



Intergenerational collaboration and digitalization

Key results of a seven country survey

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Executive summary

- Demographic change poses a great challenge for most developed economies. While digitalization can cushion some of its adverse effects through automation and productivity upgrades, recent evidence points to the need of upskilling the labor force in order to reap the full benefits of digitalization.
- As the results of the seven country survey (n>21,000) presented here show, the US labor force has a obvious advantage in terms of digital skills over Europe and China. In the US, early career (late 20s) workers see digital skills as their strongest skills. In Europe and China, digital skills never register as the top skills among the eight skillsets tested in the survey. They need to close this gap by strategically upskilling their workforce.
- However just like the US and China, Europe must close the digital skills gap between young and old workers. Intergenerational collaboration is a promising approach identified by this survey to achieve this. Already today, 29% of the European workforce aged 55+ have learned digital skills from colleagues at least 10 years younger than themselves.
- As Europe has particularly age-diverse workplaces compared to China and the US, intergenerational knowledge exchange is more likely to happen. Digitalization of workplaces can further boost intergenerational knowledge exchange. Highly digitalized firms benefit from a ~20% increase in both knowledge giving and receiving over low digitalized firms.
- This survey underlines that advanced (touch centric) and virtual interfaces (voice and gesture inputs) work well with people of all age groups. As they gain more traction, we need to reconsider how we conceptualize and measure digital skills.
- In its stance to increase automation and productivity, Europe needs to be mindful of attitudes towards advanced tech like robots varying across age groups and regions. China benefits from very positive attitudes towards robots, whereas respondents in Europe and US look less favorably at them. We should better understand such differences in order to ensure we reap benefits from digitalization, particularly when it comes to productivity and upskilling.

Introduction

The European Commission (EC) has set out ambitious goals for 2030 in its “Digital Decade” Communication.¹ Among other objectives, by 2030 at least 80% of adults shall have basic digital skills. This is necessary as the digital skills of the labor force will critically influence if and how digitalization can unfold its productivity increasing effect.

Alongside our various initiatives aimed at fostering digital skills among young people in Europe and globally such “Seeds for the Future”² and “ICT Academy”³, we wanted to understand the interactions of how different age groups in seven countries deal with digitalization and how digitalization may influence them in doing so.

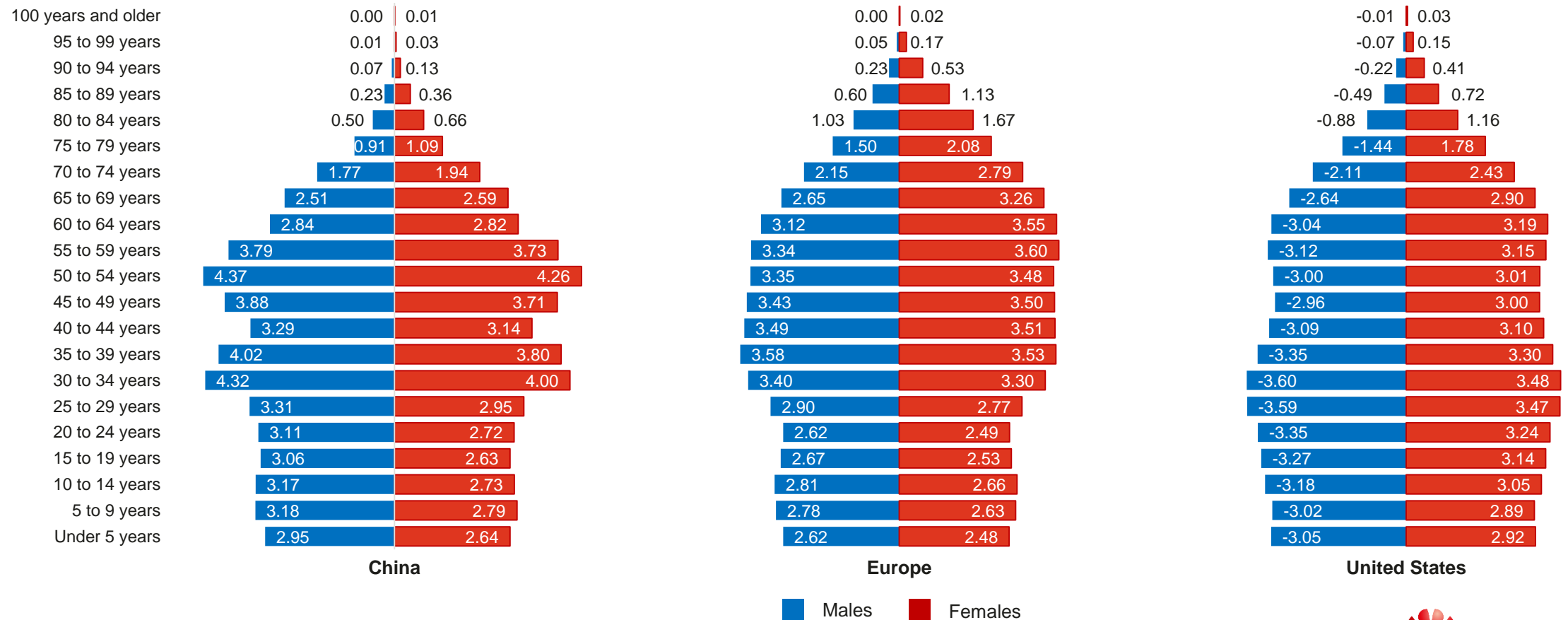
For this purpose, we worked with Prof. Dr. Anna Schneider (lead), Prof. Dr. Ulrike Fasbender, and Prof. Dr. Fabiola Gerpott to develop a survey to cover the digital skills of the future and today as well as knowledge exchange across generations in the workplace as part of a uniquely large research project. The survey covered seven countries and more than 21,000 respondents.

This report provides an initial overview of key findings. We will publish additional deep dive reports in the coming months to flesh out specific topics.

The challenge of demographic change

Demographic change poses a great challenge for most developed economies. It is particularly pronounced in Europe and in China, whereas the US can still benefit from a slow growing society with a substantial share of the population being in the younger age groups. Digitalization can cushion some of the adverse effects of demographic change with increased automation, and eventually productivity. However, to reap the benefits of the latter, we must put more effort into developing digital skills.

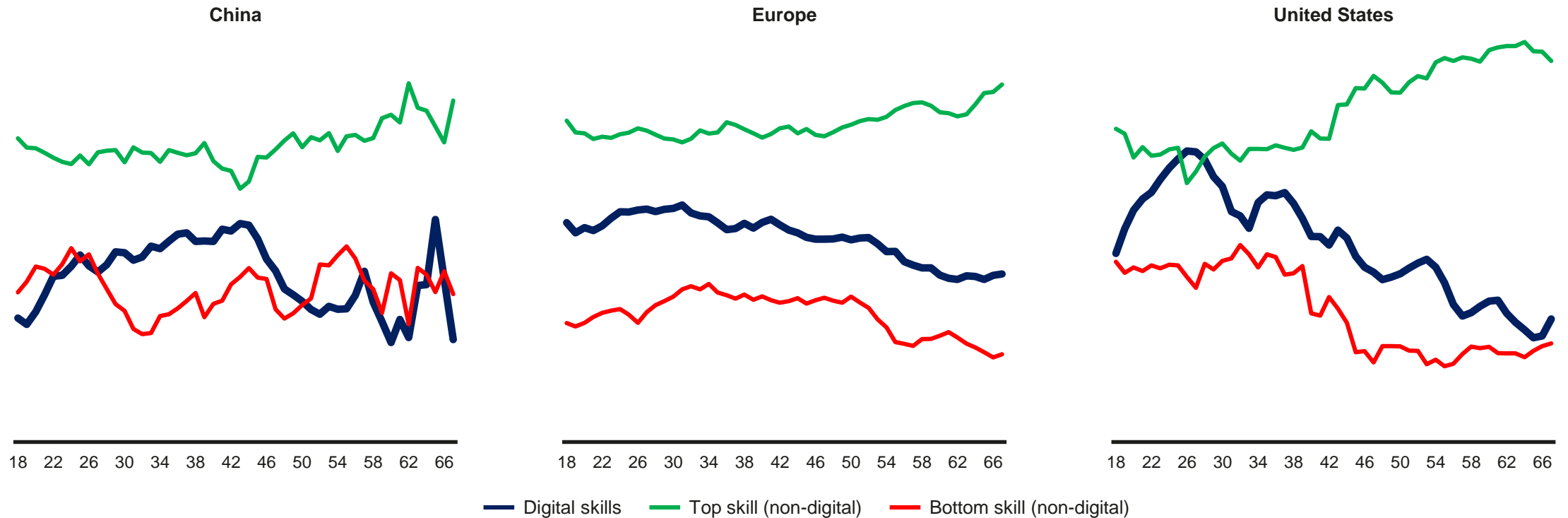
Distribution of population age groups in 2022 in % across China, Europe, and the US



Europe needs to improve its young digital talent pool

Digital skills are a key area in which Europe has to improve compared to major other economic powers. The US in particular is ahead on this front according to the data that we have collected. In the US, digital skills feature among the very top skills for the mid-to-late twenties age group, however they remain far from the top in Europe and China. On the other hand, the US sees a much stronger decrease of digital skills relative to all other skills with increasing age. The same tendency shows in Europe and China but it is not quite as pronounced. While the issue of upgrading the digital skills of young people can be addressed best by improving the framework conditions and the education system, closing the digital skills gap between young and old generations requires some new thinking. The results presented in the following slides point to intergenerational collaboration and knowledge exchange as one avenue.

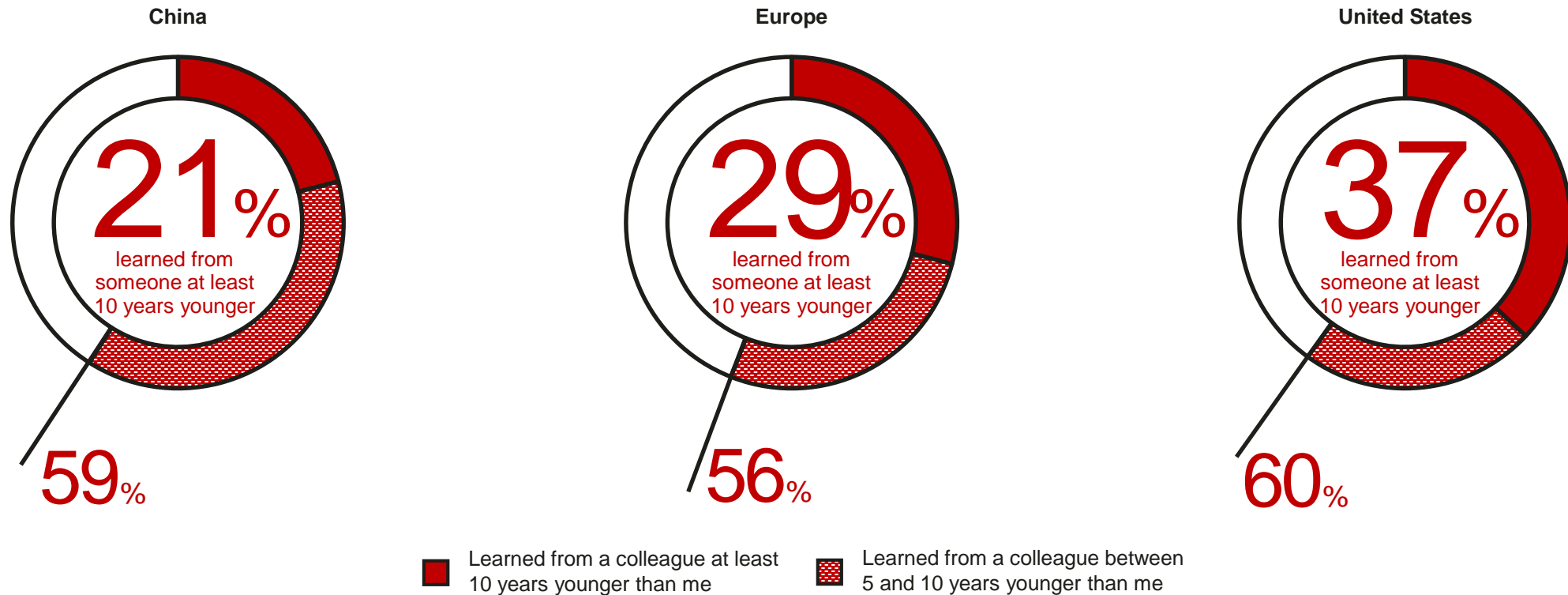
Digital skills (perceived) compared to top and bottom skills (perceived) across ages (moving average rank)



Intergenerational collaboration to close the digital skills gap

The survey data indicates that intergenerational knowledge exchange in the workplace can indeed help to close the digital skills gap. This is an angle that has so far received little if any attention in the research and policy frameworks aiming to understand and close the digital skills gap. However, our survey data shows that consistently around one third of the working respondents aged 55+ have learned digital skills from colleagues at least ten years younger than themselves in the past month at work, and more than half of them have learned digital skills from colleagues at least five years younger than themselves.

Learning digital skills at work in the age group 55+

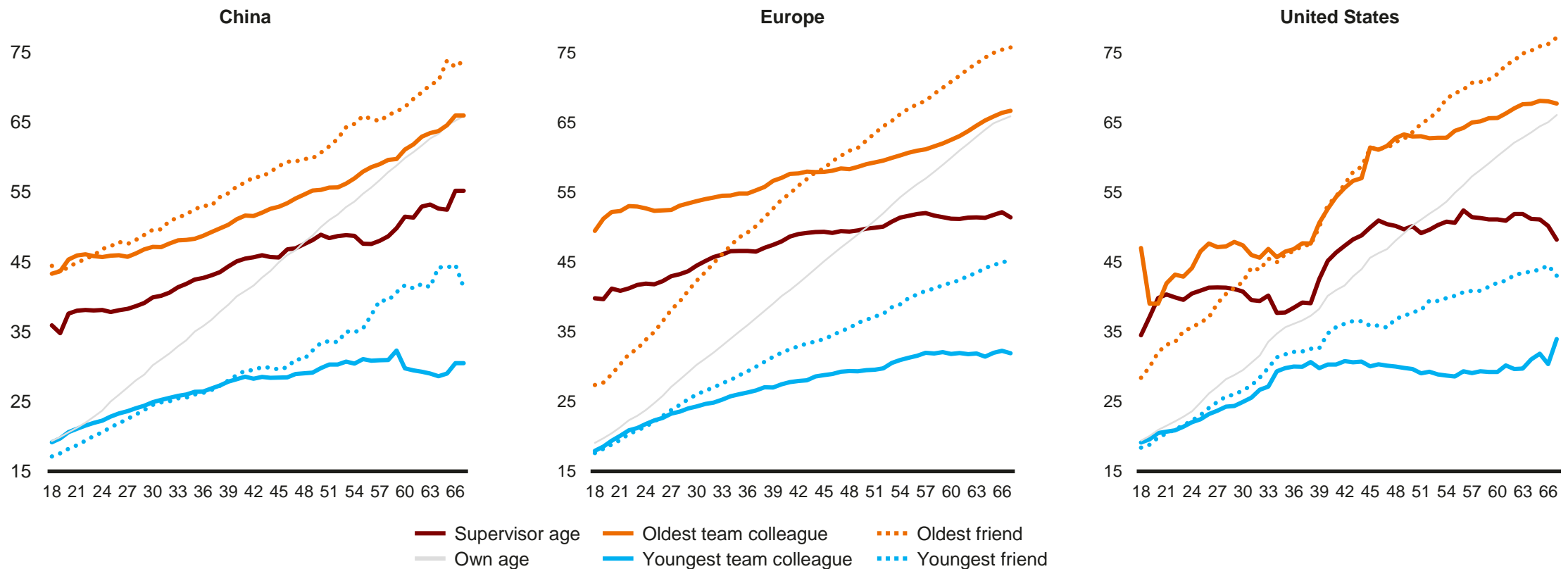


Source: Survey (N=6,279; respondents 55+ and working). Notes: Respondents were asked whether they had learned digital skills from a colleague in the last month at work as well as how old the colleague(s) from whom they had learned these skills are relative to their own age. Questions: "The type of knowledge I tended to seek from colleagues at work in the last month concerned digital information or procedures (e.g., technical advice, software or app usage, online communication)" (All respondents agreeing to this item.) and "The co-workers from whom I sought knowledge from tended to be [at least 10 years younger than me / between 5 and 10 years younger than me]." (All respondents selecting either of these items.). Europe comprises data for France, Germany, Greece, Italy, and the UK.

More age diversity spells more collaboration opportunity

Age diversity in the workplace is the prerequisite to making intergenerational knowledge exchange happen. This is where Europe shines with its age-diverse workplaces. Whereas in China and the US there is relatively less age diversity in friendships and workplaces, the survey data for European countries indicates that workers of all ages are much more likely to be working alongside an age-diverse group of co-workers. The first key takeaway from the study towards European policymakers is therefore to take this advantage seriously and build upon it to close the digital gap by fostering intergenerational exchange and age-diverse workplaces.

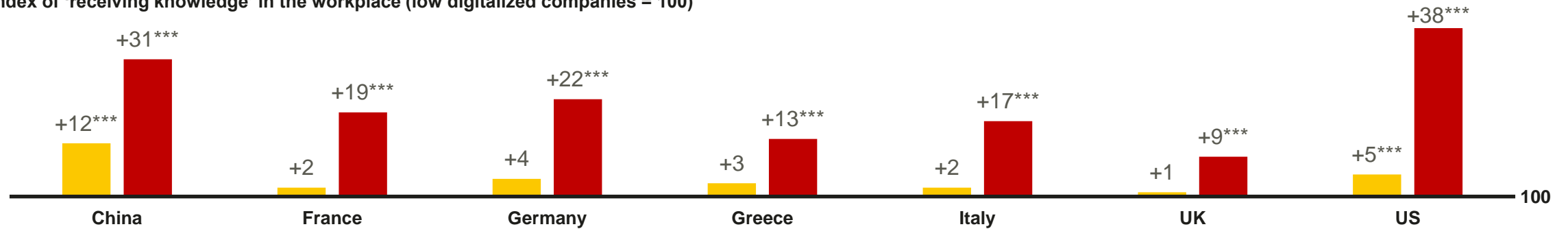
Age diversity in the workplace compared to age diversity in friendships (moving average age)



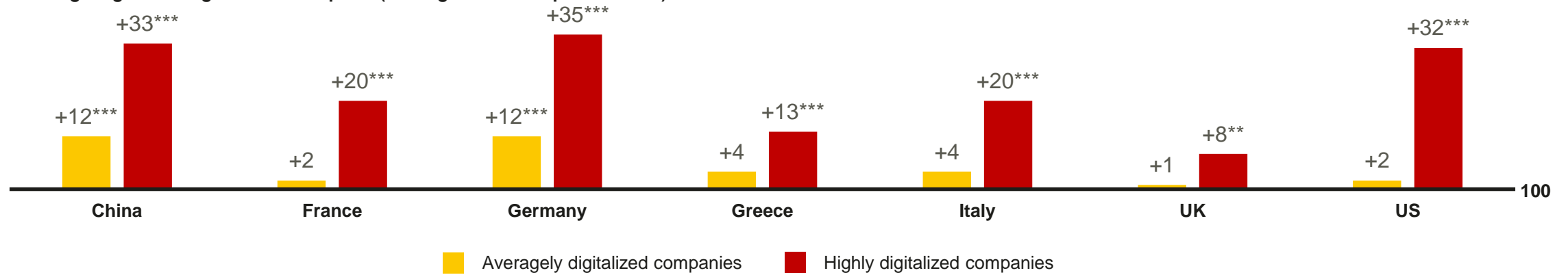
Digitalization in the workplace boosts knowledge exchange

The survey clearly shows that in all seven countries more digital companies can benefit from more knowledge exchange. Both the receiving of knowledge and the giving of knowledge increase from the baseline “low digitalization companies” as the charts below indicate. The most substantial boost happens from average digitalization to high digitalization environments. This is yet another call towards both policymakers and companies to take digitalization seriously and promote the use of digital technologies.

Index of ‘receiving knowledge’ in the workplace (low digitalized companies = 100)



Index of ‘giving knowledge’ in the workplace (low digitalized companies = 100)

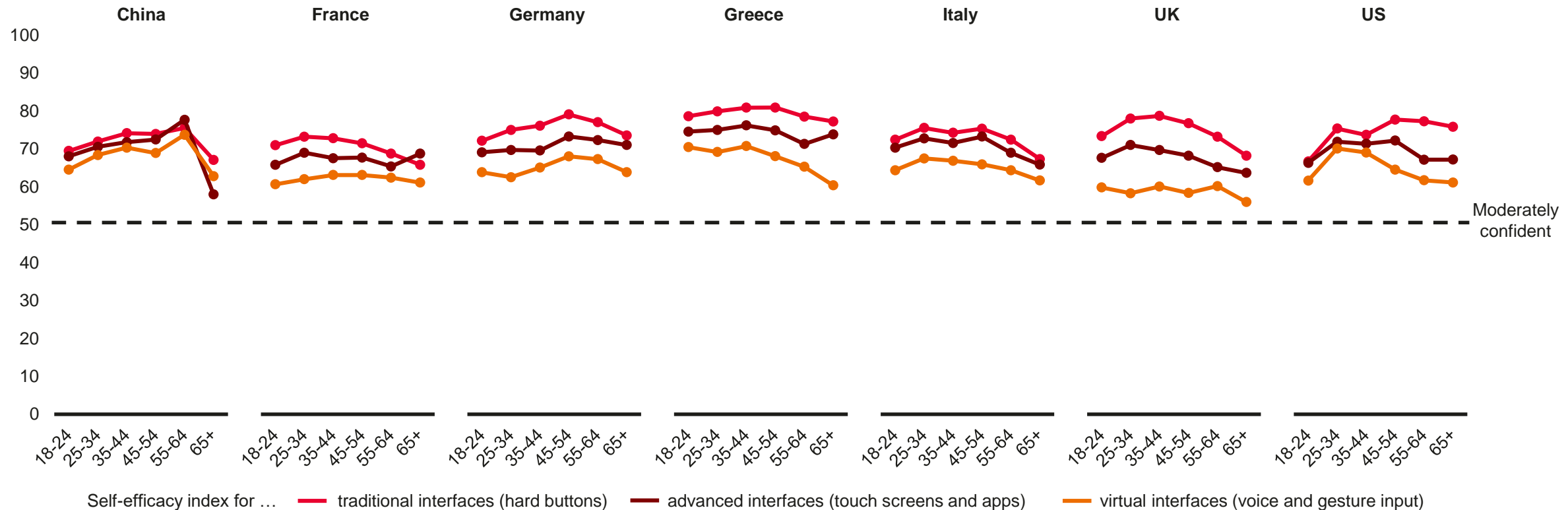


Sources: Survey (n=12,112). Notes: Digitalization of the company was measured on a nine item scale (Cronbach alpha >.9 for all countries) built from the Osterwalder and Pigneur (2010) business model canvas. The groups for low, average, and high digitalization were developed for each country individually based on a triadic split of the data using +/- one standard deviation from the mean as the cut-off. Tukey HSD test p<.05** and p<.01***. The indices for “receiving knowledge” (Cronbach alpha >.8 for all countries) and “giving knowledge” (Cronbach alpha >.8 for all countries) were taken from four and three items scales from Fasbender, U., Gerpott, F. H., & Unger, D. (2021). Give and take? Knowledge exchange between older and younger employees as a function of generativity and development striving. Journal of Knowledge Management.

Advanced and virtual interfaces work well for older users

The confidence scores of using advanced and virtual interfaces are lower than traditional buttons. So, more training is required across the board to prepare for future generations of digital technologies. However, surprisingly with increasing age there is much less difference and in some cases even an increase in confidence when using advanced and virtual interfaces. This can be explained by the technology itself which can be much more approachable and easier to access and use without prior training than hard buttons. Policymakers should take such new interfaces into account when thinking about how they conceptualize, measure, and promote digital skills.

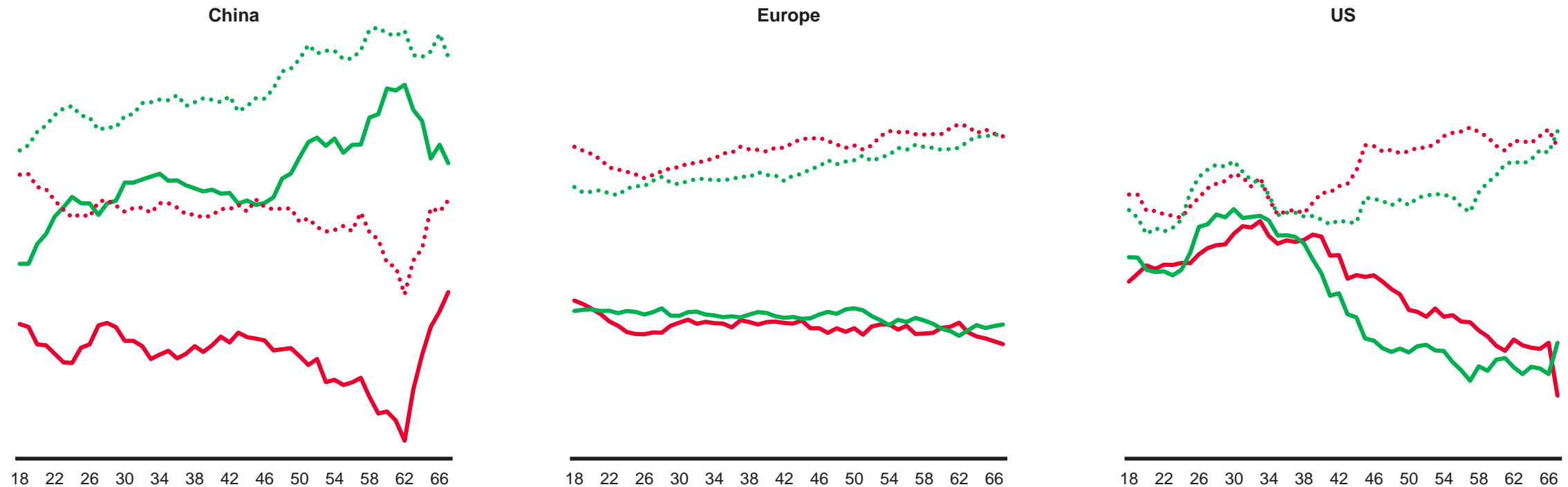
Self-efficacy index for operating traditional, advanced, and virtual human computer interfaces by age group



Attitudes to robots across age groups

The difference between positive and negative attitudes in each category gives an indication of how positive or negative overall a particular age group thinks. The position of (top or bottom) the lines indicates how strong those attitudes are. In China, we find the strongest positive attitudes towards robots. In Europe and the US, we see a broadly even distributed and therefore slightly torn attitude on whether robots are friends or foes. Surprisingly, older age groups and younger ones hardly differ in their attitudes towards robots in Europe and the US. In China, however, older generations (except 62+) are even more positively inclined towards robots than younger folks.

Individual parts of the General Attitudes Towards Robots Scale (GAToRS) by age (moving average index score)



— Negative attitude index – personal - - - Negative attitude index – society
— Positive attitude index – personal - - - Positive attitude index – society

Conclusion

- Europe needs to step up its efforts to close the digital skills gap taking full advantage of its age-diverse workplaces.
- Upgrading digitalization of firms can critically support this as more digitalized firms show higher levels of knowledge exchange.
- As digital interfaces progress, we have to reconsider how we conceptualize and measure digital skills.
- In its stance to increase automation and productivity, Europe needs to be mindful of attitudes towards advanced tech like robots varying across age groups and regions.
- We should better understand such differences in order to ensure we reap benefits from digitalization, particularly when it comes to productivity and upskilling.

Methodology

Method:	CAWI: Computer Assisted Web Interview
Sample size(s):	n=21,427 (China n=3,063; France n=3,051; Germany n=3,078; Greece n=3,031; Italy n=3,066; UK n=3,070; US n=3,068)
Sampling time:	2022/11/02 to 2022/11/15
Length of interview:	The median length of interview varied between 24 and 32 minutes depending on the country.
Sampling frame:	The sample type is a non-probability sample recruited and stratified on the basis of representative quota distributions (quota sample).
Sampling procedure:	Using YouGov's proprietary sampling technology, quotas are framed based upon the census or profile of the required population in the beginning. This frame is the basis on which the sampling software controls the flow of members into each survey. The sampling software randomly selects from the available panel, and allocates to surveys according to the quotas set. YouGov's sampling software includes a router. This removes the potential for self-selection on surveys, and increases the ability to deliver lower incidence samples within a short time frame. Panelists receive an invitation email containing a survey link. When they access the link the router checks against quotas on all live surveys and allocates them to a survey for which they qualify. Thus, panelists are not invited to a specific single survey, reducing the risk of early response bias, social desirability or other motivational biases.
Survey pretest:	For testing functionalities, the online survey was soft launched from 2022/11/02 to 2020/11/03. Based on the results, no adjustments were implemented.
Questionnaire:	Huawei in collaboration with Prof. Dr. Anna Schneider (lead), Prof. Dr. Ulrike Fasbender, and Prof. Dr. Fabiola Gerpott provided the master questionnaire in English. YouGov reviewed the questionnaire and translated it into the local languages required for the target countries.
Data preparation and analysis:	The survey data was processed by YouGov and provided in a SPSS data set. Incomplete cases were removed from the data set. Cases from the pretest as well as cases with duplicate cookie ids were removed. Analyses were done in R.

The authors

Prof. Dr. Anna Schneider

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Since 2017, Anna Schneider is Professor of Business Psychology. Her research interests and teaching revolve around the impact of digitalization on consumer behavior, and in particular how people communicate and interact with emerging technology. Anna is a member of various research associations and sits on the scientific board of the Wissenschaftliches Institut für Infrastruktur und Kommunikationsdienste (WIK) – a renowned communications and internet policy think tank. Drawing on more than 20 years of hands-on experience in market research she regularly advises public and private organizations on surveys as well as qualitative research projects.

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René Arnold is Vice President Public Affairs Strategy at Huawei Technologies. Previously, he worked at high-profile think tanks in Germany (German Economic Institute and WIK) and Brussels (Bruegel) where his research focused on digital economy, internet policy and impact assessments of regulatory frameworks. Over the past ten years, René has (co-)authored more than 100 conference papers, journal articles and white papers. He is a frequent speaker at both academic and industry events contributing among other fora to the ITU economic and industry round table, the Digital Summit of the German government and the research committee of the Munich Circle.

Thank you.

Bring digital to every person, home and organization for a fully connected, intelligent world.

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