Chapter 3. Digitalisation: a generational divide

In the EBRD regions, access to mobile internet is more common than access to the internet at home,[69] and ownership of smartphones is significantly more common than ownership of laptops or tablets. As a result, services provided by firms or governments through apps or websites designed for smartphones may reach a larger proportion of the population than services provided through websites designed for laptops. As digital infrastructure improves, digital skills are becoming increasingly important for accessing government services, good jobs and online learning materials. Across economies, there is a clear generational divide when it comes to digital skills, with greater digital literacy among the young. At the same time, in EBRD economies outside the EU, significant skills gaps also persist among younger cohorts, particularly in rural areas, so generational change may not, on its own, be sufficient to deliver near-universal digital literacy in the foreseeable future.

Introduction

Digital skills are becoming increasingly important, not only for shopping online, enrolling on courses and interacting with the government, but also for accessing good jobs as economies focus more on digital sectors and digital skills become more valuable within individual sectors.

This chapter draws on a new module in the fourth round of the Life in Transition Survey, which included detailed questions about respondents' use of the internet, their assessment of their digital skills and their experiences with remote learning during the Covid-19 pandemic.

The results of the LiTS IV survey suggest that, across the EBRD regions, access to the internet at home remains significantly higher in urban areas than in rural areas. Moreover, it is less common in a number of economies in Central Asia and the southern and eastern Mediterranean (SEMED), partly owing to the relatively high price of access. In some economies, such as Tajikistan, there is a clear need for further investment in digital infrastructure. Elsewhere, policymakers should ensure that there is competition in the sector and, if need be, provide subsidies to guarantee affordable access in rural areas.

Access to 3G/4G mobile data services is high across the EBRD regions, even in economies where a smaller proportion of households have access to the internet at home. Similarly, while only around a quarter of lower-income households in the EBRD regions own a computer or a laptop, around 70 per cent have a smartphone. This suggests that businesses and governments could broaden their reach by optimising their online services for mobile phones rather than computers.

The survey asked a number of questions about basic digital literacy – enquiring about respondents' ability to send emails with attachments, copy files and install software. Respondents were also asked whether their jobs required basic digital skills.

While around 75 per cent of respondents in the EBRD regions use the internet for phone or video calls, only around 30 per cent report being able to send emails with attachments, copy files and install software. Depending on the economy, between 10 and 70 per cent of respondents report shopping online, and between around 10 and 45 per cent engage in online learning.

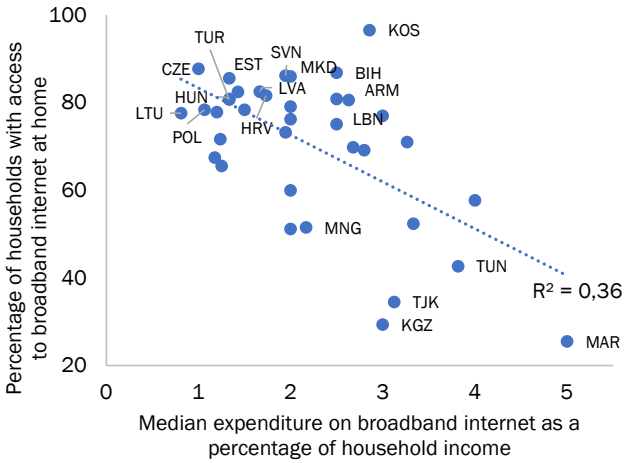
Jobs that require digital skills carry an estimated wage premium of 12 to 33 per cent relative to jobs with no digital skill requirements. Those jobs also offer greater access to benefits such as pensions, social security, annual leave and sick leave (see Chapter 2 for a detailed discussion of work-related benefits and working conditions).

In EBRD economies in the EU, the distribution of digital skills primarily reflects a generational divide. Among younger cohorts, nearly everyone makes payments online, and uptake of e-government services is strong – on a par with or in excess of the levels reported in Germany. In other EBRD economies, however, only around 40 per cent of respondents below the age of 30 report being able to send emails with attachments, copy files and install software. Thus, generational change may not, on its own, be sufficient to deliver near-universal digital literacy in the foreseeable future in those economies. In particular, female respondents and those living in rural areas tend to have weaker digital skills.

The Covid-19 pandemic led to a rapid increase in the uptake of online learning as schools closed during lockdowns. The LiTS IV survey asked a number of questions about households' experiences with remote learning during the pandemic. The impact on low-income households was disproportionately high, not only as a result of the costs incurred and the poor quality of their internet connections, but also because of the competing demands of work. Across economies, the overwhelming majority of the burden of home schooling fell on mothers, regardless of their place of residence or income level, calling for support for working

[69] The term "access to the internet at home" reflects the wording of the LiTS IV survey. Respondents were asked: "Do you have access to internet at home, excluding through smartphone/3G/4G?" Consequently, "access to the internet at home" includes fixed-line access (via broadband, fibre, dial-up modems and so on) and satellite-based access, for example, but excludes access via 3G/4G mobile networks.

Chart 3.1. Access to the internet at home is less common where it is more expensive relative to income



Source: LiTS IV and authors' calculations.
Note: This chart is based on median expenditure as reported by respondents to the survey. Selected economies have been labelled.

mothers with children in education in terms of more flexible working arrangements.

Digital technologies have the potential to increase equality of opportunity in education. E-learning could enhance accessibility and help to personalise education, as well as creating distance-learning opportunities. However, people's experience with remote learning during the Covid-19 pandemic serves as a reminder that the rise of online learning could exacerbate divides in society if online tools end up being used much more effectively by richer households.[70] Policies to mitigate such inequalities could include the distribution of devices to students, efforts to ensure that students have effective access to learning materials via their mobile phones, and measures aimed at enhancing digital literacy in schools.

This chapter begins by examining access to the internet at home, access to 3G/4G mobile internet and access to devices such as laptops and smartphones, before turning to digital skills, use of online technologies and experiences with remote learning during the Covid-19 pandemic.

Access to the internet

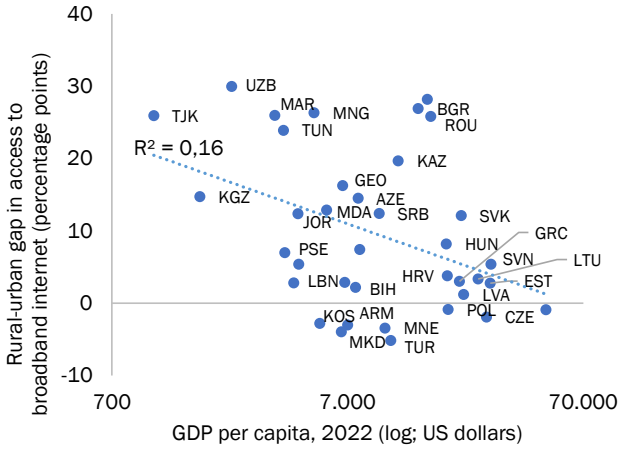
Across the EBRD regions, an average of 70 per cent of survey respondents have access to the internet at home (with figures ranging from more than 80 per cent in Armenia, Bosnia and Herzegovina, Croatia, Czechia, Estonia, Hungary, Kosovo, Latvia, Lebanon, North Macedonia, Slovenia and Türkiye to less than 40 per cent in the Kyrgyz Republic, Morocco and Tajikistan).

Differences in access to the internet at home may, in part, be explained by differences in the cost relative to household income. Indeed, analysis based on LiTS IV data shows that access to the internet at home is less common in economies where respondents report paying a larger percentage of their household income for that service (see Chart 3.1).

Economies in Central Asia and the SEMED region have some of the lowest levels of access and some of the highest reported costs relative to household income. In Morocco, for instance, the median household spends 5 per cent of its income on internet access at home and half of all households report that cost is the main reason for not having internet at home. In contrast, the median households in Lithuania, Czechia and Poland spend less than 1 per cent of their income on internet at home. A similar picture can be observed when the average cost of internet is based on alternative data sources.[71]

Overall, access to the internet at home remains significantly lower in rural areas than in urban areas, with urban-rural gaps being observed in most economies. Those gaps tend to be larger in poorer economies, with particularly large gaps being seen in Central Asia (see Chart 3.2). In Tajikistan, for instance, around 56 per cent of urban households have access to the internet at home, but the same is true of only 30 per cent of rural households.

Chart 3.2. Urban-rural gaps in access to the internet at home tend to be larger in poorer economies



Source: LiTS IV, World Bank WDIs and authors' calculations.
Note: The horizontal axis shows the log of GDP per capita in 2022 in US dollars at market exchange rates. EBRD economies are labelled.

[70] See also Gottschalk and Weise (2023).

[71] See EBRD (2021).

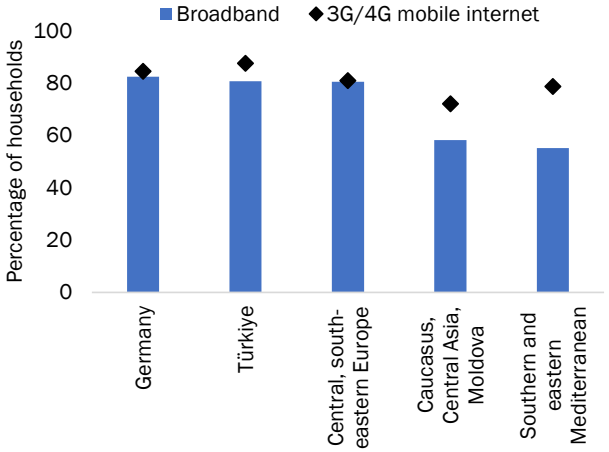
Table 3.1. Determinants of access to the internet at home

	(1)	(2)
Local population density (30 km x 30 km grid)	0.017***	
	(0.003)	
Local population density (5 km x 5 km grid)		0.004***
		(0.001)
Average age of household members	-0.006***	-0.006***
	(0.000)	(0.000)
Education level of household head: upper secondary	0.103***	0.104***
	(0.013)	(0.013)
Education level of household head: tertiary	0.178***	0.179***
	(0.014)	(0.015)
Equivalised household income percentile	0.003***	0.003***
	(0.000)	(0.000)
R^2	0.269	0.267
Number of observations	31,322	31,322
Country fixed effects	Yes	Yes

Source: LiTS IV, Version 4 of the Gridded Population of the World dataset and authors' calculations.
Note: This table shows the results of linear regressions. The dependent variable is an access to internet dummy that is equal to 1 if the household has access to the internet at home and is 0 otherwise. Local population density is measured by matching the centre of the PSU where the household is located to gridded population density data. Local population density is defined as the number of people, in thousands, per square kilometre at the level of a 30 km x 30 km grid cell or a 5 km x 5 km grid cell.

Some of the differences between urban and rural areas can be explained by low population densities in rural locations, which mean that the fixed cost of providing access to the internet in those areas is high. Mongolia, for instance, has the lowest population density in the world. The relationship between population density and access to the internet at home also holds within individual economies. The location of households participating in LiTS IV can be matched to detailed local population data with 30 km x 30 km and 5 km x 5 km grid cells, which provide a measure of local population density.[72] When controlling for the average age of household members, the household head's education level, household income and country fixed effects, households that are located in more densely populated areas are, on average, more likely to have internet access at home (see Table 3.1). At the economy level, even after taking into account population density and the percentage of the population that live in rural areas, urban-rural gaps still tend to be larger in poorer economies.

Chart 3.3. Access to 3G/4G mobile internet is high even in economies where access to the internet at home is relatively low



Source: LiTS IV and authors' calculations.

Access to mobile data networks is generally high across the EBRD regions, being comparable to the levels reported by survey respondents in Germany. This is also the case in economies where access to the internet at home is relatively low. In Central Asia and the SEMED region, for instance, 70 to 80 per cent of respondents report having access to 3G/4G mobile internet, while only 50 to 60 per cent have access to the internet at home (see Chart 3.3). Tajikistan is a notable exception in this regard, with only a third of respondents reporting that they have access to 3G/4G mobile internet.

As with access to the internet at home, access to 3G/4G mobile internet is also significantly higher in urban areas than in rural areas. However, within rural areas, access to mobile internet is more widespread than access to the internet at home.

Access to smartphones is widespread, unlike access to computers

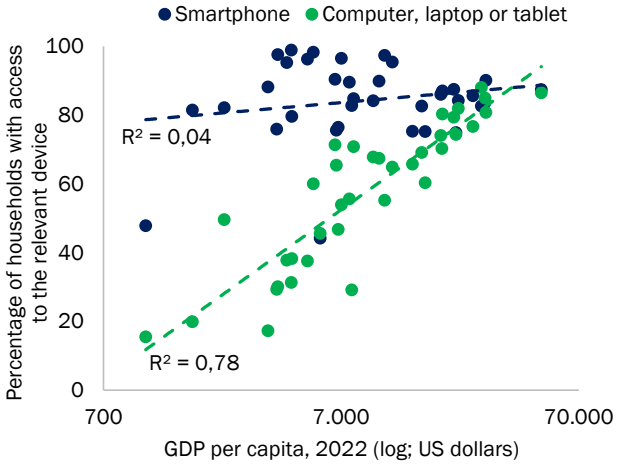
Across the EBRD regions, 84 per cent of households say that they have access to a smartphone, mirroring the high levels of access to mobile internet. In contrast, only 57 per cent of households report having access to a computer.

Strikingly, while access to a computer, a laptop or a tablet is higher in richer economies, this pattern is much weaker for smartphones (see Chart 3.4). In Germany, for example, 86 per cent of households have access to a computer, a laptop or a tablet, and 87 per cent have access to a smartphone. In contrast, the equivalent figures for the Kyrgyz

[72] Those population density data are taken from Version 4 of the Gridded Population of the World dataset, which is published by NASA's Socioeconomic Data and Applications Center. See https://sedac.ciesin.columbia.edu/data/set/gpw-v4-population-density-rev11 (last accessed on 9 June 2024).

Republic are 20 and 81 per cent respectively. More generally, per capita income can explain about 50 per cent of total variation in access to computers, laptops and tablets as reported by households, but only 5 per cent of total variation in access to a smartphone and 10 per cent of total variation in use of a smartphone to access the internet.[73]

Chart 3.4. An economy's level of development matters less for access to a smartphone than for access to a computer, a laptop or a tablet

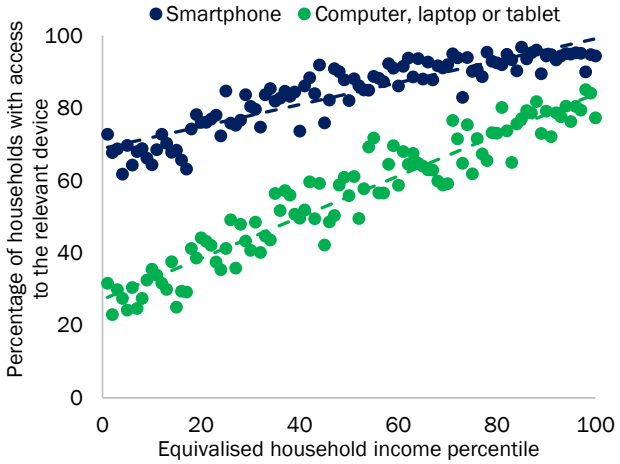


Source: LiTS IV, World Bank WDIs and authors' calculations.
Note: The horizontal axis shows the log of GDP per capita in 2022 in US dollars at market exchange rates.

Within individual economies in the EBRD regions, more educated households and those living in urban areas are more likely to have access to both computers and smartphones. In Germany, by contrast, the head of the household's education level and the household's urban/rural location are not significantly correlated with access to either of those devices.

Access to computers, laptops and tablets varies more with household income, while access to smartphones is higher among poorer households (see Chart 3.5). Looking at households that are in the lowest income decile in their respective economies, 68 per cent have smartphones, while only 27 per cent own computers (compared with figures of 94 and 79 per cent respectively for households in the highest income decile).

Chart 3.5. Household income matters more for access to computers than for access to smartphones



Source: LiTS IV and authors' calculations.
Note: Each dot captures people in the same household income percentile in different countries. Household income has been equivalised using the OECD-modified equivalence scale (see Chapter 1 for details).

These patterns have important implications for firms and governments in the EBRD regions. Ensuring that online services provided by businesses and governments can be accessed effectively using mobile phones (rather than computers) with the help of apps and appropriate designs could help to make those services accessible to a wider audience.

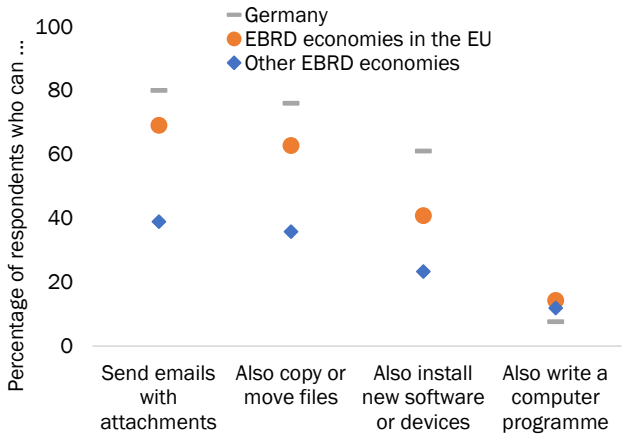
Competency of digital users

There were detailed questions in the LiTS IV survey asking respondents whether they could (i) send emails with attachments, (ii) copy or move files, and (iii) install new software or devices. In addition to those three basic tasks, survey participants were also asked if they could write a computer program.

In Germany, over 75 per cent of respondents say that they are able to send emails with attachments and copy files. And around 60 per cent of respondents report that they are able to perform all three of those basic tasks (and can therefore be regarded as "competent users"; see Chart 3.6). Some EBRD economies in the EU, such as Czechia and Lithuania, are comparable to Germany as regards the two most basic digital skills, but lag behind it in terms of being able to install new software or devices. Overall, around 40 per cent of respondents in EBRD economies in the EU report being able to complete all three basic tasks.

[73] This is based on Shapley decomposition of R^2 values derived from two separate regressions estimated using ordinary least squares. Those regressions seek to explain dummy variables for access to computers, laptops and tablets and access to smartphones using a set of household-level characteristics and the logarithm of GDP per capita in US dollars at market exchange rates.

Chart 3.6. In EBRD economies outside the EU, less than half of all respondents have basic digital skills



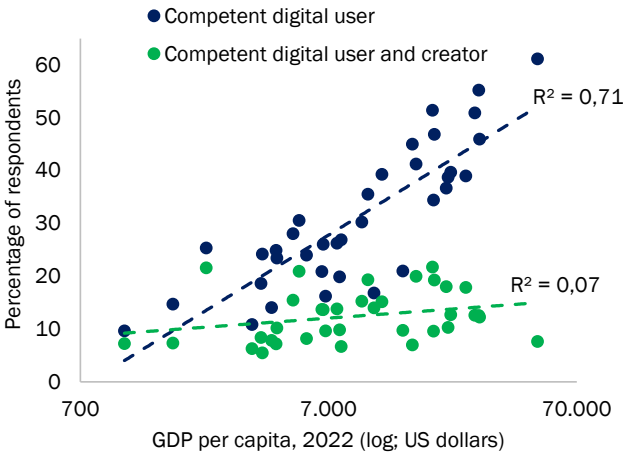
Source: LiTS IV and authors' calculations.
Note: Tasks are listed from left to right in ascending order of complexity. The percentages refer to individuals who can complete the task in question and all lower-level tasks.

In EBRD economies outside the EU, less than a quarter of respondents report being able to complete all three basic tasks. In Tajikistan, for instance, only 17 per cent of respondents are able to send emails with attachments and also copy or move files, and the figure for Morocco is not much higher at 19 per cent. In those two countries, only 10 and 11 per cent of respondents respectively are able to carry out all three basic tasks.

At the same time, a number of economies in the EBRD regions have relatively high percentages of respondents who, in addition to being competent digital users, are also able to write a computer program (see Chart 3.7). Figures for such digital creators are often higher in economies that are developing significant IT clusters and targeting the software industry and the provision of outsourced digital services (with examples including Hungary, Poland and Lithuania).

Unsurprisingly, respondents in richer economies tend to have better digital skills. However, the relationship with per capita income is considerably stronger for basic user skills than it is for the ability to write a computer program. Some economies, such as Türkiye and North Macedonia, have relatively large numbers of digital creators but only modest levels of digital literacy in the general population.

Chart 3.7. Richer economies tend to have more digitally skilled users; however, the relationship with GDP per capita is less strong when it comes to digital creators



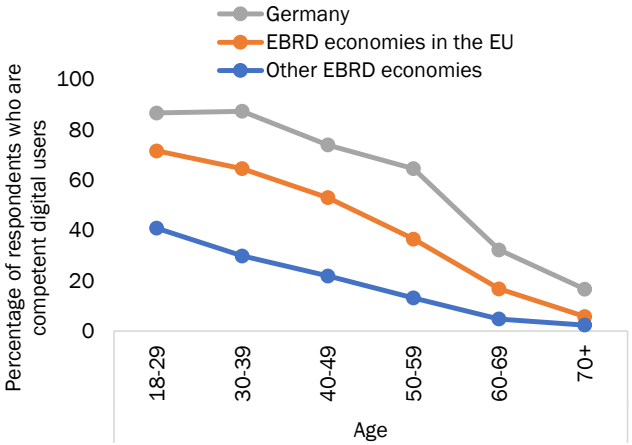
Source: LiTS IV and authors' calculations.
Note: The horizontal axis shows the log of GDP per capita in 2022 in US dollars at market exchange rates. A "competent digital user" is a respondent who is able to (i) send emails with attachments, (ii) copy or move files and (iii) install software. A "competent digital user and creator" is, in addition to those three things, also able to write a computer program.

Digital skills: a generational divide

In all economies, digital skills are considerably weaker among older cohorts. In Germany, for instance, 87 per cent of LiTS IV respondents under the age of 40 can send emails with attachments, copy or move files and install software, but the same is true of less than a third of respondents in their 60s and just 17 per cent of those aged 70 or above. Similar generational divides can be observed in other economies.

However, in EBRD economies outside the EU, deficits in terms of digital skills can be observed not only among older respondents but also in younger cohorts (see Chart 3.8). In those economies, only 40 per cent of respondents aged 18 to 29 are competent digital users, compared with 73 per cent in EBRD economies in the EU.

Chart 3.8. In EBRD economies outside the EU, deficits in terms of digital skills can also be observed in younger cohorts

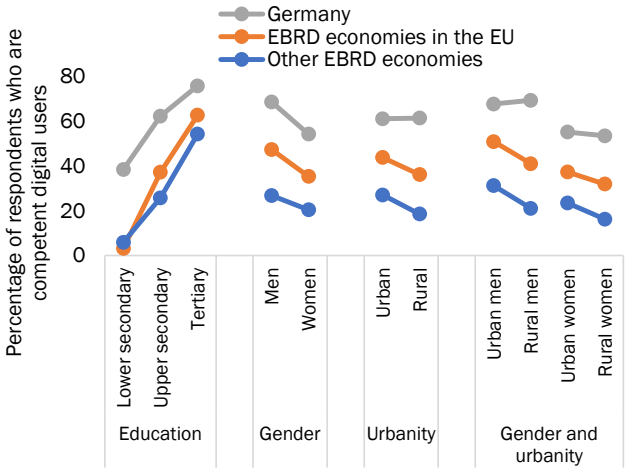


Source: LiTS IV and authors' calculations.
Note: A "competent digital user" is a respondent who is able to (i) send emails with attachments, (ii) copy or move files and (iii) install software.

As expected, digital competency is greater among respondents with higher levels of education (see Chart 3.9). On average, it is also higher for men than for women (a difference that is statistically significant in both Germany and the EBRD regions). In the EBRD regions, respondents living in urban areas tend, on average, to have significantly better digital skills than those living in rural areas; however, there is no urban-rural gap in Germany.

Overall, differences based on gender and location are much smaller than differences based on age. For instance, in EBRD economies in the EU, 48 per cent of male respondents are competent digital users, compared with 36 per cent of female respondents, while the average difference between urban and rural areas in those economies stands at 8 percentage points. In contrast, the average difference between respondents aged 18 to 29 and those aged 50 to 59 is around 35 percentage points.

Chart 3.9. Digital competency tends to be greater among respondents with higher levels of education and those living in urban areas



Source: LiTS IV and authors' calculations.
Note: A "competent digital user" is a respondent who is able to (i) send emails with attachments, (ii) copy or move files and (iii) install software. "Lower secondary" also includes respondents with lower levels of education (such as those who have only completed primary education).

More highly paid, stable jobs with better access to benefits are more likely to require digital skills

Employed LiTS IV respondents were asked whether their jobs required computer skills. On average, 61 per cent of those respondents reported a need for computer skills at work, with figures ranging from more than 80 per cent for managerial and professional occupations (such as managers or teachers) to between 12 and 34 per cent for elementary occupations (such as mining or construction workers).

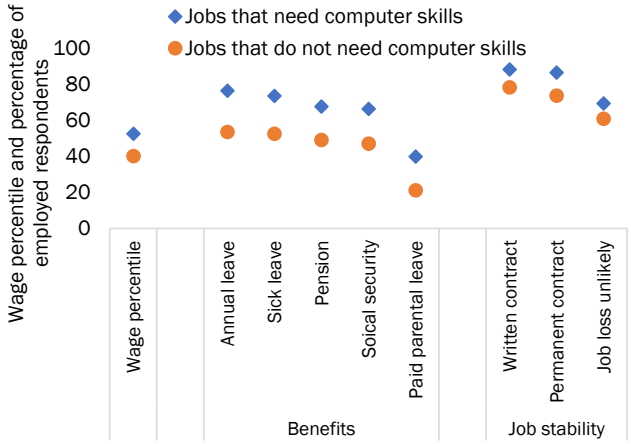
On the basis of those survey responses, the EBRD regions are similar to Germany in terms of demand for computer skills in the service sector (with around 60 per cent of such jobs requiring computer skills). In the manufacturing sector, by contrast, demand for computer skills is currently lower than in Germany, in line with the lower level of automation: around 54 per cent of manufacturing workers in the EBRD regions report a need for computer skills at work, compared with 82 per cent in Germany.[74]

Combining the detailed analysis of job characteristics in Chapter 2 with these responses on the subject of computer skills suggests that more highly paid jobs, those that provide access to more benefits (such as annual leave, sick leave, parental leave, pensions and social security) and those that are governed by a written contract are all more likely to require digital skills (see Chart 3.10). These differences are all

[74] See EBRD (2018) for evidence that the EBRD regions are lagging behind advanced economies in terms of the use of robots in manufacturing.

statistically significant, but there is no statistically significant difference between jobs with and without computer skill requirements in terms of the perceived likelihood of job loss.

Chart 3.10. More highly paid, stable jobs with better access to benefits are more likely to require digital skills



Source: LiTS IV and authors' calculations.
Note: This chart is based on employed individuals aged 18 to 64.

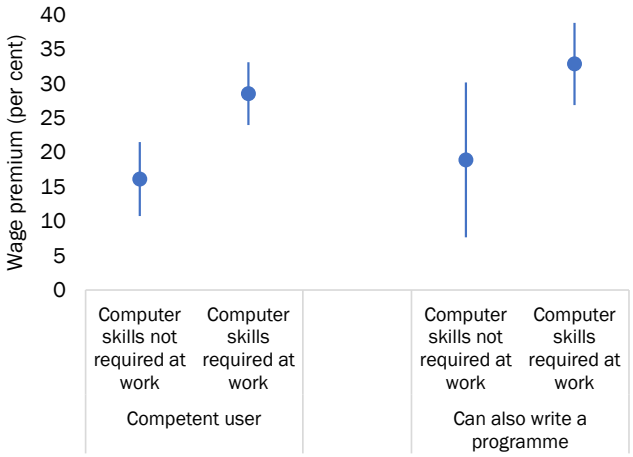
Regression analysis at an individual level points to a wage premium of 12 to 33 per cent for digital skills (see Chart 3.11). The baseline group in this analysis are respondents who report no computer skill requirements and are not competent digital users. The classification also distinguishes between (i) individuals who report such skill requirements but do not have basic digital skills, (ii) people with basic digital skills whose job does not have computer skill requirements, (iii) respondents who have basic digital skills and can also write a computer program, but whose job does not require computer skills, (iv) individuals who report computer skill requirements at work and are deemed to be competent users, and (v) people with basic digital skills and the ability to write a computer program whose job requires computer skills.

In order to estimate the wage premium, the logarithm of self-reported earnings is regressed on the categorical variable capturing the type of respondent as outlined above, as well as various individual-level characteristics such as age, age squared (to account for non-linear effects that age has on earnings), level of education, gender, location (urban or rural) and country of residence. Control variables include the number of books at home during childhood (to account for differences in individuals' learning environments, which may have translated into differences in various cognitive skills, in addition to differences in acquired digital skills). For instance, recent research has shown that the number of books at home during childhood is a strong predictor of performance in standardised cognitive tests for adults.[75]

Some of that wage premium – the difference between the earnings of (i) individuals with digital skills and jobs that require them and (ii) individuals with no digital skills and jobs that do not require them – may be down to other skills possessed by holders of digital-intensive jobs. Indeed, the wages of people with basic digital skills but jobs that do not require them are 16 per cent higher than those of the baseline group. For those who can also write a computer program, the wage premium in a job with no computer skill requirements is estimated at 19 per cent. These differences may reflect a strong association between digital skills and other – unobserved, but nonetheless valuable – skills that respondents possess.

Focusing solely on employed individuals with basic digital skills, 79 per cent of those individuals have jobs with computer skill requirements. The wage premium commanded by individuals with such jobs is 12 percentage points higher than that of other competent digital users. This difference is statistically significant at the 5 per cent level and can be regarded as a fairly conservative estimate of the wage premium that is associated with using digital skills at work.

Chart 3.11. Digital skills command a wage premium of 12 to 33 per cent



Source: LiTS IV and authors' calculations.
Note: This chart shows transformed point estimates and 95 per cent confidence intervals that are derived from a linear model regressing the logarithm of self-reported earnings in euros on a categorical variable indicating respondents' digital skills and the requirements of their jobs as shown on the horizontal axis. The omitted baseline group are individuals who are not competent digital users and have jobs that do not require computer skills. The individual-level characteristics that are included in the regression are age, age squared, gender, education level and the number of books at home during childhood. Additional controls include an urban or rural household dummy and country of residence fixed effects. Standard errors are clustered at the level of the PSU.

[75] See Byrne and Plekhanov (2021).

The estimated wage premium for individuals who can write a computer program and are in a job with computer skill requirements is around 33 per cent. The difference between the wage premiums of competent users and people who are able to write a computer program is not statistically significant and is considerably smaller than the difference between the wage premium of competent digital users with a job requiring computer skills and the premium that is commanded by competent users with a job that does not require computer skills. The premium that is associated with jobs requiring computer skills can be observed for both private and public-sector employees.

The estimates of wage premiums in this chapter are not precise. There may be many reasons why individuals hold certain jobs and have acquired particular skills. Skills help people to obtain jobs and are, in turn, acquired in the course of doing jobs. Individuals with and without digital skills also differ in terms of other skills, and variables such as the level of education and the number of books at home during childhood may not capture all of those differences.

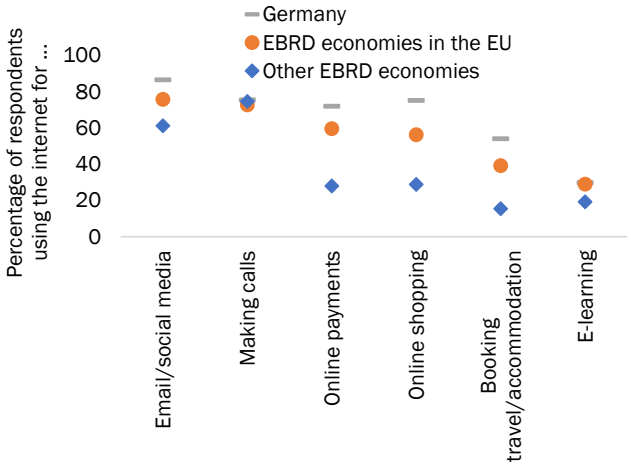
However, the estimates provided are nonetheless insightful insofar as they describe labour market equilibria across economies with differing levels of development, varying industrial structures and different levels of digital literacy.

Digital skills are likely to become even more important as production structures focus more on digital-intensive sectors and technological skills become more important within individual sectors and occupations. As the automation of production increases, many repetitive tasks may be carried out by advanced robotic systems, with human involvement switching to the maintenance and supervision of machines.[76] In line with these trends, the importance of technological skills increased in almost three-quarters of industries globally between 2015 and 2019, including industries that are far removed from the information and communication technology (ICT) sector such as food production, paper products and textiles.[77]

Limited use of digital technologies, beyond making calls

In both the EBRD regions and Germany, around 75 per cent of LiTS IV respondents use the internet to make audio or video calls (see Chart 3.12). Use of other online services is more limited in the EBRD regions than in Germany. In the EBRD regions, between 15 and 56 per cent of respondents use the internet to shop, compared with 75 per cent in Germany, and a similar differential can be observed when it comes to booking travel online. In EBRD economies in the EU, uptake of online courses is similar to that seen in Germany at around 30 per cent, with somewhat lower figures being observed in other EBRD economies.

Chart 3.12. In the EBRD regions, around 75 per cent of respondents use the internet for calls, but only around 40 per cent shop online



Source: LiTS IV and authors' calculations.
Note: "Making calls" includes both phone and video calls made over the internet, while "online payments" encompasses the sending and receipt of payments, including mobile banking. "Online shopping" refers to the buying or selling of goods or services online. "E-learning" includes both participation in online courses and the use of online learning materials. With the exception of "e-learning" and "making calls", all differences between the regions shown are statistically significant at the 1 per cent level. For "making calls", the difference between EBRD economies in the EU and Germany is statistically significant at the 5 per cent level, as is the difference between EBRD economies in the EU and other EBRD economies, but the difference between other EBRD economies and Germany is not statistically significant at the 10 per cent level. For e-learning, the difference between EBRD economies in the EU and Germany is not statistically significant at the 10 per cent level.

In Germany and EBRD economies in the EU, use of the internet for online payments, shopping and booking travel or accommodation is near-universal among younger cohorts (see Chart 3.13). In other EBRD economies, by contrast, less than 60 per cent of younger respondents make such payments.

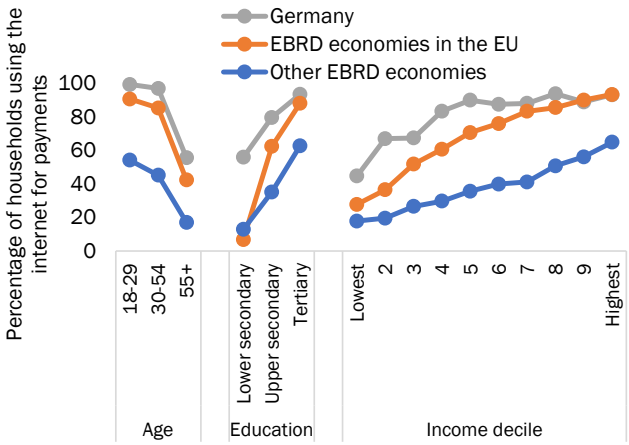
Research has shown that a lack of digital skills impedes people's use of digital technologies. Indeed, differences in digital skills can explain almost 80 per cent of total cross-country variation in households' use of digital technologies. In other words, low levels of digital skills appear to be impeding the use of digital technologies in situations where supporting infrastructure and digital government services are available. A similar correlation can be observed between ICT specialists' share of total employment and firms' use of digital technologies.[78]

[76] See Dauth et al. (2017), EBRD (2021) and Graetz and Michaels (2018). Dauth et al. (2017) study the impact that exposure to robots has on the careers of people working in manufacturing in Germany. They find no evidence that robotisation causes job losses, showing that workers may take on new roles within the same workplace, with displaced workers potentially specialising in new tasks that complement robots.
[77] See EBRD (2021).
[78] Ibid.

Respondents in LiTS IV were asked about their reasons for not using internet-based services such as online shopping. In both the EBRD regions and Germany, the two most common reasons were a preference for shopping in person and a lack of any need to shop online. In the EBRD regions, the next two reasons were a lack of digital skills and concerns about delivery. This echoed the findings of an earlier survey by Eurostat, which showed that a lack of skills was the second most common reason for not shopping online in EBRD economies in the EU, after a preference for shopping in person. In advanced European comparators, by contrast, concerns about payment security were the second most common reason for avoiding e-commerce.[79]

LiTS IV respondents who have a bank account are more likely to use the internet to make payments, as are respondents who trust financial institutions. However, even after controlling for account ownership and trust in banks, along with access to the internet, ownership of a smartphone, laptop or tablet, and individual-level characteristics, lack of digital skills remains a significant impediment to the making of online payments.

Chart 3.13. Use of the internet for payments is still limited among young people in EBRD economies outside the EU

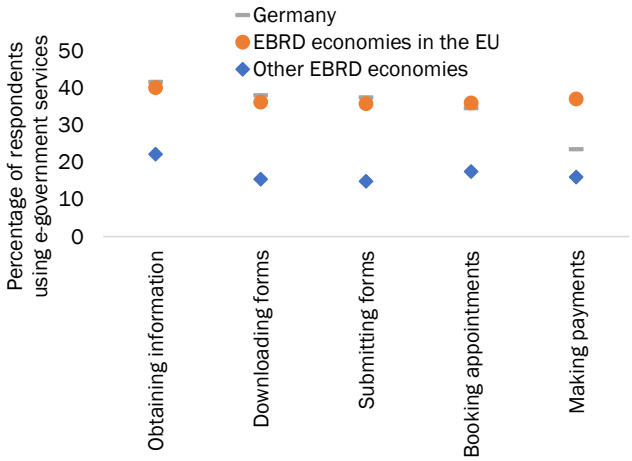


Source: LiTS IV and authors' calculations.
Note: The term "payments" refers to online payments, online shopping and the booking of travel or accommodation online. The income deciles are country-specific. "Lower secondary" also includes respondents with lower levels of education (such as those who have only completed primary education).

High use of e-government services among the young in EU economies

E-government services are used by about 24 to 42 per cent of respondents in Germany and EBRD economies in the EU, compared with 15 to 22 per cent in other EBRD economies (see Chart 3.14).[80] Use of online payments for government and public services is widespread in EBRD economies in the EU, particularly among younger cohorts (see Chart 3.15), which partly reflects the rollout of online payment options during the Covid-19 pandemic (for utilities payments, for instance).

Chart 3.14. In Germany and EBRD economies in the EU, e-government services are used by 24 to 42 per cent of respondents



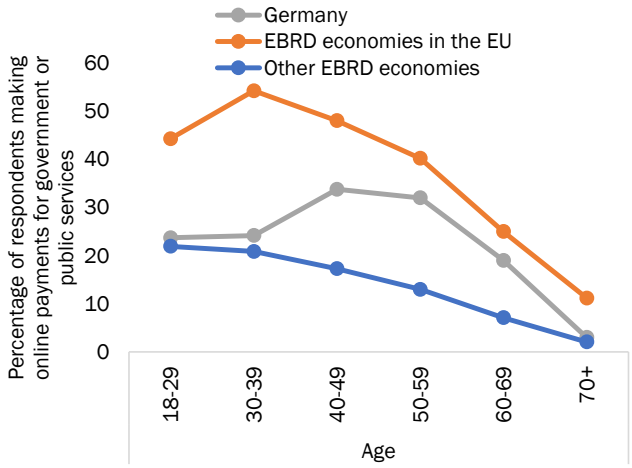
Source: LiTS IV and authors' calculations.
Note: For "obtaining information", "downloading forms", "submitting forms" and "booking appointments", differences between EBRD economies in the EU and Germany are not statistically significant at the 10 per cent level; all other differences between the regions shown are statistically significant at the 1 per cent level.

Across the EBRD regions, the digital skills of respondents are strongly correlated with the use of e-government services when controlling for age and other relevant characteristics. In contrast, differences between residents of urban and rural areas in terms of the uptake of e-government services are not statistically significant at the 10 per cent level.

[79] Ibid.

[80] The more limited use of e-government services in EBRD economies outside the EU may, in part, be due to the availability of such services. EBRD (2021) indicates that the availability of e-government services tends, on average, to be lower in those economies.

Chart 3.15. In the EBRD regions, online payments for government and public services are most prevalent among the young



Source: LiTS IV and authors' calculations.

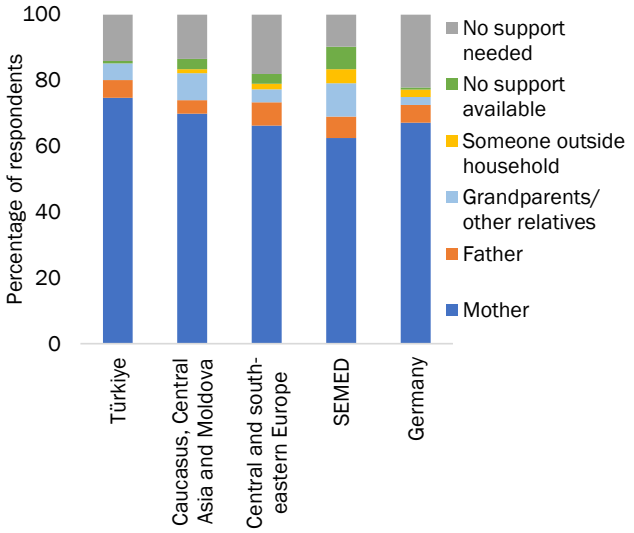
Remote learning during the Covid-19 pandemic

The survey asked respondents about their experiences during the Covid-19 pandemic. In addition to questions about the economic impact of the crisis (see Chapter 2), all respondents with children under the age of 18 in the household who were attending school in February 2020 answered a number of additional questions about their experience of remote learning. Questions focused on the experiences of the youngest child of school age in each household.

Across all economies, two-thirds of households reported that mothers were the main source of support for children when it came to remote learning (see Chart 3.16). In around one-fifth of households, children received no support (either because it was not needed or because it was not available), and in other cases fathers, grandparents, other relatives and people outside the household stepped in to help.

Within individual economies, there were no statistically significant differences between urban and rural households as regards the question of who assisted with remote learning. Nor were there significant differences across the income distribution. Central and south-eastern Europe had a higher percentage of fathers providing support relative to other regions, while grandparents and other relatives were more likely to help in the Caucasus, Central Asia, Moldova and the SEMED region.

Chart 3.16. Mothers tended to assist most with remote learning during the Covid-19 pandemic



Source: LiTS IV and authors' calculations.
Note: This chart excludes people who responded "don't know" or declined to answer the question.

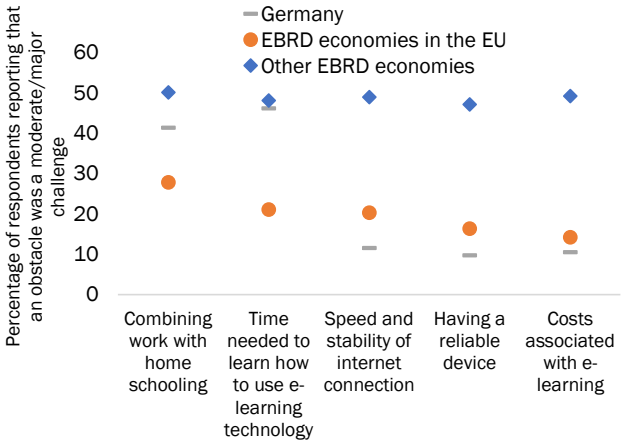
In the EBRD regions, laptops, tablets and other devices required for remote learning were more likely to be shared among a number of children in the household or provided by the school. In Germany, 63 per cent of respondents said that the device used for remote learning was owned by the household and only used by one child; in the SEMED region, by contrast, this was the case for only 29 per cent of households, while 62 per cent of respondents reported that a device owned by the household was shared between multiple household members. Meanwhile, between 12 and 22 per cent of households in Türkiye, Croatia and Georgia reported having a device that had been provided by the school. This was not surprising, given that targeted education programmes relating to e-learning had started to be rolled out in those economies around a decade ago. In Türkiye, for instance, the FATIH Project, which was launched in 2010, covering children from pre-school right up to secondary school, installed electronic whiteboards, supplied students with tablets and enabled the use of e-books in state schools.[81] In Croatia, meanwhile, an e-schooling initiative launched in 2013 not only invested in hardware and digital infrastructure, but also provided specialist training to teachers.[82] Similarly, Georgia embarked on a three-year New School Model programme in 2019, which provided schools with tablets and laptops for teaching.[83]

In EBRD economies outside the EU, around half of all respondents found the lack of a fast and stable internet connection and the absence of a reliable device to be a moderate or major challenge when it came to remote learning (see Chart 3.17).[84] Respondents in those economies were also more likely to highlight challenges associated with the

[81] See Pouezevara et al. (2013).
[82] See European Commission (2020) and CARNET (2023).
[83] See UNICEF (2019).
[84] See also UNICEF (2021).

cost of e-learning (such as the cost of devices or internet access) than respondents in EU economies. When it came to the time needed to learn how to use e-learning technologies, responses were more similar across economies. This could reflect the fact that some simpler technologies were used to reach out to children at home during the pandemic. For instance, Kazakhstan developed more than 3,000 TV-based lessons. TV broadcasting was also used as an e-learning solution in Bosnia and Herzegovina, Kosovo, Montenegro and North Macedonia.[85]

Chart 3.17. Around half of all respondents in EBRD economies outside the EU found internet access and having a reliable device to be a moderate or major challenge when it came to remote learning

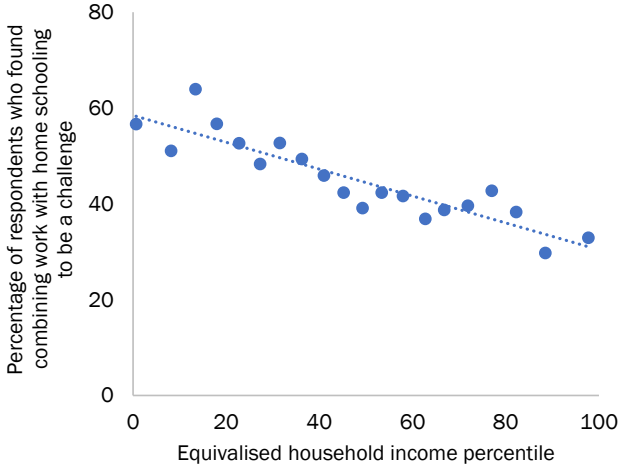


Source: LiTS IV and authors' calculations.
Note: Each obstacle was assessed on a scale of 1 to 4, where those four ratings meant "not a challenge", "a slight challenge", "a moderate challenge" and "a major challenge" respectively.

Lower-income households tended to find that remote learning was more challenging. If one looks at the top half of the income distribution within each economy, the differences between EBRD economies in the EU and Germany in terms of reported obstacles to remote learning are not statistically significant, with the exception of the time needed to learn how to use technologies. In contrast, with the exception of the costs associated with e-learning, the differences are significantly larger if one focuses on the bottom half of the income distribution.

Across economies, poorer households faced greater challenges not only in terms of access to the internet, access to reliable devices and learning how to use new technologies, but also in terms of combining work with home schooling (see Chart 3.18). This could, in part, reflect lower levels of flexibility in terms of working hours among people with lower-paid jobs. For instance, previous studies have shown that highly skilled high-income workers tend to benefit most from remote working,[86] while other research demonstrates that the adoption of digital technologies to accommodate remote working has reinforced pre-existing trends in terms of inequality.[87]

Chart 3.18. Poorer households faced greater challenges in terms of combining work with home schooling during Covid-19 lockdowns



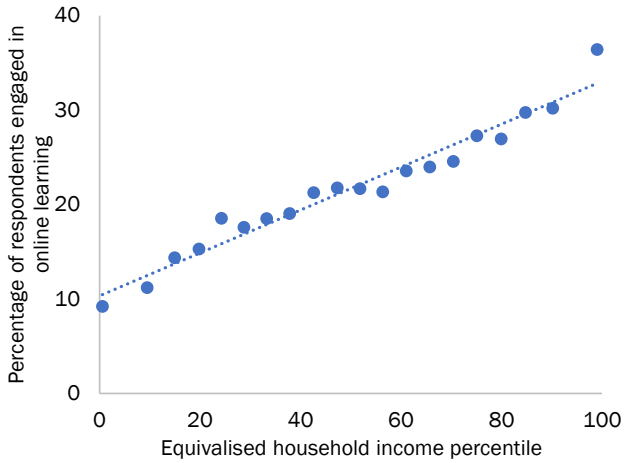
Source: LiTS IV and authors' calculations.
Note: Each dot captures people in the same household income percentile in different countries. Household income has been equivalised using the OECD-modified equivalence scale (see Chapter 1 for details). This binned scatter plot has been residualised against country fixed effects, controlling for individual-level characteristics.

On the one hand, online learning could be used to increase equality of opportunity, as people are not constrained by the availability of courses or good teachers in the area where they live (see Chapter 1 on the importance of a person's place of birth for economic outcomes). On the other hand, however, people in poorer households are less likely to engage in online learning. For instance, while 37 per cent of adult respondents in the top income decile for their economy participated in online learning in the three months preceding the survey, the same was true of only 8 per cent of those in the bottom income decile (see Chart 3.19).

This points to the risk of a "digital inequality stack", whereby a series of digital divides – in respect of access to technologies and hardware, digital skills, and the ability and willingness to learn online – reinforce each other and exacerbate existing socioeconomic divides.[88]

[85] See UNESCO (2021) and UNICEF (2022).
[86] See Adams-Prassl et al. (2020) and Angelucci et al. (2020).
[87] See Mas and Pallais (2020).
[88] See Robinson et al. (2020) and Gottschalk and Weise (2023).

Chart 3.19. Adult respondents in lower-income households are less likely to participate in online courses



Source: LiTS IV and authors' calculations.
Note: Each dot captures people in the same household income percentile in different countries. Household income has been equivalised using the OECD-modified equivalence scale (see Chapter 1 for details). This binned scatter plot has been residualised against country fixed effects, controlling for individual-level characteristics.

Conclusions and policy implications

In some economies in the EBRD regions, the lack of reliable internet access remains a constraint when it comes to increasing uptake of e-government services, e-commerce and online learning. In Central Asia and the SEMED region, for instance, internet access at home is limited by high costs. In those economies, policymakers should (i) ensure that there is competition in the sector, (ii) explore the possibility of establishing public-private partnerships (PPPs) and providing internet access via satellite broadband, and (iii) provide subsidies if need be to ensure investment in infrastructure.[89] This will help to support affordable access in rural areas where population density is low and the fixed cost of providing a reliable service is high.

Access to smartphones is significantly more widespread and equal than access to devices such as laptops or tablets. Consequently, businesses and governments could broaden the reach of their digital services by ensuring that their online presence is optimised for mobile phones through the use of apps and appropriately designed websites.

In addition to digital infrastructure, digital skills are also crucial for the uptake of e-commerce and e-government services and efforts to boost the productivity of workers. Jobs which are more stable, have better access to benefits (such as pensions, social security, annual leave, sick leave and parental leave) and are better paid are more likely to require digital skills. Ensuring broad access to digital skills is thus crucial in the context of labour market shifts such as the green transition and automation.

In Germany and EBRD economies in the EU, there is a strong generational divide when it comes to digital skills, with high levels of digital literacy among younger cohorts and lower levels among older respondents. In other EBRD economies, by contrast, basic digital skills are noticeably weaker in younger cohorts, particularly in rural areas.

There is therefore a case for providing targeted digital skills courses (such as digital literacy programmes offered through public libraries in rural areas), offering support for reskilling and establishing programmes targeting older workers or the unemployed.[90] For example, the Digital Skills @ Your Local Library initiative in Uganda has trained librarians to teach digital literacy, offering affordable and accessible training which has benefited young people, women and rural populations.

In both the EBRD regions and Germany, the overwhelming majority of the burden of home schooling during the pandemic fell on mothers, regardless of their income level or place of residence. Low-income households were disproportionately affected by the costs associated with remote learning and the quality of their internet connection, and they also found it more difficult to manage the competing demands of home schooling and work. This highlights the importance of ensuring support for working mothers with children in education in terms of more flexible working arrangements (see also Chapter 2).

While online learning could be used to increase equality of opportunity, it could also exacerbate existing socioeconomic divides. Policies aimed at making online learning more accessible for individuals from disadvantaged backgrounds could include distributing devices to students or ensuring that students have access to learning materials through their mobile phones (as in the case of Hungary's Hipersuli programme, which was launched in 2015). Efforts to teach digital skills in schools and promote digital literacy among the general public can also play an important role in making access to e-learning opportunities more equitable.[91]

[89] See European PPP Expertise Centre (2012) for details of projects developed by the public sector and investment models that could potentially be adopted through PPPs in order to improve internet infrastructure. See also the proposed Team Europe Initiative on Digital Connectivity in Central Asia, which is currently being implemented and reported on by the European Commission's Directorate-General for International Partnerships. This project has two components: (i) investment in satellite infrastructure to boost connectivity and speeds in the region, and (ii) interventions to foster a policy and regulatory framework that is conducive to the rollout of infrastructure.

[90] See also The Bridgespan Group (2018), which explains that 15 million women have benefited from phase one of the Internet Saathi initiative in India.

[91] See Adams-Prassl et al. (2020) and Angelucci et al. (2020), which show that highly skilled high-income workers tend to be the ones who benefit most from remote working. Meanwhile, Mas and Pallais (2020) show that the adoption of digital technologies to accommodate remote working has reinforced existing trends.

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