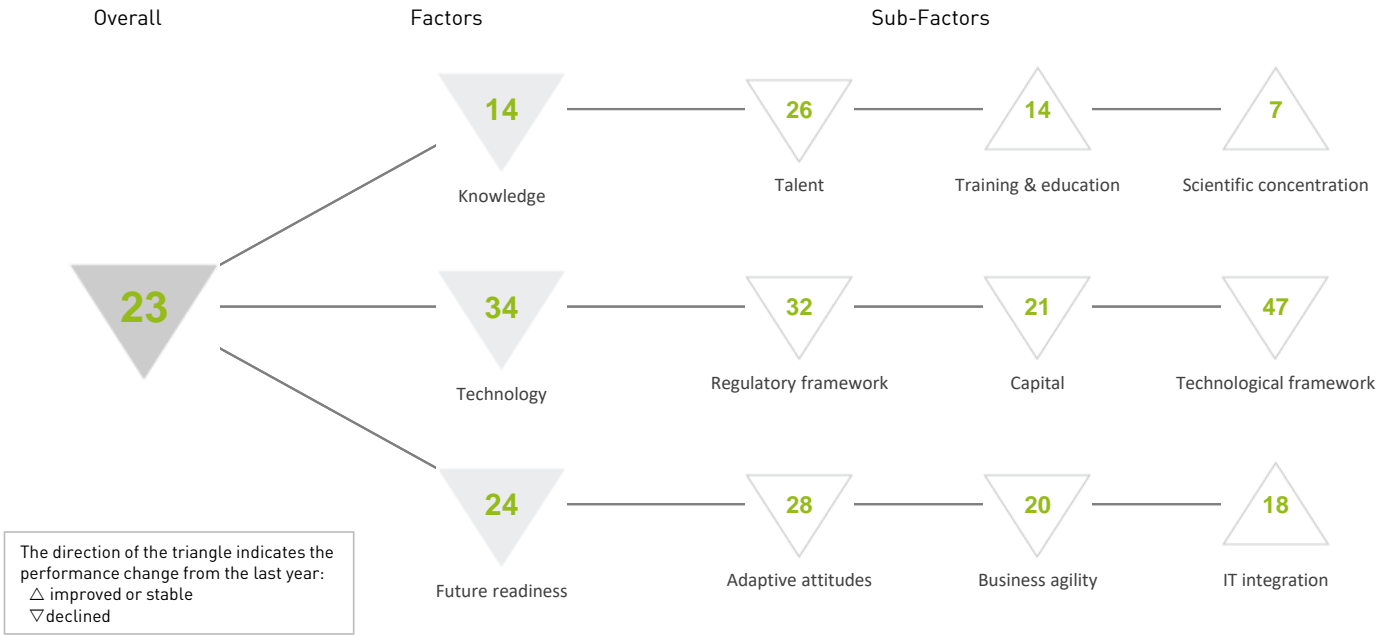


# GERMANY

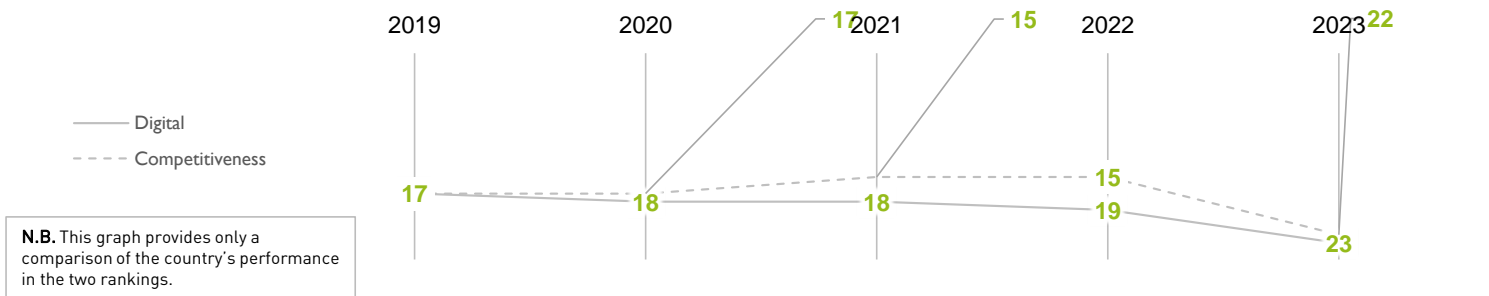
## OVERALL PERFORMANCE (64 countries)



## OVERALL & FACTORS - 5 years

	2019	2020	2021	2022	2023
OVERALL	17	18	18	19	23
Knowledge	12	12	14	11	14
Technology	31	31	31	27	34
Future readiness	16	19	18	19	24

## COMPETITIVENESS & DIGITAL RANKINGS



## PEER GROUPS RANKINGS

### EUROPE - MIDDLE EAST - AFRICA (41 countries)



### POPULATIONS > 20 MILLION (27 countries)



## GERMANY

► Overall Top Strengths

▷ Overall Top Weaknesses

## KNOWLEDGE

Sub-Factors	2019	2020	2021	2022	2023
Talent	25	22	21	20	26
Training & education	14	17	17	15	14
Scientific concentration	04	05	06	07	07

Talent	Rank	Training & education	Rank	Scientific concentration	Rank
Educational assessment PISA - Math	19	► Employee training	03	Total expenditure on R&D (%)	10
International experience	16	Total public expenditure on education	40	Total R&D personnel per capita	14
Foreign highly skilled personnel	25	Higher education achievement	43	Female researchers	50
Management of cities	28	► Pupil-teacher ratio (tertiary education)	04	R&D productivity by publication	12
▷ Digital/Technological skills	58	► Graduates in Sciences	04	Scientific and technical employment	25
Net flow of international students	14	Women with degrees	43	High-tech patent grants	18
				► Robots in Education and R&D	02

## TECHNOLOGY

Sub-Factors	2019	2020	2021	2022	2023
Regulatory framework	27	28	25	20	32
Capital	17	16	23	16	21
Technological framework	40	45	43	43	47

Regulatory framework	Rank	Capital	Rank	Technological framework	Rank
Starting a business	51	IT & media stock market capitalization	09	▷ Communications technology	54
Enforcing contracts	12	Funding for technological development	34	▷ Mobile broadband subscribers	57
Immigration laws	45	Banking and financial services	30	Wireless broadband	44
Development & application of tech.	42	► Country credit rating	01	Internet users	17
Scientific research legislation	27	Venture capital	33	Internet bandwidth speed	30
Intellectual property rights	05	Investment in Telecommunications	34	High-tech exports (%)	28

## FUTURE READINESS

Sub-Factors	2019	2020	2021	2022	2023
Adaptive attitudes	16	23	23	27	28
Business agility	11	15	15	15	20
IT integration	17	20	20	19	18

Adaptive attitudes	Rank	Business agility	Rank	IT integration	Rank
E-Participation	29	▷ Opportunities and threats	51	E-Government	21
Internet retailing	14	World robots distribution	05	Public-private partnerships	36
Tablet possession	35	Agility of companies	42	Cyber security	37
▷ Smartphone possession	51	Use of big data and analytics	49	Software piracy	08
Attitudes toward globalization	40	Knowledge transfer	11	Government cyber security capacity	30
		Entrepreneurial fear of failure	13	Privacy protection by law content	18