
Capital		43	53	51	62	65
Technological framework		58	59	59	61	60
Regulatory framework		58	58	58	58	58
Starting a business		49	49	49	49	49
Funding for technological development		63	63	63	63	63
Banking and financial services		54	54	54	54	54
Country credit rating		47	47	47	47	47
Venture capital		57	57	57	57	57
Investment in Telecommunications		51	51	51	51	51
High-tech exports (%)		55	55	55	55	55
Secure internet servers		54	54	54	54	54
Communications technology		63	63	63	63	63
Mobile broadband subscribers		58	58	58	58	58
Wireless broadband		64	64	64	64	64
Internet users		59	59	59	59	59
Internet bandwidth speed		41	41	41	41	41
High-tech exports (%)		55	55	55	55	55
Secure internet servers		55	55	55	55	55

FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes		54	53	47	54	53
Business agility		39	39	48	49	61
IT integration		56	59	61	63	65
Adaptive attitudes		37	37	37	37	37
E-Participation		49	49	49	49	49
Internet retailing		53	53	53	53	53
Tablet possession		48	48	48	48	48
Smartphone possession		39	39	39	39	39
Attitudes toward globalization		44	44	44	44	44
Flexibility and adaptability		53	53	53	53	53
Opportunities and threats		49	49	49	49	49
Work robots distribution		53	53	53	53	53
Agility of companies		53	53	53	53	53
Use of big data and analytics		60	60	60	60	60
Knowledge transfer		61	61	61	61	61
Entrepreneurial fear of failure		-	-	-	-	-

PHILIPPINES

DIGITAL TRENDS - OVERALL



PHILIPPINES

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	55	55	56	60	56
Training & education	61	61	62	62	62
Scientific concentration	56	57	58	61	63

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	58	Employee training	46	Total expenditure on R&D (%)	57
International experience	50	Total public expenditure on education	55	Total R&D personnel per capita	53
Management of cities	51	Higher education achievement	55	R&D productivity by publication	32
Digital/Technological skills	47	Pupil-teacher ratio (tertiary education)	53	High-tech patent grants	45
Foreign highly skilled personnel	54	Graduates in Sciences	37	AI-related patent publications	48
Net flow of international students	46	Women with degrees	58	Robots in Education and R&D	51
► Female researchers	02	Computer science education index	59	AI articles	65
Scientific and technical employment	59				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	62	62	63	66	67
Capital	40	40	41	45	46
Technological framework	49	45	43	53	47

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
► Starting a business	66	IT & media stock market capitalization	39	Communications technology	66
► Enforcing contracts	66	Funding for technological development	58	Mobile broadband subscribers	37
Immigration laws	48	Banking and financial services	39	Wireless broadband	30
Development & application of tech.	49	Country credit rating	45	Internet users	53
Scientific research legislation	55	Venture capital	56	Internet bandwidth speed	56
Intellectual property rights	58	► Investment in Telecommunications	09	High-tech exports (%)	03
AI policies passed into law	40	AI private investment	47	Secure internet servers	63

FUTURE READINESS

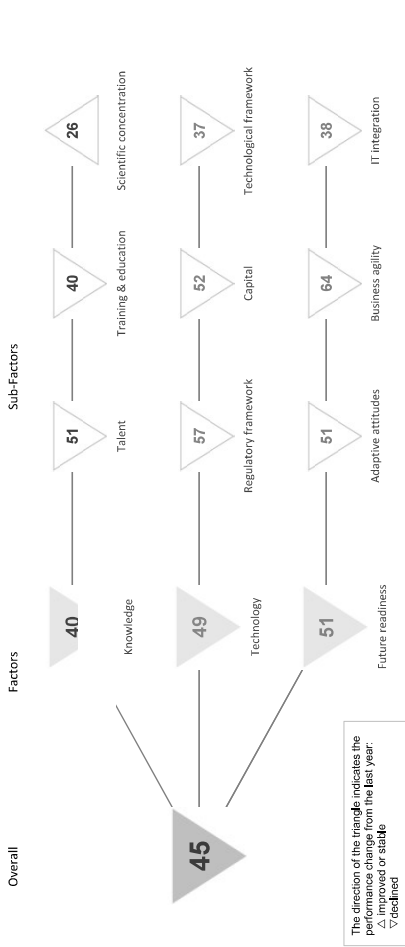
Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	60	58	59	52	40
Business agility	37	45	50	54	50
IT integration	57	57	60	58	57

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	42	Opportunities and threats	45	E-Government	58
Internet retailing	55	World robots distribution	38	► Public-private partnerships	26
Tablet possession	52	Agility of companies	40	Cyber security	60
Smartphone possession	54	Use of big data and analytics	41	Software piracy	57
Attitudes toward globalization	32	Knowledge transfer	52	► Government cyber security capacity	63
► Flexibility and adaptability	13	Entrepreneurial fear of failure	-	Privacy protection by law exists	32

POLAND

DIGITAL TRENDS - OVERALL

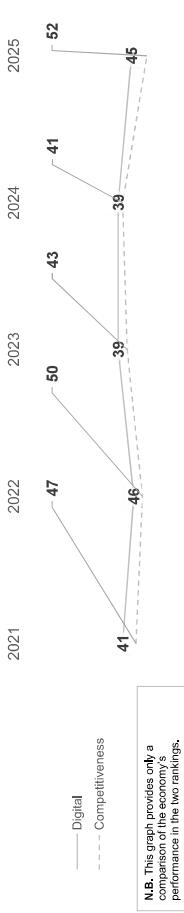
OVERALL PERFORMANCE (69 economies)



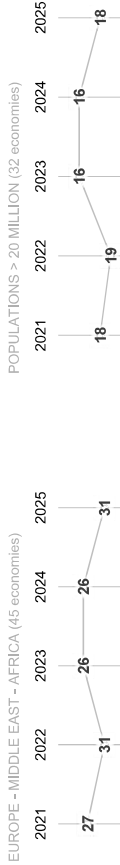
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



POLAND

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent		41	48	36	40	51
Training & education		44	42	39	39	40
Scientific concentration		28	30	28	37	26
Talent		Rank	Training & education		Rank	Rank
► Educational assessment PISA - Math		12	► Employee training		65	26
International experience		61	Total public expenditure on education		27	33
Management of cities		53	Higher education achievement		27	26
Digital/Technological skills		61	Pupil-teacher ratio (tertiary education)		30	39
Foreign highly skilled personnel		55	Graduates in Sciences		42	25
Net flow of international students		29	Women with degrees		30	14
Female researchers		34	Computer science education index		37	40
Scientific and technical employment		32				

TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework		53	57	49	46	57
Capital		47	49	43	44	52
Technological framework		31	33	37	28	37
Regulatory framework		Rank	Capital		Rank	Rank
Starting a business		56	IT & media stock market capitalization		37	59
Enforcing contracts		38	Funding for technological development		57	20
Immigration laws		57	Banking and financial services		49	05
Development & application of tech.		63	Country credit rating		37	47
Scientific research legislation		58	Venture capital		38	29
Intellectual property rights		63	Investment in Telecommunications		28	43
► AI policies passed into law		10	AI private investment		36	27

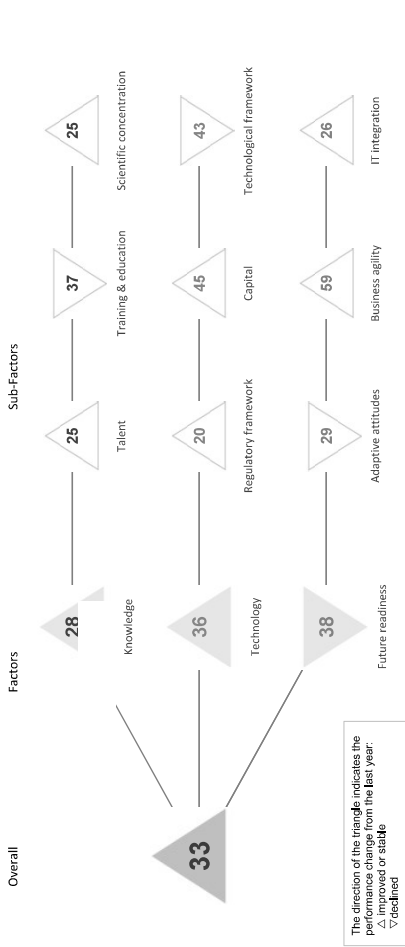
FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes		28	37	45	43	51
Business agility		44	47	28	43	64
IT integration		45	51	44	35	38
Adaptive attitudes		Rank	Business agility		Rank	Rank
E-Participation		37	► Opportunities and threats		64	33
Internet retailing		25	Work robots distribution		18	54
► Tablet possession		10	Agility of companies		59	54
Smartphone possession		56	► Use of big data and analytics		64	36
► Attitudes toward globalization		65	Knowledge transfer		53	27
► Flexibility and adaptability		64	Entrepreneurial fear of failure		42	16

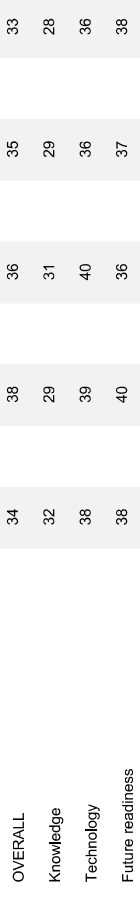
PORTUGAL

DIGITAL TRENDS - OVERALL

OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



PORTUGAL

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	22	29	29	28	25
Training & education	38	36	34	34	37
Scientific concentration	27	27	26	26	25

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	30	Employee training	61	Total expenditure on R&D (%)	24
International experience	45	Total public expenditure on education	41	Total R&D personnel per capita	21
Management of cities	27	Higher education achievement	40	R&D productivity by publication	33
Digital/Technological skills	21	Pupil-teacher ratio (tertiary education)	10	High-tech patent grants	30
Foreign highly skilled personnel	41	Graduates in Sciences	19	AI-related patent publications	29
Net flow of international students	17	Women with degrees	39	Robotics in Education and R&D	31
Female researchers	20	Computer science education index	35	AI articles	21
Scientific and technical employment	27				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	21	19	27	26	20
Capital	44	48	49	50	45
Technological framework	46	48	46	42	43

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	31	IT & media stock market capitalization	44	Communications technology	08
Enforcing contracts	29	Funding for technological development	41	Mobile broadband subscribers	45
Immigration laws	05	Banking and financial services	35	Wireless broadband	56
Development & application of tech.	31	Country credit rating	35	Internet users	50
Scientific research legislation	37	Venture capital	50	Internet bandwidth speed	20
Intellectual property rights	30	Investment in Telecommunications	26	High-tech exports (%)	52
AI policies passed into law	15	AI private investment	30	Secure internet servers	32

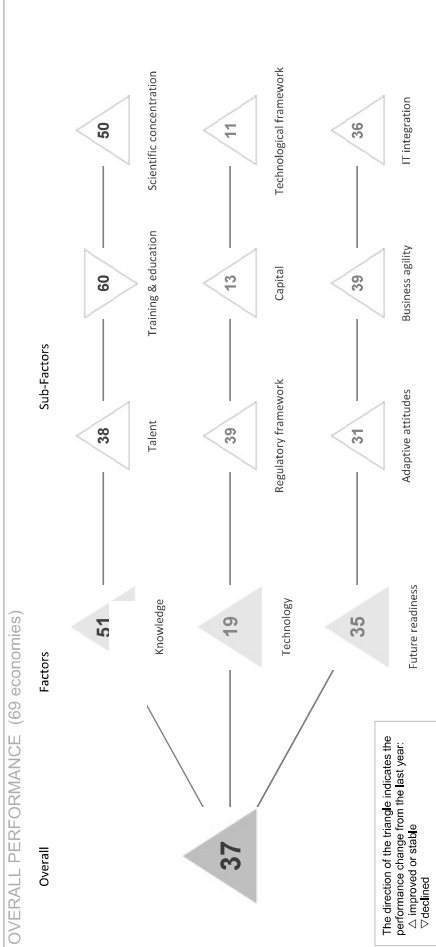
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	30	35	26	24	29
Business agility	58	60	58	61	59
IT integration	30	25	25	28	26

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	52	Opportunities and threats	46	E-Government	41
Internet retailing	32	Work robots distribution	30	Public-private partnerships	34
Tablet possession	25	Agility of companies	58	Cyber security	42
Smartphone possession	27	Use of big data and analytics	55	Software piracy	27
Attitudes toward globalization	37	Knowledge transfer	47	Government cyber security capacity	17
Flexibility and adaptability	11	Entrepreneurial fear of failure	43	Privacy protection by law exists	02

PUERTO RICO

DIGITAL TRENDS - OVERALL



PUERTO RICO

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025	Rank	Scientific concentration	Rank
Talent		-	-	-	48	38			
Training & education		-	-	-	50	60	34	Total expenditure on R&D (%)	55
Scientific concentration		-	-	-	57	50			
Talent		-	-	-	-	-	23	Total R&D personnel per capita	01
Educational assessment PISA - Math		-	-	-	-	-			
International experience		-	-	-	-	-	58	R&D productivity by publication	57
Management of cities		-	-	-	-	-			
Digital/Technological skills		-	-	-	-	-	32	High-tech patent grants	-
Foreign highly skilled personnel		-	-	-	-	-			
Net flow of international students		-	-	-	-	-	53	AI-related patent publications	-
Female researchers		-	-	-	-	-			
Scientific and technical employment		-	-	-	-	-	-	Robots in Education and R&D	53
Computer science education index		-	-	-	-	-			
AI articles		-	-	-	-	-	60	-	57

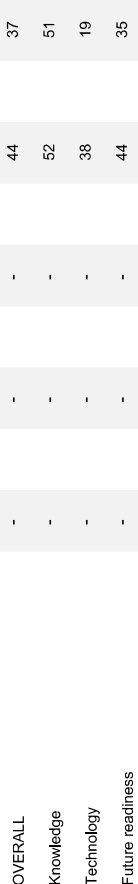
TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025	Rank	Technological framework	Rank
Regulatory framework		-	-	-	42	39			
Capital		-	-	-	48	13	-	Communications technology	43
Technological framework		-	-	-	22	11			
Regulatory framework		-	-	-	-	-	-	Mobile broadband subscribers	09
Starting a business		-	-	-	-	-			
Enforcing contracts		-	-	-	-	-	68	Wireless broadband	33
Immigration laws		-	-	-	-	-			
Development & application of tech.		-	-	-	-	-	26	Internet users	42
Scientific research legislation		-	-	-	-	-			
Intellectual property rights		-	-	-	-	-	26	Internet bandwidth speed	26
AI policies passed into law		-	-	-	-	-			
AI private investment		-	-	-	-	-	02	High-tech exports (%)	01
Secure internet servers		-	-	-	-	-	-	-	56

FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025	Rank	IT integration	Rank
Adaptive attitudes		-	-	-	49	31			
Business agility		-	-	-	44	39	-	E-Government	-
IT integration		-	-	-	37	36			
Adaptive attitudes		-	-	-	-	-	-	Public-private partnerships	21
E-Participation		-	-	-	-	-			
Internet retailing		-	-	-	-	-	-	Cyber security	29
Tablet possession		-	-	-	-	-			
Smartphone possession		-	-	-	-	-	-	Government cyber security capacity	-
Attitudes toward globalization		-	-	-	-	-			
Flexibility and adaptability		-	-	-	-	-	34	Privacy protection by law exists	-

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



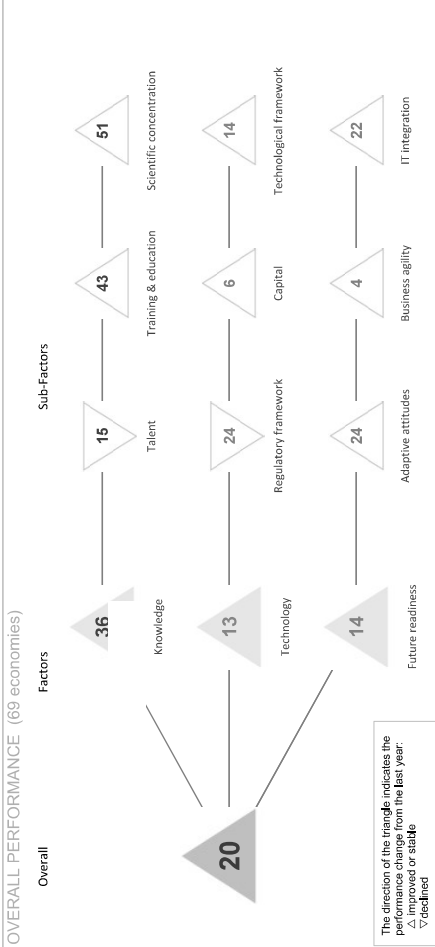
N.B. This graph provides only a comparison of the economy's performance in the two rankings.

PEER GROUPS RANKINGS



QATAR

DIGITAL TRENDS - OVERALL



QATAR

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ▢ Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	19	11	10	06	15
Training & education	54	45	51	55	43
Scientific concentration	59	59	60	54	51

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	45	Employee training	10	Total expenditure on R&D (%)	46
International experience	03	► Total public expenditure on education	65	Total R&D personnel per capita	48
Management of cities	02	Higher education achievement	52	R&D productivity by publication	52
Digital/Technological skills	04	Pupil-teacher ratio (tertiary education)	35	High-tech patent grants	23
Foreign highly skilled personnel	05	Graduates in Sciences	46	AI-related patent publications	41
Net flow of international students	11	Women with degrees	09	Robots in Education and R&D	51
Female researchers	44	Computer science education index	46	AI articles	15
Scientific and technical employment	52				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	27	27	23	23	24
Capital	24	21	22	16	06
Technological framework	16	15	18	24	14

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	47	IT & media stock market capitalization	33	Communications technology	07
Enforcing contracts	58	► Funding for technological development	01	► Mobile broadband subscribers	02
Immigration laws	08	► Banking and financial services	01	Wireless broadband	11
Development & application of tech.	02	Country credit rating	16	Internet users	06
Scientific research legislation	02	Venture capital	02	Internet bandwidth speed	24
Intellectual property rights	10	► Investment in Telecommunications	64	► High-tech exports (%)	61
AI policies passed into law	60	AI private investment	-	Secure internet servers	57

FUTURE READINESS

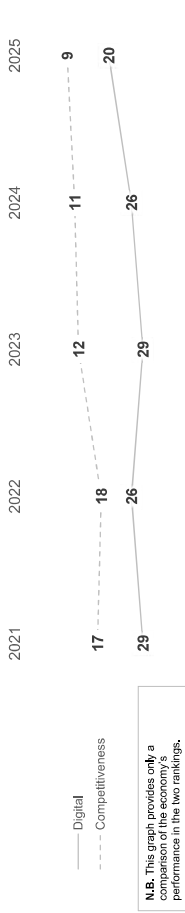
Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	26	29	33	28	24
Business agility	17	14	11	18	04
IT integration	28	28	27	27	22

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
► E-Participation	61	Opportunities and threats	04	E-Government	45
Internet retailing	51	Work robots distribution	54	Public-private partnerships	02
Tablet possession	04	Agility of companies	07	► Cyber security	02
Smartphone possession	05	► Use of big data and analytics	01	Software piracy	38
Attitudes toward globalization	07	Knowledge transfer	02	Government cyber security capacity	12
Flexibility and adaptability	05	Entrepreneurial fear of failure	15	► Privacy protection by law exists	63

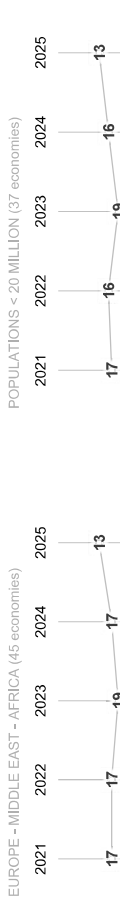
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS

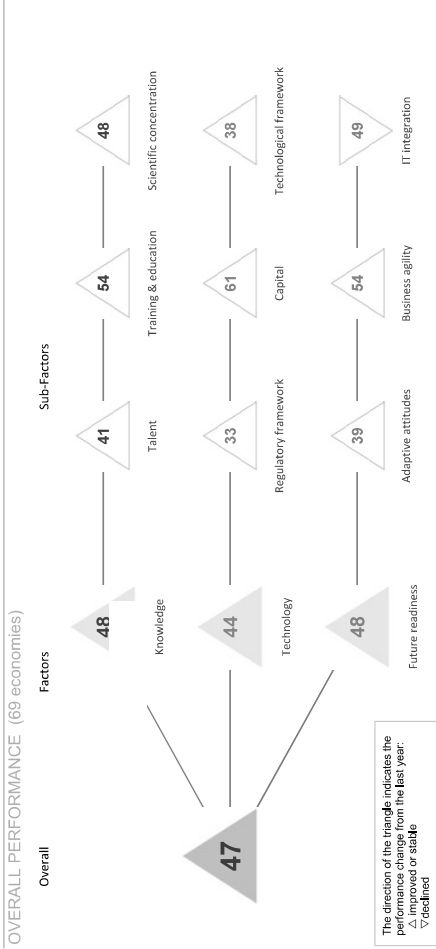


PEER GROUPS RANKINGS



ROMANIA

DIGITAL TRENDS - OVERALL



ROMANIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025	Rank
Talent	50	51	50	45	41	52
Training & education	59	55	56	57	54	46
Scientific concentration	43	44	47	48	48	34
Talent	50	51	50	45	41	52
Employee training	40	39	39	47	33	53
Educational assessment PISA - Math	40	39	39	47	33	53
International experience	44	44	44	44	44	58
Management of cities	44	44	44	44	44	58
Digital/Technological skills	20	20	20	20	20	49
Pupil-teacher ratio (tertiary education)	50	50	50	50	50	14
Foreign highly skilled personnel	38	38	38	38	38	53
Net flow of international students	17	17	17	17	17	52
Female researchers	50	50	50	50	50	45
Scientific and technical employment	50	50	50	50	50	45

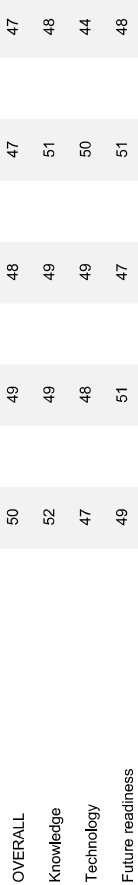
TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025	Rank
Regulatory framework	40	39	39	47	33	53
Capital	61	61	59	64	61	61
Technological framework	40	41	40	41	38	38
Regulatory framework	39	39	39	39	39	53
Starting a business	18	18	18	18	18	38
Funding for technological development	24	24	24	24	24	40
Banking and financial services	42	42	42	42	42	54
Country credit rating	51	51	51	51	51	44
Venture capital	50	50	50	50	50	66
Investment in Telecommunications	27	27	27	27	27	31
AI private investment	40	40	40	40	40	31
Regulatory framework	39	39	39	39	39	53
IT & media stock market capitalization	18	18	18	18	18	38
Enforcing contracts	24	24	24	24	24	40
Banking and financial services	42	42	42	42	42	54
Country credit rating	51	51	51	51	51	44
Venture capital	50	50	50	50	50	66
Investment in Telecommunications	27	27	27	27	27	31
AI private investment	40	40	40	40	40	31

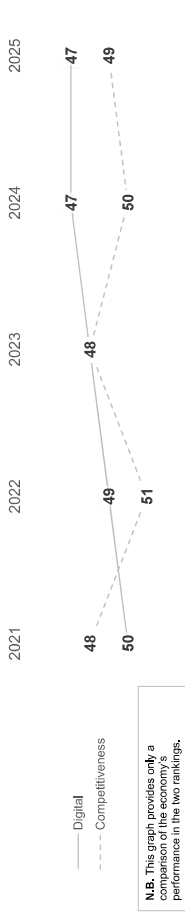
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025	Rank
Adaptive attitudes	42	46	48	44	39	39
Business agility	57	59	45	56	54	54
IT integration	50	42	42	48	49	49
Adaptive attitudes	46	46	46	46	46	53
E-Participation	42	42	42	42	42	41
Internet retailing	28	28	28	28	28	31
Tablet possession	37	37	37	37	37	53
Smartphone possession	52	52	52	52	52	54
Attitudes toward globalization	39	39	39	39	39	38
Flexibility and adaptability	50	50	50	50	50	38

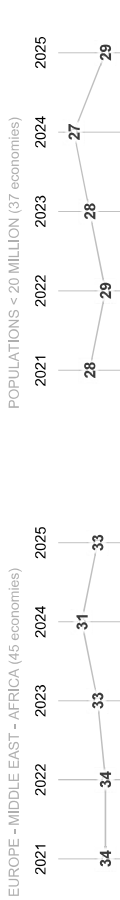
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS

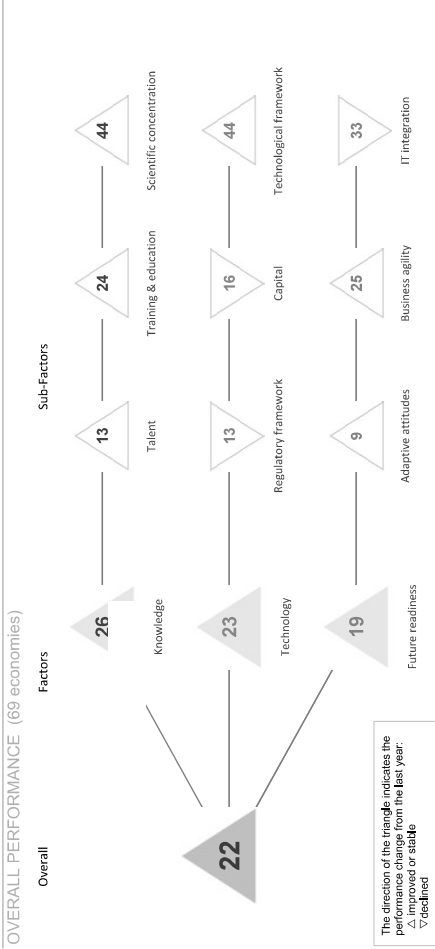


PEER GROUPS RANKINGS



SAUDI ARABIA

DIGITAL TRENDS - OVERALL



SAUDI ARABIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent					
Training & education	32	28	19	18	13
Scientific concentration	34	24	30	28	24
	64	58	55	46	44
Talent					
Educational assessment PISA - Math	51				
Employee training	13				
Total public expenditure on education	17				
Higher education achievement	31				
R&D productivity by publication	10				
Digital/Technological skills	10				
Pupil-teacher ratio (tertiary education)	46				
Graduates in Sciences	17				
High-tech patent grants	27				
Net flow of international students	35				
Foreign highly skilled personnel	06				
AI-related patent publications	30				
Women with degrees	34				
Roots in Education and R&D	53				
Female researchers	35				
Computer science education index	12				
Scientific and technical employment	18				
Scientific concentration					
Total expenditure on R&D (%)	51				
Total R&D personnel per capita	49				
R&D productivity by publication	10				
High-tech patent grants	27				
AI-related patent publications	30				
Roots in Education and R&D	53				
AI articles	20				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	30	25	14	12	13
Capital	15	22	09	15	16
Technological framework	35	34	36	51	44
Regulatory framework					
IT & media stock market capitalization	49				
Communications technology	17				
Mobile broadband subscribers	44				
Wireless broadband	20				
Internet users	01				
Internet bandwidth speed	50				
High-tech exports (%)	65				
Secure internet servers	59				
Development & application of tech.					
Country credit rating	25				
Venture capital	03				
Investment in Telecommunications	43				
Intellectual property rights	13				
AI policies passed into law	38				

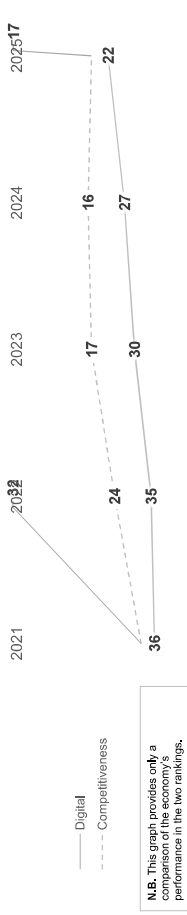
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	46	33	32	20	09
Business agility	35	32	25	30	25
IT integration	24	33	29	32	33
Adaptive attitudes					
E-Participation	06				
Opportunities and threats	13				
E-Government	06				
Internet retailing	46				
World robots distribution	50				
Public-private partnerships	03				
Tablet possession	08				
Agility of companies	11				
Cyber security	01				
Smartphone possession	05				
Use of big data and analytics	15				
Software piracy	38				
Attitudes toward globalization	15				
Government cyber security capacity	20				
Knowledge transfer	17				
Entrepreneurial fear of failure	47				
Flexibility and adaptability	07				
Privacy protection by law exists	68				

OVERALL & FACTORS - 5 years

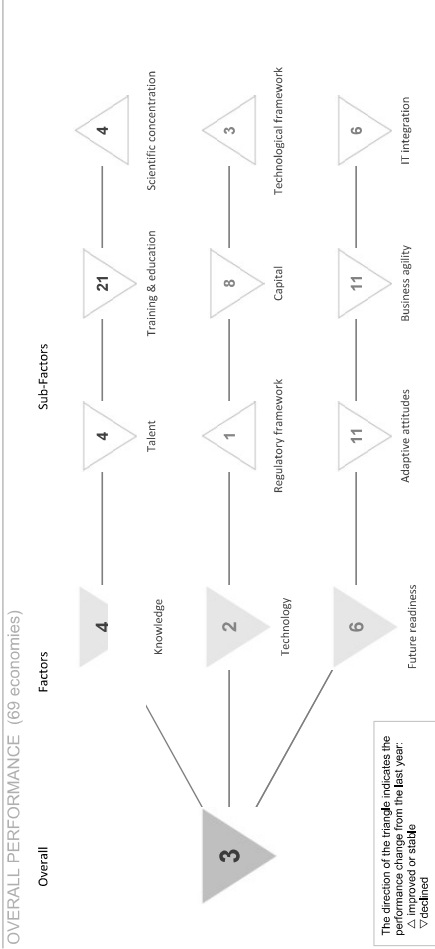


COMPETITIVENESS & DIGITAL RANKINGS



SINGAPORE

DIGITAL TRENDS - OVERALL



SINGAPORE

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent	Training & education	13	09	09	14	21
	Scientific concentration	11	11	11	09	04
Talent	Rank	02	03	04	01	04
	Employee training	19				
	International experience	13	► Total public expenditure on education	63		
	► Management of cities	01	Higher education achievement	02		
	Digital/Technological skills	15	Pupil-teacher ratio (tertiary education)	26	► High-tech patent grants	01
	Foreign highly skilled personnel	03	Graduates in Sciences	04	AI-related patent publications	11
	Net flow of international students	04	Women with degrees	42	Robots in Education and R&D	28
	► Female researchers	46	Computer science education index	39	AI articles	03
	Scientific and technical employment	31				
	Rank	02				

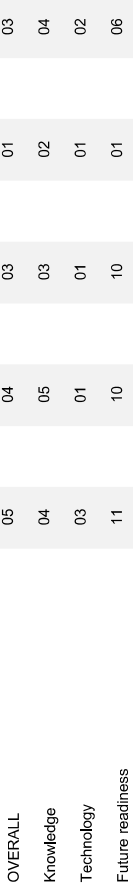
TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework	Regulatory framework	05	01	01	01	01
	Capital	14	11	15	04	08
	Technological framework	02	02	02	04	03
Regulatory framework	Rank	03				
	Starting a business	01	IT & media stock market capitalization	29		
	► Enforcing contracts	01	Funding for technological development	03		
	► Immigration laws	52	Banking and financial services	02		
	Development & application of tech.	05	► Country credit rating	01		
	Scientific research legislation	03	Venture capital	05		
	Intellectual property rights	07	► Investment in Telecommunications	61		
	AI policies passed into law	31	AI private investment	15		
	Rank	03				
	Technological framework	29				

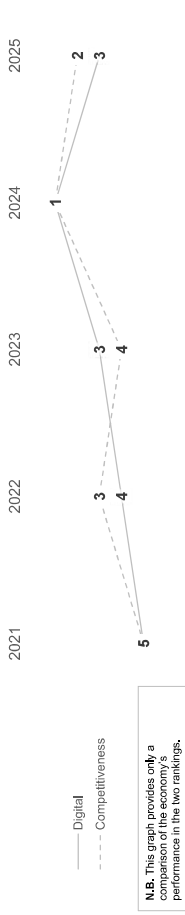
FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes	Adaptive attitudes	11	17	13	01	11
	Business agility	12	09	14	01	11
	IT integration	07	08	11	01	06
Adaptive attitudes	Rank	06				
	E-Participation	09	Opportunities and threats	09		
	Internet retailing	28	World robots distribution	13		
	Tablet possession	13	Agility of companies	09		
	Smartphone possession	03	Use of big data and analytics	30		
	Attitudes toward globalization	08	Knowledge transfer	11		
	Flexibility and adaptability	26	Entrepreneurial fear of failure	-		
	Rank	06				
	IT integration	09				
	E-Government	07				

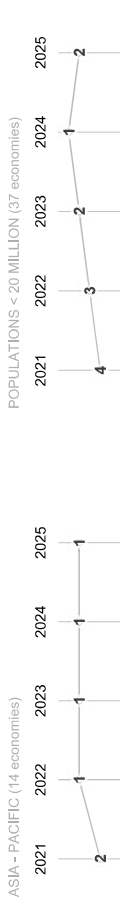
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS

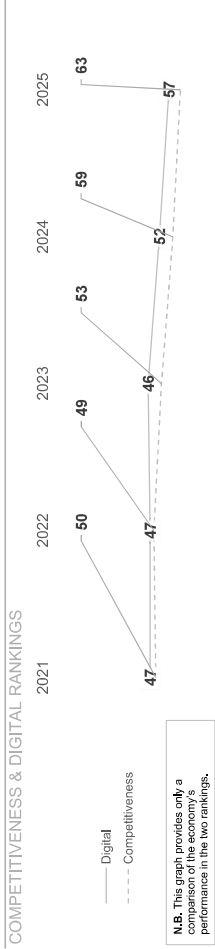
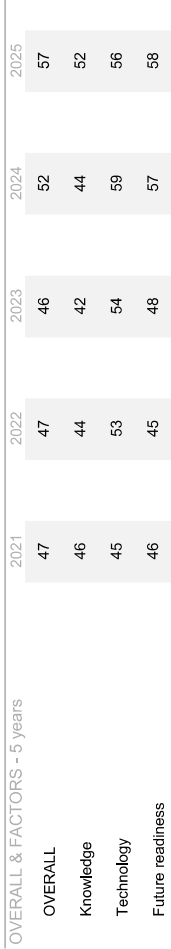
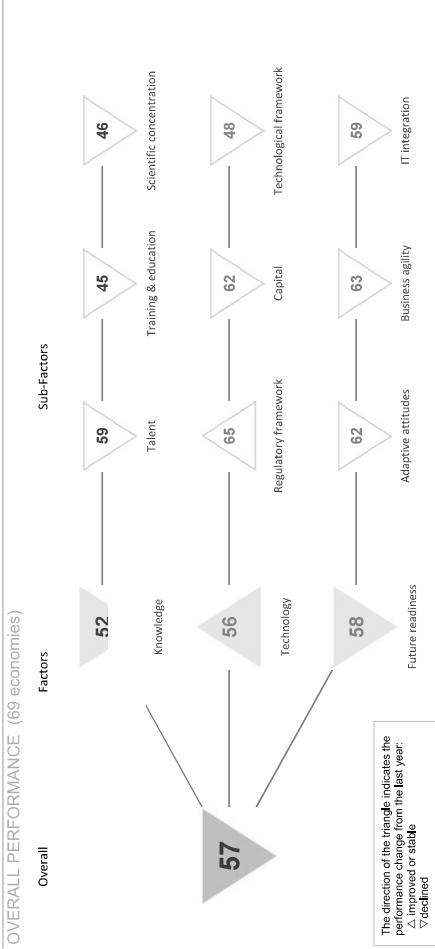


PEER GROUPS RANKINGS



SLOVAK REPUBLIC

DIGITAL TRENDS - OVERALL



SLOVAK REPUBLIC

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	52	44	48	52	59
Training & education	49	43	40	42	45
Scientific concentration	40	39	39	43	46

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	34	Employee training	63	Total expenditure on R&D (%)	38
International experience	55	Total public expenditure on education	25	Total R&D personnel per capita	36
Management of cities	49	Higher education achievement	42	R&D productivity by publication	48
Digital/Technological skills	37	► Pupil-teacher ratio (tertiary education)	16	High-tech patent grants	25
► Foreign highly skilled personnel	68	Graduates in Sciences	44	AI-related patent publications	52
Net flow of international students	58	Women with degrees	41	Robots in Education and R&D	33
Female researchers	24	Computer science education index	50	AI articles	37
Scientific and technical employment	46				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	60	58	55	65	65
Capital	42	58	58	61	62
Technological framework	39	40	42	45	48

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	51	IT & media stock market capitalization	58	Communications technology	31
Enforcing contracts	34	Funding for technological development	61	Mobile broadband subscribers	46
► Immigration laws	67	Banking and financial services	44	Wireless broadband	46
► Development & application of tech.	68	Country credit rating	33	Internet users	43
Scientific research legislation	64	Venture capital	51	Internet bandwidth speed	32
Intellectual property rights	64	Investment in Telecommunications	39	High-tech exports (%)	46
► AI policies passed into law	20	AI private investment	48	Secure internet servers	25

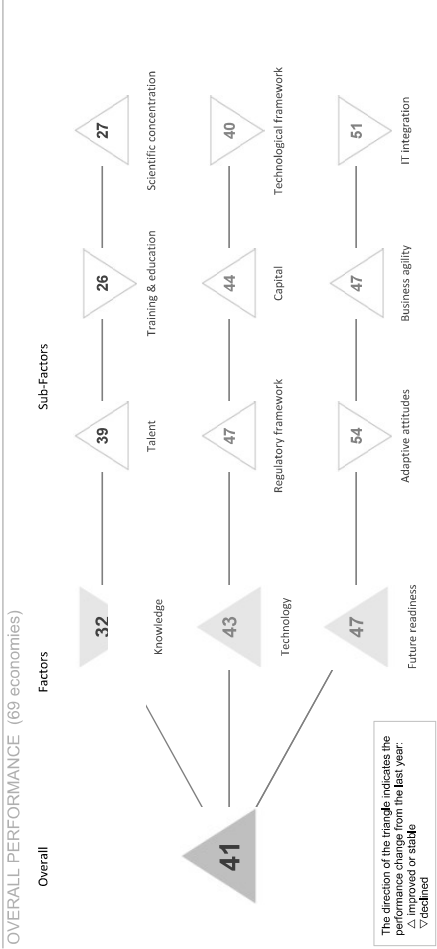
FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	49	50	52	58	62
Business agility	60	50	51	59	63
IT integration	40	39	36	45	59

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	43	Opportunities and threats	62	E-Government	52
Internet retailing	36	Work robots distribution	28	► Public-private partnerships	68
► Tablet possession	20	Agility of companies	55	Cyber security	67
Smartphone possession	26	Use of big data and analytics	58	Software piracy	25
Attitudes toward globalization	66	Knowledge transfer	66	Government cyber security capacity	62
► Flexibility and adaptability	69	► Entrepreneurial fear of failure	16	► Privacy protection by law exists	01

SLOVENIA

DIGITAL TRENDS - OVERALL



SLOVENIA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent						
Training & education	Rank	37	38	39	42	39
Scientific concentration	Rank	23	18	13	19	26
		31	28	29	27	27
Talent						
Educational assessment PISA - Math	Rank	19				
Employee training	Rank	37				
Total public expenditure on education	Rank	46				
Higher education achievement	Rank	37				
Pupil-teacher ratio (tertiary education)	Rank	34				
Graduates in Sciences	Rank	65				
Foreign highly skilled personnel	Rank	21				
Net flow of international students	Rank	36				
Female researchers	Rank	15				
Scientific and technical employment	Rank					
Total expenditure on R&D (%)	Rank	17				
Total R&D personnel per capita	Rank	17				
R&D productivity by publication	Rank	58				
High-tech patent grants	Rank	29				
AI-related patent publications	Rank	41				
Robots in Education and R&D	Rank	35				
AI articles	Rank	10				

TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework	Rank	45	43	48	55	47
Capital	Rank	39	38	38	49	44
Technological framework	Rank	33	35	41	37	40
Regulatory framework	Rank					
IT & media stock market capitalization	Rank	43				
Funding for technological development	Rank	45				
Banking and financial services	Rank	45				
Country credit rating	Rank	31				
Venture capital	Rank	52				
Investment in Telecommunications	Rank	13				
AI private investment	Rank	56				

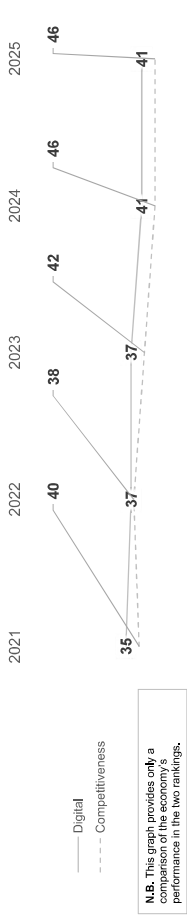
FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes	Rank	41	45	38	50	54
Business agility	Rank	40	33	39	48	47
IT integration	Rank	35	37	38	46	51
Adaptive attitudes	Rank					
E-Participation	Rank	32				
Opportunities and threats	Rank	29				
Workforce robots distribution	Rank	32				
Agility of companies	Rank	33				
Use of big data and analytics	Rank	45				
Knowledge transfer	Rank	56				
Entrepreneurial fear of failure	Rank	27				

OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS

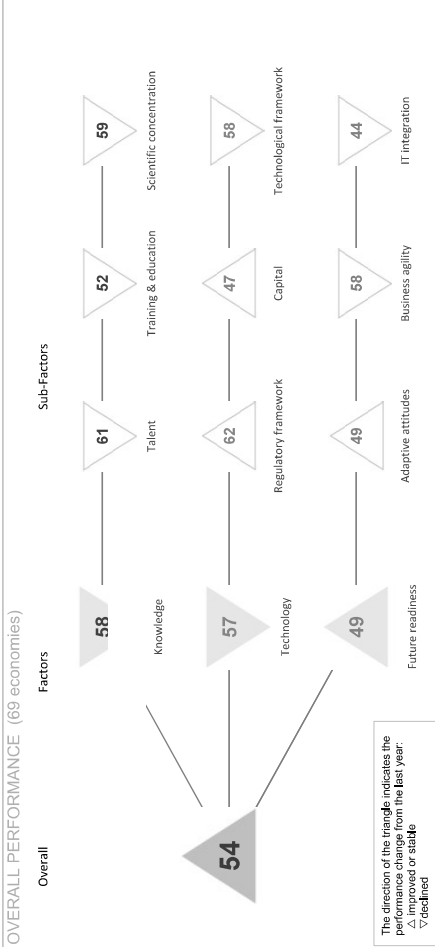


PEER GROUPS RANKINGS



SOUTH AFRICA

DIGITAL TRENDS - OVERALL



SOUTH AFRICA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	58	57	60	59	61
Training & education	62	50	49	46	52
Scientific concentration	53	53	53	55	59

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	-	Employee training	58	Total expenditure on R&D (%)	48
International experience	56	► Total public expenditure on education	02	Total R&D personnel per capita	54
► Management of cities	67	► Higher education achievement	62	R&D productivity by publication	21
► Digital/Technological skills	67	Pupil-teacher ratio (tertiary education)	40	High-tech patent grants	50
Foreign highly skilled personnel	49	Graduates in Sciences	55	AI-related patent publications	48
Net flow of international students	39	Women with degrees	57	Robots in Education and R&D	47
► Female researchers	14	Computer science education index	41	AI articles	52
Scientific and technical employment	-				

TECHNOLOGY

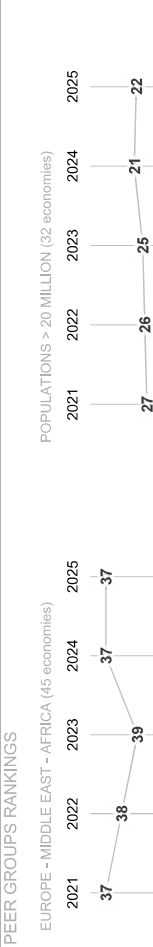
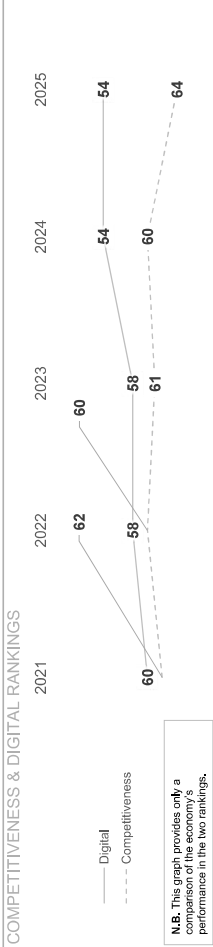
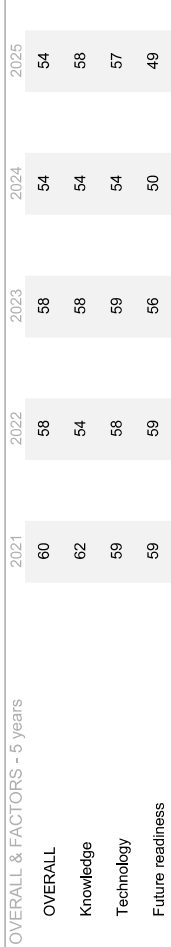
Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	59	53	56	62	62
Capital	36	51	45	47	47
Technological framework	61	60	61	55	58

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	62	► IT & media stock market capitalization	07	Communications technology	61
Enforcing contracts	54	Funding for technological development	59	Mobile broadband subscribers	50
► Immigration laws	66	Banking and financial services	56	Wireless broadband	39
Development & application of tech.	56	Country credit rating	58	Internet users	62
Scientific research legislation	41	Venture capital	61	Internet bandwidth speed	62
Intellectual property rights	46	► Investment in Telecommunications	06	High-tech exports (%)	57
AI policies passed into law	44	AI private investment	42	Secure internet servers	38

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	59	57	57	55	49
Business agility	59	57	54	52	58
IT integration	55	55	56	40	44

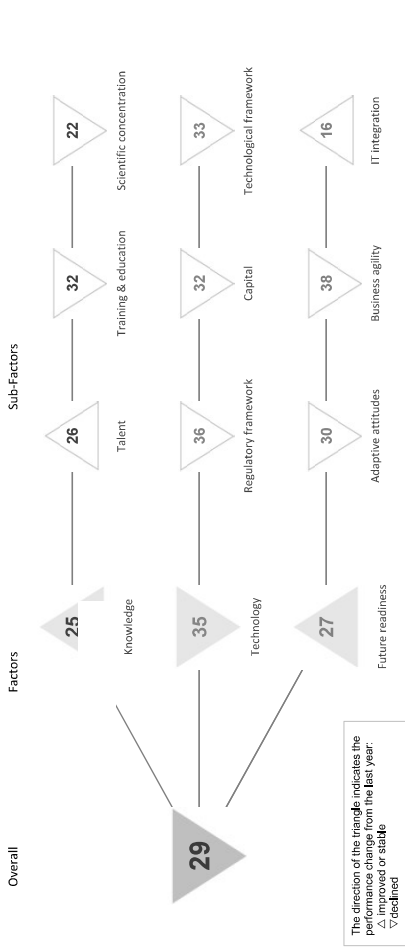
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	24	Opportunities and threats	50	E-Government	35
Internet retailing	57	Work robots distribution	33	► Public-private partnerships	63
Tablet possession	42	Agility of companies	56	Cyber security	57
Smartphone possession	35	Use of big data and analytics	34	► Software piracy	19
Attitudes toward globalization	49	Knowledge transfer	48	Government cyber security capacity	52
Flexibility and adaptability	58	Entrepreneurial fear of failure	48	Privacy protection by law exists	27



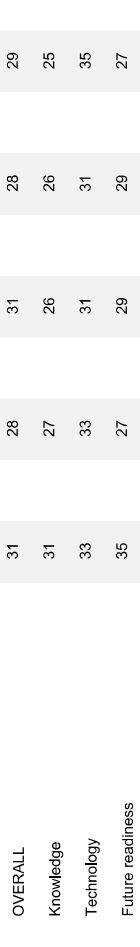
SPAIN

DIGITAL TRENDS - OVERALL

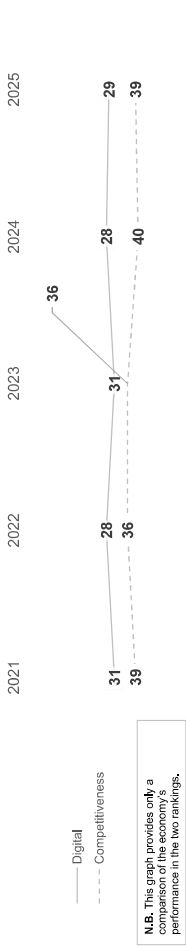
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



SPAIN

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors		2021	2022	2023	2024	2025
Talent	Rank	31	31	27	34	26
Training & education	Rank	40	35	35	31	32
Scientific concentration	Rank	23	20	19	21	22
Talent		Rank	Rank			
Educational assessment PISA - Math	Rank	28	Rank			
Employee training	Rank	45	Rank			
Total public expenditure on education	Rank	44	Rank			
Higher education achievement	Rank	20	Rank			
Pupil-teacher ratio (tertiary education)	Rank	20	Rank			
Graduates in Sciences	Rank	41	Rank			
Women with degrees	Rank	29	Rank			
Computer science education index	Rank	08	Rank			
Female researchers	Rank	21	Rank			
Scientific and technical employment	Rank	23	Rank			
Talent		Rank	Rank			
International experience	Rank	32	Rank			
Management of cities	Rank	26	Rank			
Digital/Technological skills	Rank	39	Rank			
Foreign highly skilled personnel	Rank	28	Rank			
Net flow of international students	Rank	33	Rank			
Female researchers	Rank	21	Rank			
Scientific and technical employment	Rank	23	Rank			

TECHNOLOGY

Sub-Factors		2021	2022	2023	2024	2025
Regulatory framework	Rank	37	35	38	34	36
Capital	Rank	34	31	30	30	32
Technological framework	Rank	24	28	22	26	33
Regulatory framework		Rank	Rank			
Starting a business	Rank	41	Rank			
IT & media stock market capitalization	Rank	20	Rank			
Funding for technological development	Rank	43	Rank			
Banking and financial services	Rank	32	Rank			
Country credit rating	Rank	39	Rank			
Venture capital	Rank	32	Rank			
Investment in Telecommunications	Rank	27	Rank			
High-tech exports (%)	Rank	48	Rank			
Secure internet servers	Rank	33	Rank			
Regulatory framework		Rank	Rank			
Communications technology	Rank	22	Rank			
Mobile broadband subscribers	Rank	42	Rank			
Wireless broadband	Rank	37	Rank			
Internet users	Rank	20	Rank			
Internet bandwidth speed	Rank	09	Rank			
High-tech exports (%)	Rank	48	Rank			
Secure internet servers	Rank	33	Rank			

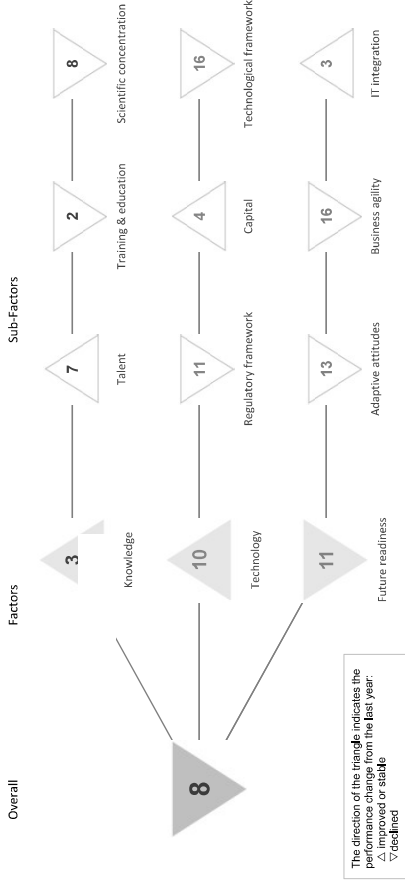
FUTURE READINESS

Sub-Factors		2021	2022	2023	2024	2025
Adaptive attitudes	Rank	33	25	21	26	30
Business agility	Rank	49	44	43	33	38
IT integration	Rank	29	20	19	22	16
Adaptive attitudes		Rank	Rank			
E-Participation	Rank	28	Rank			
Opportunities and threats	Rank	22	Rank			
Public-private partnerships	Rank	22	Rank			
Workforce distribution	Rank	10	Rank			
Agility of companies	Rank	23	Rank			
Smartphone possession	Rank	17	Rank			
Use of big data and analytics	Rank	52	Rank			
Government cyber security capacity	Rank	10	Rank			
Privacy protection by law exists	Rank	15	Rank			

SWEDEN

DIGITAL TRENDS - OVERALL

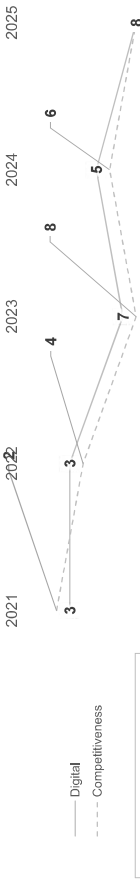
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years

	2021	2022	2023	2024	2025
OVERALL	03	03	07	05	08
Knowledge	02	02	05	03	03
Technology	08	05	11	10	10
Future readiness	06	04	08	04	11

COMPETITIVENESS & DIGITAL RANKINGS



N.B. This graph provides only a partial view of the performance in the two rankings.

PEER GROUPS RANKINGS



SWEDEN

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	07	06	13	07	07
Training & education	02	04	04	01	02
Scientific concentration	04	02	04	03	08

Rank	Rank	Rank	Rank	Rank
23	08	04	03	03
08	18	03	03	11
18	09	17	19	44
09	17	15	19	09
17	26	10	15	10
26	38	24	09	22
38	01			09

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	03	02	07	10	11
Capital	05	07	08	08	04
Technological framework	13	09	17	14	16

Rank	Rank	Rank	Rank	Rank
22	30	19	26	15
30	46	04	17	32
46	14	01	19	19
14	08	06	17	17
08	11	53	27	27
11	12	04	19	19

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	05	07	10	08	13
Business agility	13	10	17	09	16
IT integration	05	04	08	05	03

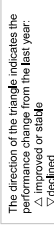
Rank	Rank	Rank	Rank	Rank
30	15	02	16	27
30	02	44	14	19

DIGITAL TRENDS - OVERALL

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

▷ Overall Top Weaknesses

Overall	Factors
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Female researchers	30
Scientific and technical employment	02

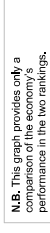
TECHNOLOGY

Regulatory framework	Rank
Starting a business	36
Enforcing contracts	40
Immigration laws	12
Development & application of tech.	04
Scientific research legislation	01
Intellectual property rights	01
AI policies passed into law	39

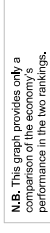
FUTURE READINESS

Adaptive attitudes	Rank
E-Participation	27
Internet retailing	04
Tablet possession	07
Smartphone possession	17
Attitudes toward globalization	18
Flexibility and adaptability	23

EUROPE - MIDDLE EAST - AFRICA (45 economies)



COMPETITIVENESS & DIGITAL RANKINGS

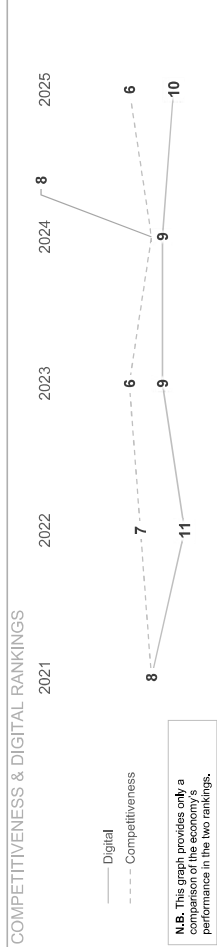
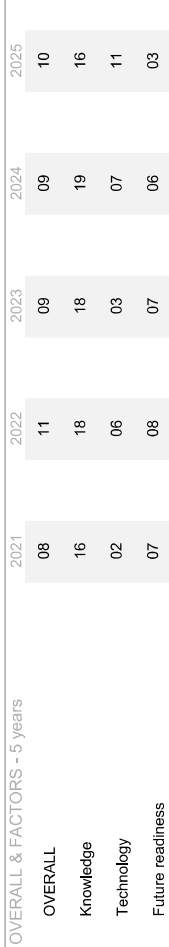
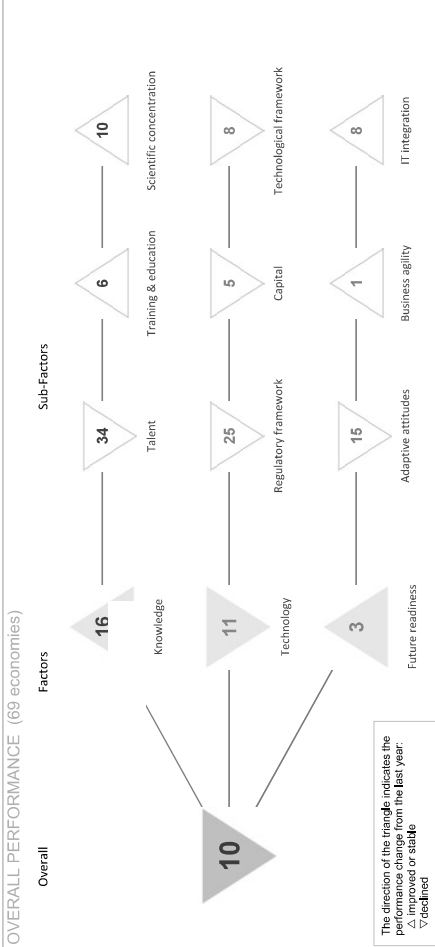


OVERALL I

Knowledge
Technology
Future read

TAIWAN (CHINESE TAIPEI)

DIGITAL TRENDS - OVERALL



TAIWAN (CHINESE TAIPEI)

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths

► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	17	21	22	20	34
Training & education	12	11	10	07	06
Scientific concentration	19	21	21	22	10
Talent	Rank 03	Rank 06	Rank 06	Rank 06	Rank 02
Educational assessment PISA - Math	38	38	38	38	38
Employee training	38	38	38	38	38
International experience	10	10	10	10	10
Management of cities	10	10	10	10	10
Digital/Technological skills	45	45	45	45	45
Pupil-teacher ratio (tertiary education)	42	42	42	42	42
Foreign highly skilled personnel	16	16	16	16	16
Graduates in Sciences	56	56	56	56	56
Women with degrees	56	56	56	56	56
Net flow of international students	56	56	56	56	56
Female researchers	56	56	56	56	56
Computer science education index	45	45	45	45	45
Scientific and technical employment	45	45	45	45	45
Scientific concentration	Rank 02	Rank 02	Rank 02	Rank 02	Rank 02
Total expenditure on R&D (%)	53	53	53	53	53
Total R&D personnel per capita	38	38	38	38	38
R&D productivity by publication	15	15	15	15	15
High-tech patent grants	08	08	08	08	08
AI-related patent publications	20	20	20	20	20
Robots in Education and R&D	29	29	29	29	29
AI articles	29	29	29	29	29

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	16	14	16	24	25
Capital	02	09	05	03	05
Technological framework	04	04	05	03	08
Regulatory framework	Rank 10	Rank 10	Rank 01	Rank 01	Rank 20
Starting a business	11	11	11	11	11
Funding for technological development	39	39	39	39	39
Banking and financial services	19	19	19	19	19
Country credit rating	11	11	11	11	11
Venture capital	36	36	36	36	36
Investment in Telecommunications	32	32	32	32	32
AI private investment	32	32	32	32	32
Technological framework	Rank 20	Rank 20	Rank 20	Rank 20	Rank 20
Communications technology	21	21	21	21	21
Mobile broadband subscribers	06	06	06	06	06
Wireless broadband	34	34	34	34	34
Internet users	14	14	14	14	14
Internet bandwidth speed	04	04	04	04	04
High-tech exports (%)	36	36	36	36	36
Secure internet servers	36	36	36	36	36

FUTURE READINESS

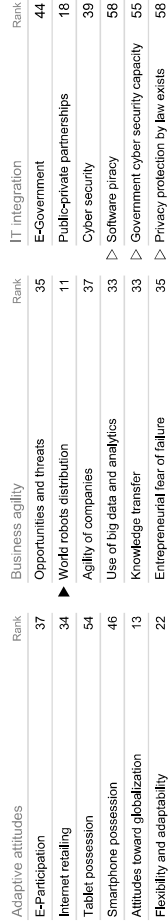
Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	13	13	17	13	15
Business agility	02	05	01	04	01
IT integration	15	13	14	14	08
Adaptive attitudes	Rank -	Rank -	Rank 03	Rank 03	Rank -
E-Participation	26	26	26	26	26
Opportunities and threats	07	07	07	07	07
Public-private partnerships	11	11	11	11	11
Internet retailing	29	29	29	29	29
Workforce robots distribution	02	02	02	02	02
Tablet possession	14	14	14	14	14
Use of big data and analytics	03	03	03	03	03
Smartphone possession	06	06	06	06	06
Knowledge transfer	14	14	14	14	14
Entrepreneurial fear of failure	14	14	14	14	14
Government cyber security capacity	18	18	18	18	18
Privacy protection by law exists	25	25	25	25	25

THAILAND

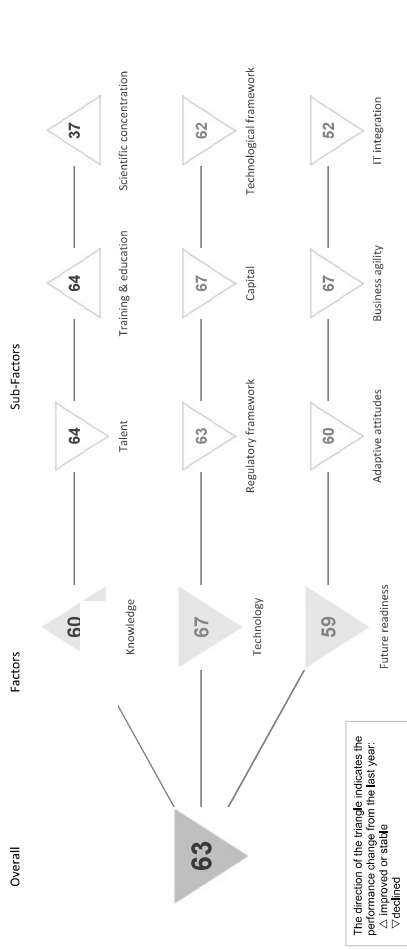
FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	29	34	31	36	37
Capital	19	20	12	13	21
Technological framework	22	18	15	21	23

Regulatory framework		Rank	Capital	Rank	Technological framework	
Starting a business	26	► IT & media stock market capitalization	09	16	Communications technology	
	28	Funding for technical development	20	24	Mobile broadband subscribers	
	28	Enforcing contracts	25	27	Wireless broadband	
	41	Immigration laws	25	38	Internet users	
Development & application of tech.	41	Country credit rating	43	13	Internet bandwidth speed	
	42	Scientific research legislation	34	15	High-tech exports (%)	
	41	Intellectual property rights	08	48	Secure internet servers	
	40	AI policies passed into law	53	18		



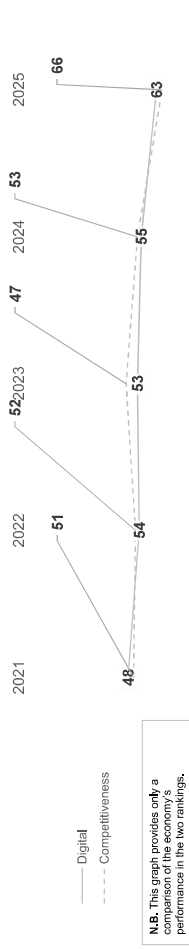
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



KNOWLEDGE

Sub-Factors					
Talent	49	47	51	51	64
Training & education	63	63	63	64	64
Scientific concentration	41	41	41	45	37
Talent					
Educational assessment PISA - Math	37	37	37	37	30
Employee training	68	68	68	68	41
Total public expenditure on education	42	42	42	42	41
Higher education achievement	36	36	36	36	13
R&D productivity by publication	61	61	61	61	53
High-tech patent grants	53	53	53	53	24
AI-related patent publications	30	30	30	30	69
Robots in Education and R&D	69	69	69	69	30
AI articles	30	30	30	30	69

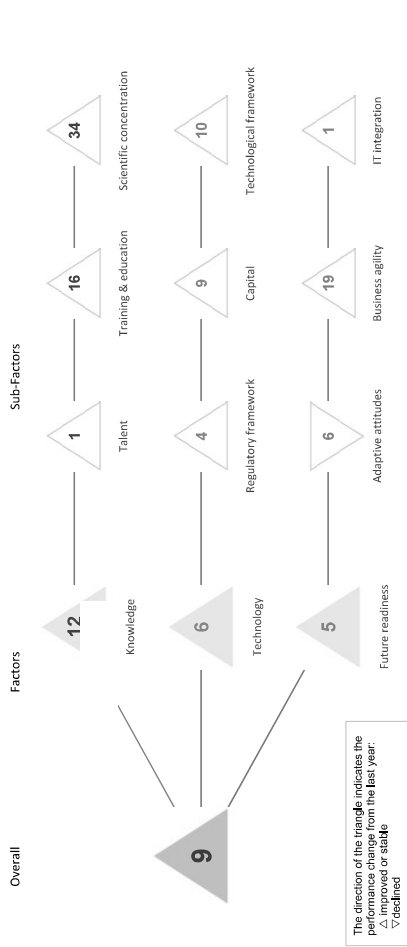
TECHNOLOGY

Sub-Factors					
Regulatory framework	41	44	40	37	63
Capital	60	60	60	63	67
Technological framework	48	52	53	56	62
Regulatory framework					
IT & media stock market capitalization	50	50	50	50	58
Funding for technological development	66	66	66	66	67
Banking and financial services	67	67	67	67	58
Country credit rating	62	62	62	62	49
Internet users	57	57	57	57	57
Internet bandwidth speed	58	58	58	58	58
High-tech exports (%)	37	37	37	37	41
Secure internet servers	17	17	17	17	41

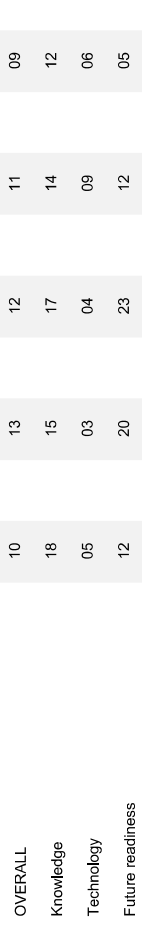
FUTURE READINESS

Sub-Factors					
Adaptive attitudes	34	42	40	46	60
Business agility	29	42	35	46	67
IT integration	47	54	55	49	52
Adaptive attitudes					
E-Participation	19	19	19	19	25
Opportunities and threats	63	63	63	63	53
Workforce distribution	17	17	17	17	62
Agility of companies	67	67	67	67	49
Use of big data and analytics	68	68	68	68	40
Knowledge transfer	68	68	68	68	42
Entrepreneurial fear of failure	09	09	09	09	42

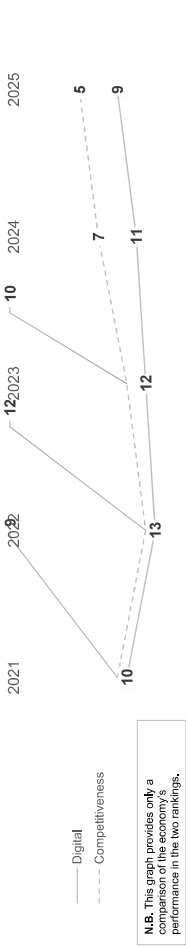
OVERALL PERFORMANCE (69 economies)



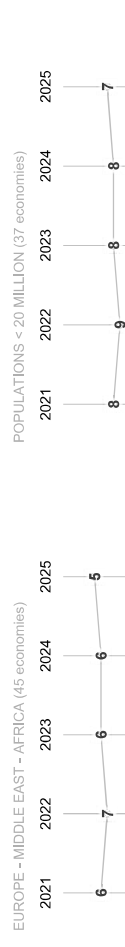
OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	01	01	01	02	01
Training & education	25	22	25	29	16
Scientific concentration	52	46	51	41	34
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	38	Employee training	26	Total expenditure on R&D (%)	34
International experience	01	Total public expenditure on education	51	Total R&D personnel per capita	39
Management of cities	04	Higher education achievement	18	R&D productivity by publication	43
Digital/Technological skills	01	Pupil-teacher ratio (tertiary education)	42	High-tech patent grants	22
Foreign highly skilled personnel	02	Graduates in Sciences	03	AI-related patent publications	32
Net flow of international students	01	Women with degrees	03	Robots in Education and R&D	42
Female researchers	40	Computer science education index	23	AI articles	18
Scientific and technical employment	35				

TECHNOLOGY

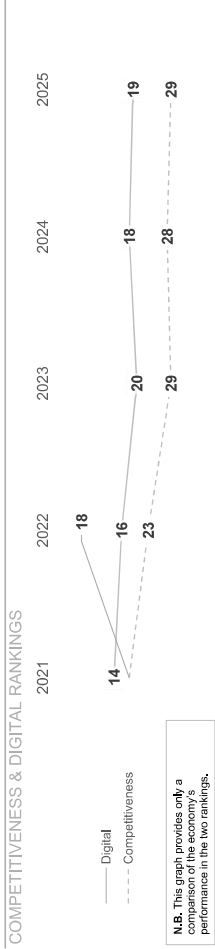
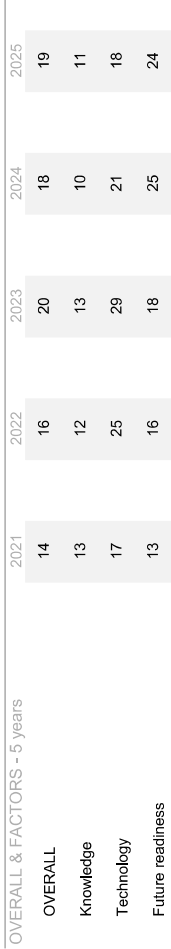
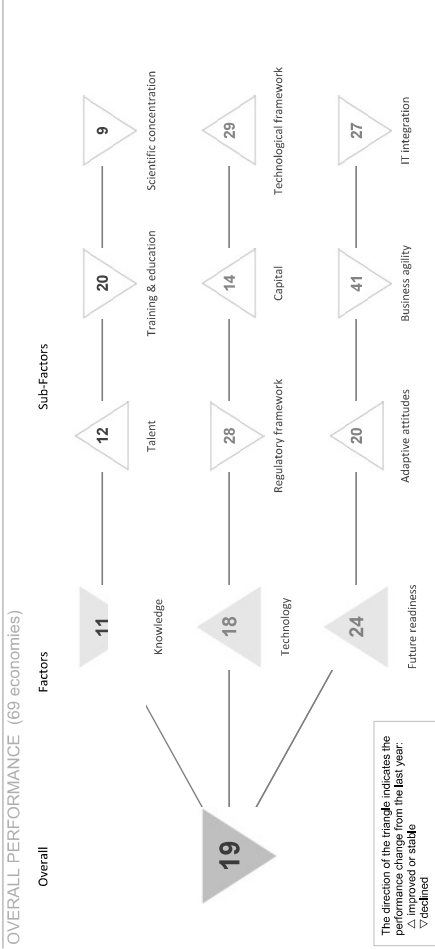
Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	02	03	08	14	04
Capital	11	10	17	10	09
Technological framework	05	03	03	11	10
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	08	IT & media stock market capitalization	35	Communications technology	09
Enforcing contracts	09	Funding for technological development	05	Mobile broadband subscribers	49
Immigration laws	02	Banking and financial services	11	Wireless broadband	01
Development & application of tech.	03	Country credit rating	20	Internet users	01
Scientific research legislation	16	Venture capital	01	Internet bandwidth speed	18
Intellectual property rights	24	Investment in Telecommunications	52	High-tech exports (%)	47
AI policies passed into law	57	AI private investment	08	Secure internet servers	51

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	15	16	14	05	06
Business agility	10	26	31	21	19
IT integration	10	24	26	13	01
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	32	Opportunities and threats	11	E-Government	11
Internet retailing	27	World robots distribution	49	Public-private partnerships	01
Tablet possession	01	Agility of companies	10	Cyber security	06
Smartphone possession	14	Use of big data and analytics	27	Software piracy	19
Attitudes toward globalization	12	Knowledge transfer	13	Government cyber security capacity	14
Flexibility and adaptability	08	Entrepreneurial fear of failure	36	Privacy protection by law exists	40

UNITED KINGDOM

DIGITAL TRENDS - OVERALL



UNITED KINGDOM

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	11	15	18	17	12
Training & education	26	19	27	16	20
Scientific concentration	07	06	06	05	09

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	12	Employee training	48	Total expenditure on R&D (%)	12
International experience	34	Total public expenditure on education	31	Total R&D personnel per capita	26
Management of cities	35	Higher education achievement	11	R&D productivity by publication	12
Digital/Technological skills	33	Pupil-teacher ratio (tertiary education)	29	High-tech patent grants	14
Foreign highly skilled personnel	19	Graduates in Sciences	34	AI-related patent publications	06
Net flow of international students	03	Women with degrees	14	Robots in Education and R&D	08
Female researchers	25	► Computer science education index	02	AI articles	19
► Scientific and technical employment	04				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	20	24	30	17	28
Capital	18	28	31	27	14
Technological framework	19	29	32	29	29

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	09	IT & media stock market capitalization	34	Communications technology	47
Enforcing contracts	26	Funding for technological development	17	Mobile broadband subscribers	25
Immigration laws	44	Banking and financial services	21	Wireless broadband	25
Development & application of tech.	30	Country credit rating	21	Internet users	16
Scientific research legislation	33	Venture capital	21	Internet bandwidth speed	36
Intellectual property rights	36	► Investment in Telecommunications	56	High-tech exports (%)	13
AI policies passed into law	05	AI private investment	03	Secure internet servers	22

FUTURE READINESS

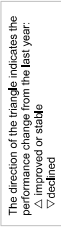
Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	09	10	07	22	20
Business agility	23	28	36	31	41
IT integration	09	16	20	21	27

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
► E-Participation	03	Opportunities and threats	48	E-Government	07
► Internet retailing	03	Work robots distribution	15	Public-private partnerships	36
Tablet possession	18	Agility of companies	43	Cyber security	38
► Smartphone possession	50	Use of big data and analytics	28	Software piracy	10
► Attitudes toward globalization	53	Knowledge transfer	20	Government cyber security capacity	31
► Flexibility and adaptability	55	Entrepreneurial fear of failure	46	► Privacy protection by law exists	51

DIGITAL TRENDS - OVERALL

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

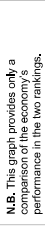
Overall	Factors
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OVERALL

Future readiness

	2021	2022	2023	2024	2025
1. Revenue	100	100	100	100	100
2. Operating Expenses	70	70	70	70	70
3. Operating Income	30	30	30	30	30
4. Non-Operating Income	0	0	0	0	0
5. Income Before Taxes	30	30	30	30	30
6. Taxes	10	10	10	10	10
7. Net Income	20	20	20	20	20
8. Dividends	10	10	10	10	10
9. Retained Earnings	10	10	10	10	10
10. Capital Gains	0	0	0	0	0
11. Total Return	30	30	30	30	30



THE AMERICAS (10 economies)

Sub-Factors

Scientific ConcFemale researchers

Sub-Factors

Technological II

AI policies passed into law 01

Sub-Factors

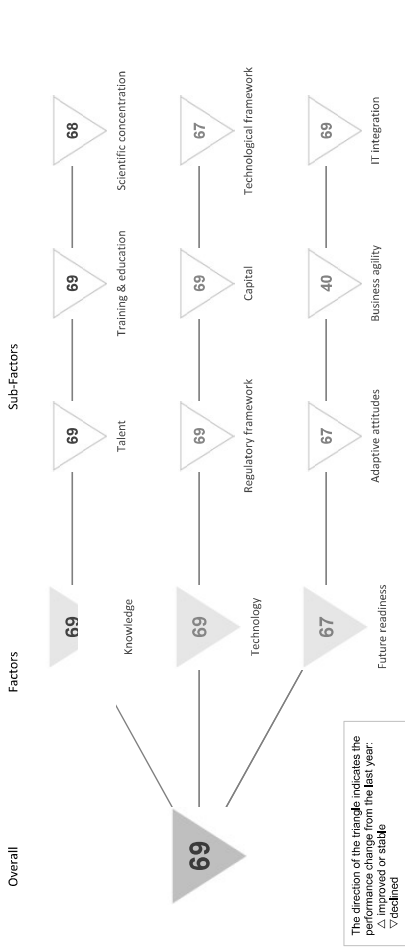
II Integration

Flexibility and adaptability 44

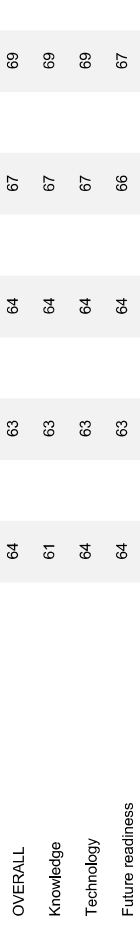
VENEZUELA

DIGITAL TRENDS - OVERALL

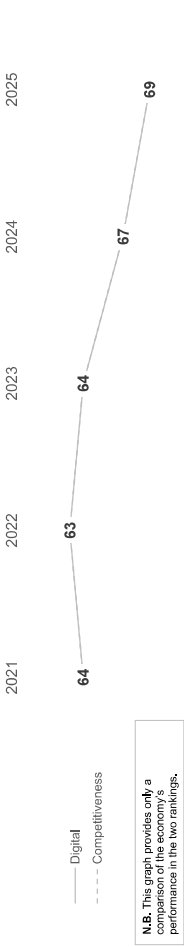
OVERALL PERFORMANCE (69 economies)



OVERALL & FACTORS - 5 years



COMPETITIVENESS & DIGITAL RANKINGS



PEER GROUPS RANKINGS



VENEZUELA

FACTORS BREAKDOWN - STRENGTHS AND WEAKNESSES

► Overall Top Strengths ► Overall Top Weaknesses

KNOWLEDGE

Sub-Factors	2021	2022	2023	2024	2025
Talent	64	63	62	67	69
Training & education	52	60	64	67	69
Scientific concentration	49	47	45	56	68
Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	56	Employee training	62	Total expenditure on R&D (%)	-
International experience	68	Total public expenditure on education	67	Total R&D personnel per capita	-
Management of cities	69	Higher education achievement	-	R&D productivity by publication	-
Digital/Technological skills	69	Pupil-teacher ratio (tertiary education)	-	High-tech patent grants	60
Foreign highly skilled personnel	69	Graduates in Sciences	-	AI-related patent publications	52
Net flow of international students	-	Women with degrees	-	Robotics in Education and R&D	53
Female researchers	07	Computer science education index	60	AI articles	66
Scientific and technical employment	-				

TECHNOLOGY

Sub-Factors	2021	2022	2023	2024	2025
Regulatory framework	64	63	64	67	69
Capital	64	63	64	67	69
Technological framework	63	63	64	66	67
Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	67	IT & media stock market capitalization	-	Communications technology	69
Enforcing contracts	65	► Funding for technological development	69	Mobile broadband subscribers	67
Immigration laws	49	► Banking and financial services	69	► Wireless broadband	69
Development & application of tech.	67	Country credit rating	68	Internet users	-
Scientific research legislation	69	Venture capital	69	Internet bandwidth speed	61
Intellectual property rights	69	Investment in Telecommunications	67	High-tech exports (%)	-
AI policies passed into law	60	AI private investment	-	Secure internet servers	66

FUTURE READINESS

Sub-Factors	2021	2022	2023	2024	2025
Adaptive attitudes	64	63	64	65	67
Business agility	52	55	44	35	40
IT integration	64	63	64	67	69
Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	66	► Opportunities and threats	15	E-Government	65
Internet retailing	-	Work robots distribution	56	Public-private partnerships	60
Tablet possession	44	Agility of companies	50	Cyber security	68
Smartphone possession	63	Use of big data and analytics	44	Software piracy	66
Attitudes toward globalization	43	Knowledge transfer	62	Government cyber security capacity	47
► Flexibility and adaptability	15	► Entrepreneurial fear of failure	05	Privacy protection by law exists	67

Appendices

Notes and Sources by Criteria

The source of the survey criteria is:
IMD World Competitiveness Center's Executive Opinion Survey 2025
which was conducted from March-May 2025, with a total number
of 6,162 responses used in the construction of the ranking.

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 (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 and national sources.
[B]	The criteria is a background criteria. They are not taken into consideration when constructing the rankings and provided for information only.

Background	
0.0.1 [B]	Exchange rate IMF International Financial Statistics IMF World Economic Outlook April 2025 Period average.
0.0.2 [B]	Population-market size IMF World Economic Outlook April 2025 National sources Mid-year estimates. Brazil, Bulgaria, Saudi Arabia: break in series in 2023, Croatia: new census in 2011 with a new methodology. India: break in series in 2011. Iceland, Romania as of January 1, Jordan: series have been revised according to the the new Population and Housing Census published in 2016. End of year population for 2019 and 2020. Lithuania: break in series 2011-census revised population figure downwards by 10% (emigration to EU over past decade), Philippines: Projected population (medium assumption) excluding for 2015, which is based on the 2015 Census. Portugal: methodological change in 2011, Russia: including Crimea as of 2015, UAE: re-estimation of the national population was made by the National Bureau of Statistics in 2010 (consequent increase as of 2008).
0.0.3 [B]	GDP per capita OECD Annual GDP and components National sources Provisional data or estimates for most recent year. Malaysia: Data for 2023 is sum of 4 quarters. Taiwan (Chinese Taipei): Data 2021 and 2022 are revised according to the annual revisions released by DGBAS in November 2023. 2023 is the latest preliminary estimate in February 2024.

Notes and Sources by Criteria	
Knowledge	Training & education
Talent	
1.1.1	Educational assessment PISA - Math PISA (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. PISA selects a sample of students that represents the full population of 15-year-old students in each participating country or education system, in both public and private schools. 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. Hong Kong SAR, Netherlands, Portugal and United States: Data did not meet the PISA technical standards but were accepted as largely comparable. China: limited regions (B-S-J-Z); the municipalities of Beijing and Shanghai and the provinces of Jiangsu and Zhejiang participated.
1.1.6	Net flow of international students UNESCO National sources 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.
1.1.7	Female researchers UNESCO OECD Main Science and Technology Indicators, OECD Science, Technology and R&D Statistics (database) 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)
1.1.8	Scientific and technical employment Eurostat OECD "I Labour Force Statistics: Employment by activities and status" OECD Employment and Labour Market Statistics ILOSTAT National sources 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). Philippines: 2020 data are preliminary figures for October 2020.
1.2.2	Total public expenditure on education IMF Government Finance Statistics Eurostat UNESCO National sources Total general (local, regional and central) government expenditure in educational institutions (current and capital). It excludes transfers to private entities such as subsidies to households and students, but includes expenditure funded by transfers from international sources to government. It includes pre-primary, primary, secondary all levels and tertiary public institutions. Chile and Jordan: Budgetary central government. Philippines: Total disbursements to the Department of Education and State Colleges and Universities.
1.2.3	Higher education achievement OECD Education at a Glance 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. Hong Kong SAR: Figures starting from 2012 exclude post-secondary diploma or certificate and exclude foreign domestic helpers. Kazakhstan: The data were reviewed taking into account the inclusion of graduates in technical and vocational education organizations (MCKO-5). New-Zealand and Slovenia: break in series. Peru: Tertiary education type A refers to University tertiary level and tertiary education type B refers to Non-university tertiary level; for 25 years and more. Singapore: proportion of resident non-students aged 25-34 years with polytechnic, professional qualification or other diploma, or university qualification. Japan: Data for tertiary education include upper secondary or post-secondary non-tertiary programmes (less than 5% of adults are in this group).
1.2.4	Pupil-teacher ratio (tertiary education) UNESCO 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. Czech Republic, France, Ireland and Poland: based on full-time equivalents. Philippines: Academic Year 2017-2018 data. Data includes students and faculty from both public and private tertiary educational institutions.

Notes and Sources by Criteria

1.2.5	Graduates in Sciences OECD Education at a Glance UNESCO Share of graduates in Natural Sciences; Mathematics and Statistics; Information and Communication technologies; Engineering, manufacturing and construction. In tertiary education (ISCED2011 levels 5 to 8), both sexes (%). Japan: Data on information and communication technologies are included in other fields. Jordan: 2020 data used in 2019, Philippines: includes Medical and Allied Disciplines Graduates.	
1.2.6	Women with degrees OECD Education at a Glance National sources Educational attainment in tertiary education of 25-64 year-old females expressed as a percentage of the female population 25-64. In most countries data refer to ISCED 2011 (codes 5/6/7/8). Japan: includes data from another category. Kazakhstan: Share of women with tertiary level degree (age 25-44).	
1.2.7	Computer science education index World University Ranking, Times Higher Education IMD WCC developed index calculated from the Times Higher Education ranking of the top 1'000 university computer science courses, measuring the quantity and quality of the universities in each economy. 33% weighting is the number of universities in THES ranking for each country, 33% weighting is the total score, 33% weighting is the total score per capita.	
Scientific concentration		
1.3.1	Total expenditure on R&D (%) OECD Main Science and Technology Indicators UNESCO 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 UNESCO 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 (Chinese Taipei): break in series. Mongolia: Total number of employees in science sector. United Kingdom: underestimated or based on underestimated data. Jordan, Philippines: based on headcount, not FTE.	
1.3.3	R&D productivity by publication NSF Science & Engineering Indicators 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.	
1.3.4	High-tech patent grants WIPO Statistics Database TIPO for Taiwan (Chinese Taipei) 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 (Chinese Taipei): data compiled by TIPO using data supplied by international patent offices (USPTO, JPO, EPO, KIPO, SIPO).	
1.3.5	AI-related patent publications WIPO Statistics Database AI-related patent publications. (Direct and PCT national phase entries) by applicant's origin. Three year average to reduce volatility. Country of origin refers to the country of residency of the first-named applicant in the application.	
1.3.6	Robots in Education and R&D World Robotics International Federation of Robotics (IFR) Industrial robot as defined by ISO 8373:2012: an automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications. The primary source is data on robot installations by country, industry and application that nearly all industrial robot suppliers worldwide report to the IFR Statistical Department directly. Several national robot associations collect data on their national robot markets and provide their results as secondary data to the IFR. This data is used to validate and complete the IFR primary data. IFR Statistical Departments estimates the operational stock assuming an average service life of 12 years with an immediate withdrawal from service afterwards.	
1.3.7	AI articles Scopus Annual count of the number of articles in Scopus using the keyword artificial intelligence, by author's institution, per capita.	

Notes and Sources by Criteria	
Technology	
Regulatory framework	
2.1.1	Starting a business Doing Business 2020 -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 2020 -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.
2.1.7	AI policies passed into law Digital Policy Alert Cumulative count of AI related bills passed into law.
Capital	
2.2.1	IT & media stock market capitalization Refinitiv -used to be Thomson Reuters - Thomson One banker Datastream Telecom, Media and IT (TMT) Market Value in national currency. Calculated as a percentage of Datastream Total Market Value in national currency. Figures for close-of-business on the 29th March each year.
2.2.4	Country credit rating Fitch, Moody’s and S&P IMD WCC created index of the three country credit ratings Fitch, Moody’s and S&P. Each rating, including the outlook, is converted to a numerical score from 20-0 and totalled for each country.
2.2.6	Investment in Telecommunications Passport, Source: © Euromonitor International 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.
2.2.7	AI private investment Quid via Stanford AI Index Report Annual private investment in artificial intelligence. Includes companies that received more than \$1.5 million in investment. This data is expressed in US dollars.
Technological framework	
2.3.2	Mobile broadband subscribers Fitch Solutions-used to be Business Monitor International Total active mobile 5G subscriptions, excluding broadband connections on dedicated data SIM cards or USB dongles. Data given as a percentage of the total mobile market.

Notes and Sources by Criteria

2.3.3	Wireless broadband Passport, Source: © Euromonitor International	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.	Future readiness
2.3.4	Internet users World Development Indicators (World Bank) National sources Average of available sources		Adaptive attitudes
2.3.5	Internet bandwidth speed Broadband Speed League Ookla SpeedTest Pro Average connection speed in Mbps: data transfer rates for Internet access by end-users. Values presented are an average compiled from three different sources: Broadband Speed League (Jun. 2024); Ookla (Jan. 2025); and SpeedTest Pro (Feb. 2023)		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").
2.3.6	High-tech exports (%) World Development Indicators (World Bank) National sources High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.		3.1.2 Internet retailing Passport, Source: © Euromonitor International National sources Retail Value excluding sales tax. Iceland Based on data from Centre for Retail Studies Iceland. Total turnover in online retail with Icelandic cards.
2.3.7	Secure internet servers Netcraft (http://www.netcraft.com/) and World Bank population estimates. publicly-trusted TLS/SSL certificates. Netcraft Secure Server Survey		3.1.3 Tablet possession Passport, Source: © Euromonitor International 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, Source: © Euromonitor International National sources 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.

Notes and Sources by Criteria

Business agility

3.2.2 World robots distribution World Robotics International Federation of Robotics (IFR)	Industrial robot as defined by ISO 8373:2012: an automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications. The primary source is data on robot installations by country, industry and application that nearly all industrial robot suppliers worldwide report to the IFR Statistical Department directly. Several national robot associations collect data on their national robot markets and provide their results as secondary data to the IFR. This data is used to validate and complete the IFR primary data. IFR Statistical Departments estimates the operational stock assuming an average service life of 12 years with an immediate withdrawal from service afterwards.
3.2.6 Entrepreneurial fear of failure Global Entrepreneurship Monitor	Percentage of 18-64 population perceiving good opportunities to start a business who indicate that fear of failure would prevent them from setting up a business.

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.

3.3.5 Government cyber security capacity Varieties of Democracy (V-Dem)	Digital Society Project Does the government have sufficiently technologically skilled staff and resources to mitigate harm from cyber-security threats? 0: No. The government does not have the capacity to counter even unsophisticated cyber security threats. 1: Not really. The government has the resources to combat only unsophisticated cyber attacks. 2: Somewhat. The government has the resources to combat moderately sophisticated cyber attacks. 3: Mostly. The government has the resources to combat most sophisticated cyber attacks. 4: Yes. The government has the resources to combat sophisticated cyber attacks, even those launched by highly skilled actors.
3.3.6 Privacy protection by law exists Digital society project	Question: Does a legal framework to protect Internet users' privacy and their data exist? Responses: 0: No, 1: Yes

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