Digital Inclusion in Ireland:
Connectivity, Devices & Skills

NESC

An Chomhairle Náisiúnta Eacnamaíoch agus Shóisialta
National Economic & Social Council

An Oifig Náisiúnta um Fhorbairt Eacnamaíoch agus Shóisialta
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An Chomhairle Náisiúnta Eacnamaíoch agus Shóisialta
National Economic & Social Council

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COUNCIL REPORT

No.154 June 2021

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Abbreviations

ADSL
Asymmetric digital subscriber line

BCPs
Broadband Connection Points

CEUD
Centre for Excellence in Universal Design

CRM
Customer Relationship Management

DAFM,
Department of Agriculture, Food & the Marine

DDI
Digital Divide Index

DECC,
Department of the Environment, Climate
and Communications

DES,
Department of Education and Skills,

DESI
Digital Economy and Society Index

DETE,
Department of Enterprise, Trade and Employment

DRCD,
Department of Rural and Community Development

DSL
Digital Subscriber Line

EGFSN
Expert Group on Future Skills Needs

ETBI
Education & Training Boards Ireland

ETBs,
Education & Training Boards

EU,
European Union

GDPR
General Data Protection Regulation

ICT
Information and Communication Technologies

LDCs,
Local Development Companies

LEOs,
Local Enterprise Offices

NBP
National Broadband Plan

NBPIS
National Broadband Plan Intervention Strategy

NDA
National Disability Authority

NDS
National Digital Strategy

QQI
Quality and Qualifications Ireland

RFID
Radio frequency identification technology

SMEs
Small and medium-sized enterprises

VDSL
Very high-speed digital subscriber line

Acknowledgements

NESC would like to thank all those who took part in interviews for this report, and who provided information and data for the project.

NESC also thanks the Citizens Information Board for permission to quote from a forthcoming publication on digital inclusion and e-government in Ireland.

Executive Summary

Economic, social and cultural systems worldwide are becoming increasingly digitalised as we move into the 21st century. This has opened up many new opportunities and challenges in how we live, work and relate to one another—changes which have been accelerated by the Covid-19 lockdowns. More people and businesses need to be proficient in accessing the digital world in order to adapt to and benefit from this transition. However, a number of groups are poorly engaged with ICT, in particular those who are older, have lower levels of education, lower incomes, and live in rural areas. In addition, the extent to which all of those online are fully engaging with the digital world varies. This is a cost for our economy, society, government and individuals. The World Economic Forum identifies the digital divide as a critical threat. This report therefore focuses on how Irish policy can improve digital inclusion.

Why digital inclusion?

Digital inclusion is needed to ensure that Ireland's households, businesses and public sector are prepared for a just transition towards the 'Fourth Industrial Revolution', as ICT changes the shape of enterprise, employment and living conditions. Being prepared for this will allow Ireland to compete effectively with other small open economies. Aiming for full digital inclusion is also the next logical step to build on Ireland's large investment in broadband connectivity, and in e-government. International studies show that the return to such investment in digital inclusion is high. From a social cohesion point of view, such investment aims to ensure that digital divides do not persist, and so helps to combat social exclusion.

Key dimensions of digital exclusion

The key dimensions of digital exclusion are connectivity, access to devices, skills, and the confidence to engage with ICT. Gaps in access to an internet connection have tended to close in developed countries over time but levels of access continue to vary. In Ireland, broadband connection rates and speeds are below average for households, businesses and farms in the Border, Midland and Western areas, for those in lower-income quintiles, and for those depending on welfare payments. In some areas, no broadband is available.

Gaps in access to devices (e.g. desktops, tablets) are also evident; Irish people on low incomes are more likely to own older and second-hand devices, to have internet access only on their smartphone, and to have limits on the amount of data they can use. Those with higher incomes are more likely to have broadband, and access to the internet on a range of devices including smartphones, laptops and desktops. These devices are much easier to use for employment or training. Finance is also a barrier to adoption of new technologies for Irish businesses and farms.

There are gaps in skills and confidence among those using ICT. An important issue here is the pace of change in ICT. Digital competency requires continuous learning – unlike for example, reading, a skill that is maintained once learned. As well as the technical skills of being able to use devices, ICT users also need to be able to evaluate the accuracy and trustworthiness of online resources. In Ireland, skills are lower among older people, and those on lower incomes. Challenges are also encountered by those with poor literacy. In business and farming, smaller set-ups with owners or managers who are older tend to lag in ICT skills, and to find it difficult to compete for staff with good IT skills. This further affects their adoption of new technologies.

There is an interplay between lack of skills, lack of motivation and poor use of ICT, both internationally and in Ireland. Many individuals who do not have broadband or ICT devices say they do not need them; a number of businesses also cite lack of demand as a factor in not adopting digital technologies.

Lack of trust in ICT—along with a fear of cybercrime, unwanted personal data use, and misinformation—can also affect engagement in the digital world. Those who use ICT less are more likely to fall foul of online misinformation and scams.

Policies and programmes to promote digital inclusion in Ireland

There is a wide range of Irish policies and programmes to support digital inclusion. At an overarching level, the *National Digital Strategy* (2013) and the Mobile Phone and Broadband Taskforce have provided central mechanisms to co-ordinate work on digital issues. There are commitments in the Programme for Government to complete and publish a new National Digital Strategy, and to continue to support the work of the taskforce.

On connectivity, the *National Broadband Plan* (NBP) will provide high-speed fibre broadband to all areas of the country over seven years, through an investment of almost €3bn. This includes the provision of broadband in community facilities, called broadband connection points (BCPs). Such connection is key to underpin all other aspects of digital inclusion.

On material access, several programmes—some spurred on by Covid-19—offer support with the cost of devices and broadband to households. The new EU European Electronic Communications Code requires households to be supported with the costs of access to broadband.

On skills, *Future Jobs Ireland* commits to reaching, and if possible exceeding, the EU average in terms of the percentage of the Irish population with at least basic digital skills. A range of training is available for those in and outside employment, including the Digital Skills For Citizens programme for those with few ICT skills. A National Adult Literacy, Numeracy and Digital Literacy Strategy is also being developed.

In terms of e-government, there are commitments to continue developing online service provision, while maintaining access to other service channels at the same time, for those who are poorly engaged with ICT. There is also a commitment to explore assisted digital services.

A range of strategies have been developed to support further digitalisation of business, including the *Industry 4.0* strategy and the report of the SME Taskforce: *The SME and Entrepreneurship Growth Plan*. Increased funding for the Trading Online Voucher scheme was made available during Covid-19. Finance can be accessed through a range of funding streams geared at SMEs and the agri-tech sector.

An agenda for action

The review of Irish policies and of international best practice suggests an agenda for policy action to address the varying levels of digital inclusion in Ireland. Pursuing this agenda will help to better prepare individuals, the economy, society and the public service for a more digitalised future. Five overarching recommendations are outlined:

- Develop a national strategy for digital inclusion, with a key focus on co-ordination, and with a strong commitment to fine-grained measurement of progress.

- Create a comprehensive framework for digital skills progression.

- Support digital inclusion at community level.

- Deliver targeted supports for material access to key groups.

- Enhance guidance for digital and assisted-digital public services, and 'complementary' channels.

The Council believes that, while digital inclusion should be part of a national digital strategy, there should also be a stand-alone Strategy for Digital Inclusion. Such a strategy can provide a shared direction and responsibility, co-ordinate existing work, highlight and address gaps, and allow for collaboration of statutory bodies, businesses and communities. It could include specific targets and target groups, and a focus on connectivity, skills, material access, and the provision of public services to those who are not digitally engaged. It would require an appropriate level of investment, which international studies suggest is likely to be very cost-effective. It is important that such a strategy would support actions to continue to scan for, mitigate and protect against the potential risks accompanying an increasingly digitalised world, in order to support and enhance ICT engagement by all.

Better data on ICT engagement would also be useful, particularly in respect of groups who face challenges in this: the over-65s, people with a disability, non-English speakers, those with literacy difficulties, and smaller firms. Existing data could be compiled into an index to show the relative gaps between different groups in Ireland in use of ICT.

On connectivity, given the need for broadband caused by Covid-19 restrictions, it is important that all possibilities to accelerate the rollout of the NBP be investigated and implemented. A supportive regulatory environment would facilitate the NBP's rollout and that of 5G infrastructure, with the latter being key for rural areas.

The forthcoming *National Adult Literacy, Numeracy and Digital Literacy Strategy* may address commitments to increase the proportion of the population with basic levels of digital skills in Ireland. The DigComp[1] framework should be used to draw the range of existing training into a common framework. This would help businesses and individuals to assess current skill levels, and to develop a more structured pathway of training progression. It could also provide a structure for certification of competences, using the QQI[2] scheme. There is also a need for greater support focused on older people.

To support digital inclusion work at community level, there is a need to co-ordinate nationally and to build further on the pilot schemes currently operating at local level. This would reduce the risk of gaps and duplication. It would also help to clarify the roles of the various players in digital inclusion at local level (BCPs, libraries, local authorities, Citizens Information Centres, etc). The BCPs can play an interesting role in future in supporting ICT engagement at local level, as can local authority broadband officers. Meanwhile, collaborative work involving the statutory, business and community sectors is important, and should be encouraged.

To promote access by particular groups, it would be useful to build on the existing schemes in order to provide connectivity and devices to disadvantaged groups. While many schemes focus on those in education, there is a need to support older people as well. The transposition of the new European Electronic Communications Code into Irish law will help support those who need it with the costs of access to broadband.

On business, co-ordination of existing strategies would be useful, as would increased connectivity. Businesses and farms would benefit from more demonstrator projects and advice on adopting ICT, as well as further financial support, and skills training— particularly on how to conduct business online. Good governance on data ownership is needed to underpin adoption of agri-tech products.

Finally, on e-government, centralised advice and standard requirements on providing online services to groups with varying abilities would be useful. Some groups cannot access digital services for reasons of disability, lack of skills, and literacy or language difficulties. Public services should therefore continue to be provided through a range of channels, such as face-to-face, by written correspondence and by phone. Providing online services in languages spoken by migrant groups to Ireland should be considered. Protocols on assisted digital services are also needed, to deal with safeguarding, consent, GDPR and security.

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[1] DigComp is a digital reference framework developed by the European Commission that sets out 21 competences, grouped in 5 key areas, over 8 proficiency levels, to describe what it means to be digitally competent.

[2] QQI (Quality and Qualifications Ireland) is the national agency responsible for qualifications and quality assurance in further education and training, and higher education.

Chapter 1

Digital Inclusion:
The Case for Action

1.1 Introduction

Economic, social and cultural systems worldwide are becoming increasingly digitalised as we move into the 21st century. Digital technology is propelling growth, employment, new products, new industries, and new infrastructures. These will carry goods, energy, people and information farther, faster and more cheaply than before. This change, dubbed the Fourth Industrial Revolution, has opened up many new opportunities in how we live, learn, work and relate to one another. Along with global climate change, this change is leading to substantial alterations in business, and in the structure and types of employment. Both changes offer opportunities but also challenges. The International Telecommunication Union (ITU) and Food and Agriculture Organization of the United Nations (FAO) (2020) argue that there is a critical need for actions at policy level to maximise the benefits and minimise the potential risks of these changes.

The adjustments brought about by the Covid-19 pandemic—during which many schools, colleges, workplaces, product sales and public services moved online—have accelerated this transition. More people and businesses need to be able to access the digital world, in order to adapt to and benefit from this transition. In line with this, the proportion of the population and businesses in developed countries which is online increases continuously—and even more so in the last year.

However, some groups remain poorly engaged, in particular those who are older, have lower levels of education, lower incomes, and live in rural areas. In addition, the extent to which those who are online are fully engaging with the digital world varies.

The danger that opportunities offered by digital technologies might not be available to all, and could lead to a 'two-tier' information society, has been an interest of policy on ICT in Ireland since the late 1990s (McCaffrey, 2007).[3]

This NESC report focuses on how Irish policy can improve digital inclusion. This chapter sets out the case for taking action. It begins by drawing attention to some of the high-level evidence for digital exclusion in Ireland. It then summarises the benefits of action to improve digital inclusion. The chapter closes by outlining the structure of the report.

1.2 Digital Exclusion in Ireland

Ireland ranks sixth in the EU on the use of ICT in 2019 (EC, 2020a). It scores well on the use of e-commerce by SMEs, the use of the internet by individuals, and the provision of digital public services for businesses. However, despite these successes, there are clear shortcomings:

- Digital skill levels in the wider population are below the EU average, as 53 per cent of the Irish population aged 16–74 years have only basic digital skills, compared to 58 per cent of those in the EU (EC, 2020a).

- Older Irish people have much lower levels of digital skills than their counterparts in other EU countries. For example, 33 per cent of Irish people aged 65–74 had never used the internet in 2019, compared to 11 per cent in Britain.[4]

- Other socio-economic and demographic divides are evident, with the unemployed, those with lower education, lone-parent households, and the lower income quintiles less likely to own ICT devices, use computer software, download apps, use internet banking, or interact with government online.

- Those in rural areas also tend to have weaker online engagement, linked to poorer connectivity in these areas.

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[3]   A national 'e-inclusion strategy framework' was referred to in *Towards 2016*, as well as an 'e-inclusion stakeholders group' which would monitor the strategy (see https://www.kildarestreet.com/wrans/?id=2007-10-02.543.0&s=%22einclusion+strategy%22#g547.0.r, accessed 10.02.21); further information on the work carried out under these initiatives is not available. They may have ceased operation during the financial crash.

[4]   Analysis of Eurostat DESI databases, at https://digital-agenda-data.eu/charts/analyse-one-indicator-and-compare-breakdowns, accessed 4.05.2021.

Similarly, while some businesses make strong use of new technologies and e-commerce, others lag behind—particularly small businesses and farms, and those owned/managed by older people. The barriers facing those lagging behind include lack of availability of finance and of staff with the right skills, and lack of access to digital infrastructure. Also important are low levels of confidence in using technology, and a lack of awareness of the technologies available and their potential benefits.

The higher-than-average proportion of adults with only basic digital skills in Ireland is also problematic for small businesses, as they find it harder to compete for staff who are well skilled in digital technologies (Innovation Finance Advisory, 2019; Government of Ireland, 2020a; IFA, 2019; OECD, 2019; Divilly, 2018).

In terms of digital public services, Ireland ranks 9th among EU countries, well above the EU average (EC, 2020a). There is particularly high use of digital public services by businesses; 99 per cent use them. Among individuals, 76 per cent of internet users who had to submit forms to public services did this online, which is above the EU average of 67 per cent (EC, 2020a). While this shows a demand for and engagement with digital public services, it also shows that quite a large group do not use them. Again, there are socio-economic and demographic variations evident, with older people and the unemployed less likely to use online public services, as well as those with literacy problems, and non-native English speakers (Norris et al., forthcoming).

These patterns relating to individuals, businesses and public service use are concerning, given the growth of technological innovations and automation in the workforce, the increase in online purchases and use of public services, and the need for all groups to be able to take advantage of ICT developments. It is important to ensure that as many people as possible are digitally included, in order to secure the future of the Irish economy and society during the Fourth Industrial Revolution.

1.3 Digital Inclusion and its Benefits

Digital inclusion, at its simplest, means that everybody can contribute to and benefit from the digital economy and society.[5] This section considers what digital inclusion means for individuals, businesses and nation states.

1.3.1 Individuals

For individuals, being digitally included means having convenient, reliable access to affordable, accessible digital devices and an internet connection, and the ability to confidently use these in their day-to-day life (New Zealand Government, 2019).[6] Individuals who are unable to engage effectively with digitalised communication, markets and services, and who are not well adapted to this new technological environment, have and will continue to experience negative impacts on their quality of life.

For individuals, digital literacy allows access not only to employment, education and public services, but also information and entertainment. It can save money, democratise education and knowledge, and break down geographic barriers. For those with a disability, digital innovation can be truly transformative, from provision of text services for those hard of hearing, to much greater opportunities for people with mobility difficulties to work from home. Digital technology has enormous potential to narrow divides—helped by mobile-phone technology and the likely improvement in skills which was thrust on many during Covid-19, for example.

However, digital technology dividends are not automatic, and can instead reinforce and magnify existing fault lines and worsen economic and other inequalities (United Nations, 2020; ITU & FAO, 2020). There is no guarantee that the severity of digital divides will shrink (Park, 2017). In fact, some studies show that gaps in the digital engagement of different groups can be persistent (Thomas et al., 2020). For example, research indicates that those who rely solely on

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[5]   See https://ec.europa.eu/digital-single-market/en/digital-inclusion-better-eu-society#:~:text=Digital%20inclusion%20is%20the%20European,the%20digital%20economy%20and%20society.&text=Social%20Inclusion%3A%20increasing%20the%20participation,activities%20through%20social%20inclusion%20projects, accessed 12.04.21.

[6]   While the definition of digital inclusion is likely to stay consistent over time, what is needed to be digitally included will change as technology and society evolve. For example, in the future it might be important to understand artificial intelligence, or be able to write computer code.

mobile technology for internet access have poorer digital skills and are more likely to be digitally excluded than those who use multiple ICT devices (Norris et al., forthcoming).

Such divides are evident in the fact that the challenges of the Fourth Industrial Revolution are likely to be felt most strongly in the labour force by those with lower levels of educational attainment (EGFSN, 2018). These groups are more likely to have fewer digital skills and weaker digital engagement. As digital skills are no longer optional, but essential (Nania et al., 2019), it is now the relative level of digital skill and engagement that will lead to employment (Helsper et al., 2016). Therefore it is vital to ensure that those with poorer skills are equipped to make effective use of digital opportunities, and to access future employment opportunities. This will not only help to maximise the new opportunities afforded by a more digital world, but will also help to support a just transition to a low-carbon and digital future.

Those without access to digital technology and skills are also at risk of losing their ability to participate fully in other aspects of modern life. Increasingly, government information and consultations are online. More and more public services, from driving licence renewal to renewal of Covid-19 employment support payments, are difficult to access offline. Those without digital access and skills may end up reliant on others at the loss of their own independence, even though they are not otherwise vulnerable. They may also, for example, lose out on utility and insurance discounts for online customers.

1.3.2   Businesses and Public Services

For businesses and farms, digital inclusion is about the spread of digital transformation to all enterprises; i.e. the adoption of digital technologies[7] and the existence of a range of enablers to support such adoption.[8]

The benefits of digital transformation for businesses are: opportunities to grow and create new revenue streams, to improve productivity, and to compete more effectively nationally and internationally. For this, digitally skilled and engaged workers are vital to permit progress in a range of sectors, from construction to retailing. In farming, the growth of digital technologies[9] will drive the Irish agri-food sector over the next 20 years (Teagasc, 2016). This will again require multi-skilled farmers who are educated to use, and confident with, new digital technologies.

Businesses which are not well engaged with digital markets are losing out and will continue to lose out as competitors in their own countries and internationally gain market share from increasingly online consumers (IE Domain Registry, 2019).

For public services, digitalisation and connectivity offers the opportunity to redesign services and transform administration. For example, social welfare applications and interviews could be held online, with the data arising being processed in any location. In health, digitalisation offers potential: from online consultations countrywide to improved diagnostics, surgery and treatment. It will also support cost savings. However, lack of digital skills and access among the public is undermining government work to move public services online.

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[7]   The European Commission (2018) lists these as Social media, Mobile services, Cloud technologies, Internet of Things, Cyber-security solutions, Robotics and automated machinery, Big data and data analytics, 3D printing, Artificial intelligence.

[8]   The European Commission (2018) lists these as Digital infrastructures, Investment and access to finance, Supply and demand of digital skills, E-leadership and Entrepreneurial culture.

[9]   Such technologies enable the use of data in management systems, the automation of tasks (e.g. milking, herd management, feeding, identification of oestrus, weed and plant disease management), and the simplification and automation of administration.

1.3.3   Nation States

The move to use digital technologies during Covid-19 has highlighted existing digital divides, thus 'reinforcing the need for a more inclusive approach to digital transformation' (OECD, 2020b). In fact the World Economic Forum's Global Risks Report 2021 rates digital inequality as a critical threat over the next two years, and one of the top five for 2021, as it can worsen societal fractures and undermine prospects for an inclusive recovery. The European Commission, in its latest Country Specific Recommendations, recommends that Ireland 'address the risk of digital divide'.[10]

With the benefits of online services now apparent, life 'post-Covid' will be different to what it was before. Entertainment, education, employment, public services and products will all be available in different ways in future, both online and in more 'blended' provision that mixes online and offline. It is important to ask how the economy and society can be ready to participate fully in this future, and develop it further. The OECD (2020a), for example, notes that adequate digital skills, computer equipment and internet connection are key to expanding online learning provision, and making it more inclusive. A focus on digital inclusion is essential to help everyone in Ireland to deal with this new future, and to traverse the economic and social shocks of the ongoing disruption caused by the Covid-19 crisis.

In addition, the experience of home working, e-health and online education during Covid-19 is accelerating the potential for remote work, education, healthcare and entertainment countrywide. While some jobs and services are better (or only possible) in person, many others are realising an enormously expanded reach through online provision. This provides great opportunity for a stronger economic base and related population growth in rural areas.

Countries which are not equipped to take advantage of the digital future will not reap the benefits it offers. Ireland, as a small open economy, will need to ensure that the digital skills and engagement of its population are strong, to be able to compete effectively with peer countries, such as the D9.[11]

Currently, Ireland's score in the Digital Economy and Society Index (DESI) human capital index[12] is the second lowest of the D9 countries, due to poorer performance in the proportion of the population with at least basic digital skills (EC, 2020c). Digital exclusion is a challenge for the Fourth Industrial Revolution, and potentially a high cost in the long run for countries attempting to build digital economies and hoping to reap benefits from digitalisation. In this regard, building digital capital in society should be seen as an investment rather than an expense.[13] In fact, UK research shows a strong multiplier from investing in digital skills and devices to combat digital exclusion; £15 benefit for every £1 invested (CEBR, 2018). Ireland is currently spending €3.5bn to ensure broadband connectivity countrywide. This will provide the infrastructure required for the digital future. Ensuring that all groups have the devices, skills and confidence to capitalise on this substantial investment is the next step.

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[10]   It is a country-specific recommendation for 2020-21 in the European Commission's recommendation on Ireland's 2020 *National Reform Programme*. See EC, 2020d.

[11]   The D9 countries are an informal alliance of Digital Ministers from the nine top-ranked European countries in the European Commission annual DESI (Digital Economy and Society Index). The D9+ countries include these nine, and the Czech Republic and Poland, which share similar ambitions for the Digital Single Market.

[12]   DESI is a composite index that summarises relevant indicators on Europe's digital performance and tracks the progress of EU member states in digital competitiveness. One of the index's five dimensions is human capital, which measures basic skills and internet use, and advanced skills and development.

[13]   The EGFSN (2018) argues that 'rather than allowing the social protection systems to carry the potentially growing burden of redistribution it may be more efficient and equitable to invest continually in upskilling the low-skilled, whether they are employed or unemployed.'

1.4 Report Structure

This report is focused on the actions that could be taken to improve digital inclusion in Ireland.

Chapter 2 looks in greater depth at dimensions of digital exclusion, including in four key areas: connectivity, access to devices, skills and confidence, and access to benefits. It also looks at the impact of Covid-19. It outlines varying levels of digital inclusion in Ireland, in homes, businesses and use of public services.

Chapter 3 describes the strategies in place to promote digital inclusion in Ireland. It notes commitments in the Programme for Government, *National Digital Strategy*, social inclusion and local authority digital strategies. It then discusses existing policy across the themes raised in Chapter 2; namely connectivity, access to devices, skills and confidence, and access to public services. It also looks at the specific supports for business and farming.

Chapter 4 outlines examples of good practices internationally, noting four sets of lessons. This focuses on the need for an overarching approach, access to ICT, skills and confidence, and lessons for business and farming.

Chapter 5, drawing on the analysis of current policy, international research and a range of interviews with stakeholders and experts,[14] outlines an agenda for policy action to address the varying levels of digital inclusion. Pursuing this agenda will help better prepare individuals, the economy, society and the public service for a more digitalised future.

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[14] The research work for this report included desk-based reviews of policies and programmes to promote digital inclusion in Ireland and abroad, unpublished work commissioned by the Citizens Information Board on access to online public services in Ireland, and interviews with stakeholders, including government departments and agencies (16), representative organisations (6) and training organisations (2).

Chapter 2

Digital Inclusion:
Probing variations and difference

2.1 Introduction

This chapter examines digital inclusion. It begins by outlining different dimensions of digital inclusion, and then presents a range of statistics to outline variations in these dimensions in Ireland.

2.2 Dimensions of Digital Exclusion

Drawing on the research literature, this section describes the four key dimensions of digital inclusivity.

- **Connectivity**: Gaps in access to an internet connection, typically by class and/or race, or geographic location, were most evident earlier in the evolution of digital technologies. While these gaps were wide in, e.g., the 1990s, they have tended to close over time in developed countries as more and more households become connected to the internet. However, levels of access to the internet continue to vary, with a lack of broadband connection or weaker connections still evident in rural areas and among low-income groups (Van Deursen & Van Dijk, 2019). This also affects businesses, particularly in rural areas, and farms.

- **Material Access:** This is the means required to maintain the use of the internet over time, such as computer devices (e.g. desktops, tablets), software and peripheral equipment (e.g. printers). How users and organisations adopt and use technologies is very important (Park, 2017). As connectivity improved, differences in material access have come more to the fore. Gonzales (2015) argues that, even though the vast majority of people in Western countries are now able to access the internet, these numbers do not accurately reflect the ability to reliably maintain that access. People with low incomes are more likely to own second-hand devices and to experience malfunctioning hardware and software. Their internet access is more unstable and suffers more periods of disconnection, as they are more likely to only have internet access on their smartphone, and to have limits on the amount of data they can use. Meanwhile those with higher incomes are more likely to have broadband, as well as access to the internet on a range of devices including smartphones, laptops and desktops. These devices provide much more capacity to use IT. For example, it is much easier to follow education or training on a laptop than on a mobile phone, and it is difficult to carry out a lot of work using only a mobile phone. For business and farms, finance is also a barrier to adoption of new technologies.

- **Skills and Confidence**: This is quite a complex area, as an increasing range of skills are required to effectively engage with ICT. One issue is the pace of change in ICT, with digital competency requiring continuous learning as applications are constantly changing, unlike for example, reading, a skill which is maintained once learned. Park (2017) notes the 'constant catching up' necessary for those who come late to the digital world. Her research finds that it can take from several months to several years for a person to become comfortable using digital technology. Differences in material access also play a role here, as digital competency requires constant investment to update hardware and software, which is expensive, particularly for those on low incomes.

  A second skills issue is that, as the use of digital media has expanded, a broader and more comprehensive set of skills is required—often referred to as digital media literacy. Park (2017) divides this into two sub dimensions: device literacy and content literacy. This separates the technical skills of being able to use devices (device literacy) from the intellectual and cultural activities that people engage in online (content literacy). It is possible to have one and not the other. For example, younger digital generations may have high device literacy, but they may not be as adept with content literacy, which requires a different set of skills. Some groups who do not engage much with ICT have both poor technical and content skills.

  A related barrier is lack of trust in digital technologies. This is linked to threats in the online environment, of which there are a number (see Box 2.1).

  From an inclusion point of view, concerns about online privacy and security can pose a serious barrier to the adoption of digital technologies and applications (OECD, 2020b). This can become a vicious circle, with those with lower skills in ICT more likely to fall foul of online misinformation and scams (Accenture, 2020).

As with other aspects of digital engagement, inequalities are evident in skills and along socio-economic lines, particularly by age, class and to some extent by gender. Challenges are also encountered by those with poor literacy, and those who are not native-language speakers (Norris et al., forthcoming). In business, smaller companies with older owners or managers also tend to lag in ICT skills, and to find it difficult to compete for staff with good IT skills, which constrains adoption of new technologies.

There is likely to be an interplay between lack of skills, lack of motivation and poor use of ICT (South Leinster CIB, 2019). A range of authors have noted that seeing a need to engage with ICT is important in engaging with it. This is evident among individuals and businesses. Many individuals who do not have broadband or ICT devices say that they do not need them. A number of businesses also cite lack of demand as a factor in not adopting digital technologies. A lack of confidence in ability to use ICT can underlie this hesitancy to engage. Self-efficacy is important in determining adoption of the internet by non-users. Park (2017) has also stressed social context: how people in one's immediate surrounds engage with technology can influence the extent to which individuals and businesses engage with it.

Box 2.1: Threats in the online environment

Online threats include the following:

- Cyber crime, which affects businesses, individuals and the public sector. It includes financial and identity theft; sales of counterfeit goods online; hacking and malware; and denial of service attacks which disable online services. Online sexual exploitation is another criminal activity which has particularly negative impacts on younger people.

- Data privacy issues, such as data being stolen, damaged or used for purposes for which permission was not given—which affects businesses, individuals and the public sector.

- Psychological dangers affecting individuals in particular, such as online bullying, trolling, addiction to social media, living online as opposed to the 'real' world, etc.

- Disinformation, fake news, hate speech and the existence of 'echo chambers', which can have negative effects on individuals and society.

- The increasing use of AI, algorithms, data analytics and automation that may incorporate existing biases in society (OECD, 2020b). This has implications for digital inclusion.

Some of these threats are new manifestations of age-old activities (e.g. theft of data or money). Others are entirely new (e.g. hacking, malware) (Brady & Heinl, 2020). However, as the use of digital tools becomes more ubiquitous—with, for example, more users and more uses in homes, medical devices, cars, etc—the scale of threats increases.

- Access to Benefits: As more and more functions move online, an important dimension of inclusion emerges in relation to the benefits one can gain from engaging with the digital world. The OECD (2020b) notes that the highly skilled can obtain more opportunities by using the internet to expand their knowledge, find better jobs more easily, follow online courses or secure faster access to healthcare. Conversely, if low-skilled people use the internet more for chatting and entertainment, they risk amplifying existing inequalities and undermining their well-being. For businesses, those with a strong online presence have higher sales, while those which have adopted few digital technologies tend to be less innovative, and less likely to increase employment or command higher mark-ups (Rückert et al., 2020). There are differences in the relative advantages of, e.g., earning money as a freelancer (e.g. on Fiverr) or as a provider (e.g. on AirBnB) (Berg et al., 2018). Finally, there is a potential divide in relation to the ability to protect one's self or business from falling prey to internet scams, as those who are not comfortable online are much more susceptible to misinformation.

The following sections outline variation in engagement with ICT in Ireland across these dimensions.

2.3 Connectivity[15]

2.3.1 Geographic Variation

Ireland's proportion of households with broadband access (fixed and mobile) in 2019 was 90 per cent, compared to an EU average of 88 per cent.[16] The proportion of businesses connected to the internet in that year was 96 per cent, just marginally below the EU average of 97 per cent.[17] However, there are variations by geographic area, with poor connectivity in some rural areas. For example:

- In 2019, 20 per cent of households in the Border region, and 10 per cent in the West, reported that the reason why they did not have broadband was because it was not available (CSO, 2019).

- 25 per cent of those surveyed in rural areas had daily problems with quality of mobile-phone coverage (ComReg, 2019).

One quarter of the companies without broadband in 2017 said they did not have it, as it was not available in their area (ComReg, 2017). And in 2019, 8 per cent of 1,000 companies surveyed by IE Domain Registry said their main barrier to doing more online was poor broadband connectivity.

The rural location of farmers means that connectivity is a particularly strong barrier. An IFA (IFA, 2019) survey of 768 farmers found that availability or quality of internet connection was the foremost barrier, cited by 55 per cent of those surveyed, to further adoption of technology on their farm. This barrier was highest in Connacht/Ulster (at 60%).[18] This issue also affects wider farming infrastructure; for example, during Covid-19, it became evident that 40 per cent of animal marts did not have access to good-quality broadband (Kiernan, 2020).

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[15] Data from the CSO, ComReg and the IE Domain Registry are drawn on in particular in the following sections. While CSO data is based on larger surveys, the ComReg and IEDomain Registry data include a greater range of socio-economic and other breakdowns, allowing more nuance on the position of different groups to be assessed.

[16] See https://ec.europa.eu/eurostat/databrowser/view/tin00073/default/table?lang=en, accessed 12.04.21. The Netherlands, Sweden, the UK and Iceland had the highest coverage, at over 95 per cent.

[17] See https://ec.europa.eu/eurostat/databrowser/view/isoc_ci_in_en2/default/table?lang=en, accessed 12.04.21.

[18] Good overarching data on the use of ICT on farms is not available, with degree of rurality providing a proxy, but see EC, 2017.

2.3.2 Socio-economic Variation

There are also variations by social class in internet connection. In 2019, 60 per cent of those in C2DEF households, but 72 per cent of those in ABC1 households, had a fixed broadband connection (ComReg, 2019).[19] Looking at households reliant on a mobile broadband connection only, CSO data for 2019 shows the following socio-economic and geographic patterns:

Table 2.1: Percentage of households in Ireland with mobile broadband only, by household composition and region, 2019[20]

Household composition	% of households	Region	% of households
1 adult with dependent children	27	Midlands	16
2 adults with dependent children	10	Border	13
3 or more adults with dependent children	10	South-East	12
1 adult, no dependent children	8	West	11
3 or more adults, no dependent children	7	Mid-West	8
2 adults, no dependent children	3	South-West	7
		Mid-East	4
		Dublin	3

Source: CSO, 2019.

The CSO survey data indicates that many households in the lower income quintiles had either no broadband or mobile broadband only,[21] as outlined in Table 2.2:

Table 2.2: Percentage of households in Ireland with either no broadband, or mobile broadband only, by income quintile, 2019

Quintile	%	Quintile	%
First quintile – very disadvantaged	20	Fourth quintile - affluent	13
Second quintile – disadvantaged	25	Fifth quintile - very affluent	0.5
Third quintile – average	13		

Source: CSO, 2019.

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[19] The CSO question defined fixed broadband as DSL, ADSL, VDSL, cable, optical fibre, satellite, public Wi-Fi connections' and the ComReg question defined fixed broadband as through home phone line, fibre line, or cable TV. ComReg included satellite and fixed wireless broadband under 'Other broadband'.

[20] These figures are calculated by subtracting the percentage of households with fixed broadband from the percentage of households with any type of broadband. The data is from the CSO's *Information Society Statistics – Households 2019*.

[21] The published data for income quintiles did not allow separation of those with no broadband and those with only mobile broadband.

It is relevant here that the cost of broadband in Ireland is one of the highest in the EU (EC, 2020a). While it is not a high cost for many households, for those on tight incomes it is a cost that may not be considered justified. Com Reg (ComReg, 2020) showed that 8 per cent of the population experienced difficulty paying for their broadband in the past year, although a socio-demographic breakdown of this data is not provided (ComReg, 2020). However on the basis of other data (e.g. SILC data on utility bill arrears), it is likely that those most affected are those on lowest incomes.

There are also variations in broadband connectivity by age group. Among older people, while 86 per cent of those aged 50–69 years had home internet in 2018, only 38 per cent aged 80+ did; 30 per cent of those over 50 and living alone did not have home internet. There is also a group of people aged over 50 who use the internet but are solely reliant on internet access external to their homes—e.g. friends'/relatives' home, library, community centre and public Wi-Fi networks. This group comprises 3 per cent of those in this age bracket, which is 40,000 people (Doody *et al.*, 2020).

2.4 Access to Devices and ICT Equipment/Software

2.4.1 Households

In 2017, the device which households were most likely to have connected to broadband was a laptop, closely followed by a mobile phone, as outlined in Figure 2.1.

Figure 2.1: Devices connected to broadband

Source: ComReg, 2018.
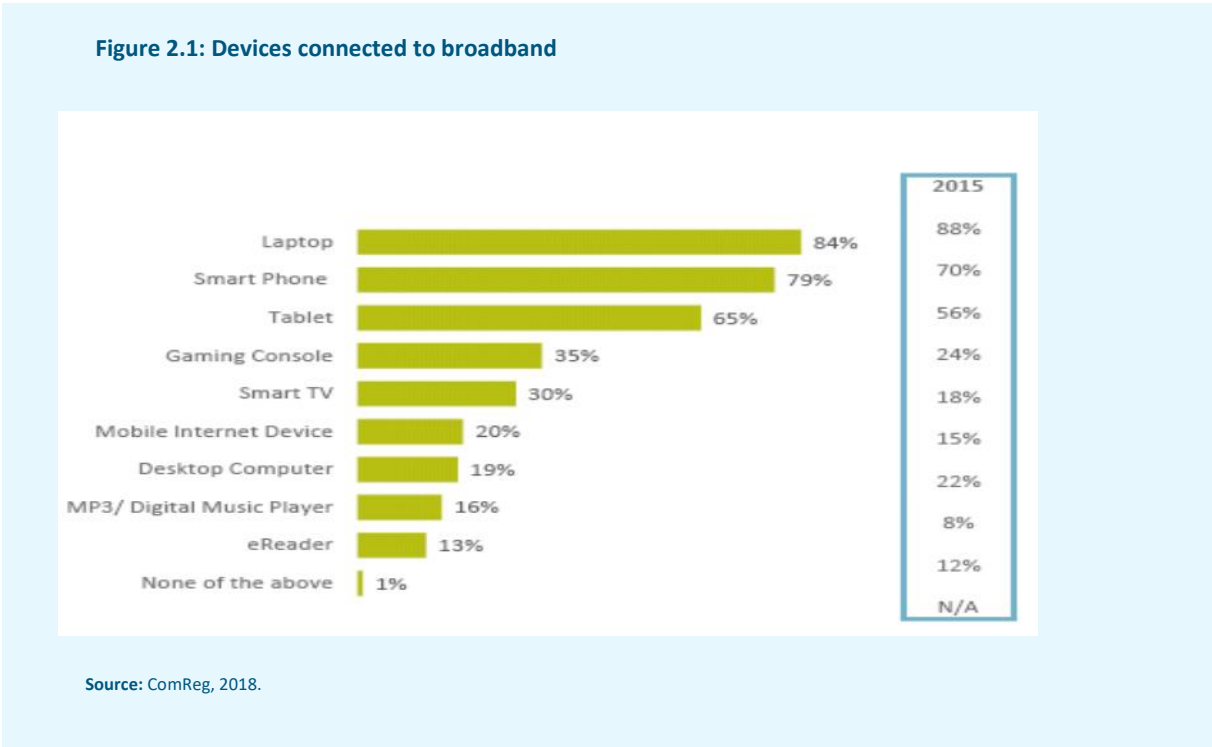
Information is not provided on the socio-economic breakdown of computer ownership. However, ComReg data for 2019 on phone ownership shows the following socio-economic variations:

- 84 per cent of the population own a smart phone, but this is 79 per cent for those in the C2DEF social class, compared to 91 per cent for those in the ABC1 class.

- 41 per cent of those in the C2DEF social class have a phone which is over three years old, compared to 29 per cent of those in the ABC1 social classes.

- 56 per cent of those in the C2DEF social class access data on their phone through 4G, compared to 71 per cent of those in the ABC1 social classes (ComReg, 2019).

Those over 65 engage with ICT less than other groups. For example,

- Less than half of over-65s own a smartphone (47 per cent),

- 43 per cent of those aged over 65 use their phone to access data.

- 65 per cent of those aged over 65 own a phone which is over three years old (ComReg, 2019).[22]

In general, the older a person is, the lower their engagement with ICT. While 60 per cent of those aged 70–79 years have access to a smartphone/tablet, only 30 per cent of those aged 80+ do (Doody *et al.*, 2020).

It would not be surprising to find that the socio-economic variations in phone ownership follow similar patterns in the ownership of other ICT devices, with implications for the extent to which different groups can engage in the digital world.

There are particular issues for people with disabilities, who need accessible devices, which are not always available—although, when they are, digital access can be very transformative.

2.4.2   Businesses

Given that access to devices is practically a requirement to run a business or farm, a key metric is the extent to which businesses are digitalised. Such digitalisation can be seen in, e.g., buying and selling goods online, using ICT in business processes, integrating ICT into products and developing smart products, digitalising production, using data analytics in processes and supply chains, etc. To what extent are companies in Ireland engaged in these processes?

While 79 per cent of companies with over 10 employees had a website in 2020 (CSO, 2020e), the IE Domain Registry 2019 survey, which includes companies with fewer than 10 employees, showed that 69 per cent had a website. This indicates lower digital engagement among micro-businesses (which make up 92 per cent of Irish businesses).

The same pattern is evident when it comes to online sales. CSO data shows that, in 2020, 35 per cent of small enterprises had e-commerce sales, compared to 58 per cent of medium-sized enterprises, and 61 per cent of large enterprises.[23] There was also a difference by size in the proportion making e-commerce purchases: 70 per cent of large enterprises, 59 per cent of medium-sized enterprises and 49 per cent of small enterprises.

When it comes to digitalising work processes,[24] Ireland does not perform as well as other countries in the EU. A two-speed digital economy is evident: 40 per cent of companies (mainly indigenous SMEs) completely lack digital technologies, and a further 30 per cent have few digital assets.[25] Less than 20 per cent of Irish companies with under 10 employees used big-data analytics in 2017, compared to 50 per cent of companies with over 250 employees (OECD, 2020b: Figure 4.13). Sectors which are particularly poor at using ICT include the construction, retail and manufacturing sectors (Innovation Finance Advisory, 2019) (although the retail sector is likely to have caught up during Covid-19). However, a positive is that small Irish firms are much more likely than those in the EU to use social media, on average (OECD, 2020b). See Table 2.3 for an outline of different types of business engagement with ICT.

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[22]   Some of the impacts of using older phones can be seen in the fact that the Covid-19 tracker app does not work on phones which are over five years old. See https://www.irishmirror.ie/news/irish-news/covid-tracker-app-ireland-phone-22313757 accessed 19:04.2021.

[23]   Small enterprises had between 10 and 49 staff, medium between 51 and 249, and large over 250.

[24]   Including the use of computers in the workplace, digitalised processes such as RFID (radio frequency identification technology) and CRM (customer relationship management software)

[25]   E.g. digitally stored content that comes with a right to use it, such as software, databases, logos, media files, presentations and domain names (Government of Ireland, 2019a).

A key difficulty which Irish SMEs face in digitalising further is finance.[26] This is due to two factors. First, companies find it difficult to access finance from traditional banking channels, especially for large-scale digital transformation programmes. Many banks do not have expertise to assess the value and risk of ICT projects. In addition, the cost of funding is high (Innovation Finance Advisory, 2019; OECD, 2019; Government of Ireland, 2020a).

Table 2.3: Digital divisions among SMEs: cheetahs, zebras & ostriches

Cheetahs	The cheetahs are a minority of digitally savvy SMEs that are fast to market and take a comprehensive, integrated approach to digital and online technology. They use websites and social media pages to interact regularly with their customers. They take full advantage of e-commerce and business-boosting software to sell to and interact regularly with new and existing markets, and use digital technology to improve their own internal processes, reducing expenditure of time and money.
Zebras	Zebras comprise the majority of Irish SMEs. While they may have some digital assets, like a website, a limited number of productivity tools, or even some e-commerce ability, they feel constrained by their day-to-day tasks. Thus Zebras' digital assets are under-used, and their web presence remains largely anonymous. Concerns about the perceived burdens of time, expertise and money in digital investment are holding the zebras back.
Ostriches	The ostriches have little to no online presence. While some may have a website or social media page, they are unlikely to see its true value, or use it only infrequently. Others may have no interest whatsoever in developing their online presence and feel that there's no need to, despite evidence to the contrary.

Source IE Domain Registry, 2019.

2.4.3 Farms

The position of farmers in relation to ICT shows similar socio-economic patterns to those found in households and businesses. A 2019 survey of farmers' use of ICT technology found that 84 per cent used a smartphone in daily life, 69 per cent a laptop or PC, and 38 per cent a tablet or iPad. Only 2 per cent did not use any of these devices (IFA, 2019). Usage of devices was higher on larger farms; 80 per cent of those with over 100ha farms used a laptop or PC, compared to 65 per cent of those with less than a 50ha farm.

A much smaller proportion of farmers were using ICT technology in their farming practices. In 2019, calf registration was being used by over half of those in the IFA sample, and approximately one third used the three other most popular technologies.[27] Some technologies had high adoption in a relevant sector; for example, 86 per cent of dairy farmers were using or had used calf registration systems, and 77 per cent of tillage farmers were using or had used GPS for machine guidance and steering. The dairy sector, which has the largest farms and the most full-time farmers, was most advanced in technology use.

A total of 23 per cent of farmers surveyed by the IFA felt that the cost of purchasing and maintaining or servicing technology was a key barrier to their adoption on Irish farms. This reason was most often cited by farmers aged under 35 and those based in Co Dublin. The report acknowledges that the cost of investing in such technology is high. Soto *et al.* (2018) also note that it is difficult for farmers to assess the likely return on investment, and this is a demotivating factor in the adoption of some agri-tech. This is particularly the case for small farms (Divilly, 2018).

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[26]   8 per cent of the companies surveyed by IE Domain Registry said the cost of ICT was a major barrier to doing more.

[27]   These were camera monitoring, herd management and remedy recording.

2.5   Skills and Confidence

Turning to the issues of skills, confidence and motivation, as noted above the proportion of adults with basic digital skills in Ireland is 53 per cent compared to 58 per cent in the EU overall (EC, 2020a). There are also socio-economic and demographic divides in digital skills among Irish households, as the following data shows:

- 58 per cent of individuals at work have used word-processing recently, compared to 41 per cent of the unemployed.

- 57 per cent of individuals in 'two-adult & dependent children' households have used word-processing recently, compared to 44 per cent of lone-parent families.

- 85 per cent of individuals in the most affluent quintile used internet banking recently, compared to 62 per cent of those in the least affluent quintile (CSO, 2019).

Eurobarometer data also shows that Irish people who do not feel sufficiently digitally skilled are more likely to be older, poorer, less educated and living in rural areas. About one fifth said that lack of time, not knowing what skills to improve, lack of appropriate training opportunities and cost were factors preventing them improving their digital skills (EC, 2020b).

Not surprisingly, low skills lead to poor digital engagement; for example, in 2017, 23 per cent of those in Ireland without fixed broadband said they did not have it as they did not know how to use the devices which operate on it (Com Reg 2017).

Businesses also note that they lack the range of skills they need to compete effectively. Some 10 per cent of businesses surveyed for IE Domain Registry in 2019 said their main barrier to doing more online was lack of skills.

Meanwhile, 12 per cent of farmers interviewed for an IFA study in 2019 said they were not comfortable using technology in general; these figures were higher for farmers aged over 55, and those on smaller farms. Those who were not confident with technology were much less likely to own ICT devices, with 11 per cent owning none.[28] Eight per cent of farmers surveyed said their main barrier to engaging more with agricultural technology was access to support and training, while 9 per cent said the main barrier was lack of confidence. These figures were higher (15 and 21 per cent respectively) for those who did not have confidence using technology.

For those who had adopted farm technology, 52 per cent said a problem/drawback they encountered was learning how to use it, 29 per cent cited the frequent updates and maintenance required, and 28 per cent the fact that it was not possible to service/maintain it themselves. These figures were almost double among those who were not confident using technology.

2.6   Access to Benefits

There is some indicative data on the benefits of using ICT in Ireland, and on which groups are affected. For example, CSO data for 2019 shows that 50 per cent of those in the most affluent income quintile buy or renew insurance policies online, compared to 35 per cent of those in the most disadvantaged income quintile. The more affluent income quintile was also more likely to buy all types of goods online than those in the more disadvantaged quintiles, and to access government services online (CSO, 2019). Using online services such as these saves time and money, but requires data connections and devices, which helps explain the variation by social class in their use.

Older people are much less likely than those aged, e.g., 35–44 to pay bills online, use online banking, book holidays, etc (IPSOS MRBI, 2018). However, they may not always see this as inconvenient, with many prioritising face-to-face connection over time saved (South Leinster CIB, 2019). A disadvantage is that they and others who carry out less

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[28]   E.g. 66 per cent of those who were not confident using technology owned a smartphone, vs 93 per cent who were confident using it. The respective figures were 49 per cent vs 75 per cent for those owing a laptop/PC, and 25 per cent vs 44 per cent for those owning a tablet/iPad.

household and individual administration online may end up paying higher amounts for these services as they cannot avail of online discounts. During Covid-19 lockdowns, further disadvantages would have arisen due to their low levels of ICT engagement; e.g. difficulties staying in touch, ordering groceries, accessing online entertainment, etc.

The more advantaged in Ireland are more likely to have degrees (in ICT as well as other subjects) and so are more likely to work in higher-paid graduate jobs (such as those in ICT) (see (HEA, 2019a, 2019b). The data available also suggests that the more advantaged are most likely to have obtained paid work through an app or website intermediary (CSO, 2019).[29]

As noted earlier, ICT access can be transformative for many people with a disability, but they can face difficulties finding accessible devices, software and online services.

Companies that engage with ICT are typically able to undertake new activities that were not previously possible, and/or improve overall productivity and/or overcome resource constraints (EGFSN, 2018). A third of SMEs surveyed in 2019 believed that their online presence had led to increased revenue (IE Domain Registry, 2019). As larger companies tend to have higher online engagement and e-commerce capability, many of the advantages would accrue to them rather than to smaller businesses.

The IFA farm survey of 2019 showed that, of those using technology, 66 per cent said that it saved them time, 61 per cent that it reduced administration, and 54 per cent that it provided them with information to improve decision-making. Its use also improved productivity in a variety of ways. Those using technology generally owned larger farms, and were younger and more educated—again showing that those deriving more benefit from ICT use were those with more assets.

2.6.1   Access to Public Services

As noted earlier, there is demand for and engagement with digital public services in Ireland, but also quite a large group who do not use these services or struggle to use them. There are socio-economic, geographic and demographic variations evident in this. For example:

- 55 per cent of those at work downloaded/printed official forms from government, compared to 36 per cent of the unemployed (CSO, 2019).

- Less than one third of those with low levels of education had interacted with government via the internet in 2019, compared to over 80 per cent of those with third-level education.[30]

- In 2018, 70 per cent of those living in Dublin had submitted completed government forms online, compared to 55 per cent in the Border area (Norris *et al.*, forthcoming).

- In 2019, 56 per cent of those aged 60–74 submitted completed forms online compared to 66 per cent of those aged 30–44 (CSO, 2019). (Unfortunately, there is no data available on those aged 75 and over, as the sample size is too small for such breakdowns).

Qualitative data from the Citizens Information Board also shows that those with literacy problems and non-native-English speakers struggle to use online public services. Groups that lack digital skills and/or devices have had difficulties with, e.g., online PRSI records, Back to School Clothing and Footwear Allowance applications, PUP eligibility checks, and driving licence renewal appointments (CIB, 2018, 2020). A report for the Citizens Information Board (Norris *et al.*, forthcoming) has found that online services used more by lower-income groups and older people (e.g. medical card and

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[29]   Those gaining such work are more likely to have broadband, to live in Dublin or the Mid-East, and to be in a household with two or more adults and dependent children. All of these groups are more affluent on average.

[30]   Analysis of Eurostat DESI databases, at https://digital-agenda-data.eu/charts/compare-two-indicators, accessed 19.04.2021.

social housing services) are more likely to be problematic for their clients to use. This, it is argued, reflects the higher levels of social exclusion among users of these public services compared to the population at large.

In terms of accessing information online, less than 7 per cent of those in a large sample of people aged over 60 got news on Covid-19 from a government website (Lalor *et al.*, 2020), relying instead on newspapers and radio.[31] A number of older people in one study reported that it was frustrating to be referred by TV programmes to government websites for information when they were not well engaged with ICT (Pirhonena *et al.*, 2020).

This data is related specifically to public services, but does suggest that several groups would also have difficulties accessing other online services—for example, online banking.

2.7 Impact of Covid-19

2.7.1 Households

The Covid-19 lockdown has seen a small increase in internet connection and use overall, but much larger change among particular groups.

For example, among households overall connections to fixed broadband increased by only one percentage point (from 84 to 85 per cent) between 2019 and 2020,[32] but a number of groups showed particularly strong increases in fixed-broadband[33] connections during that time. These are outlined in Table 2.4.

Table 2.4: Percentage of selected household types with fixed broadband, 2019 and 2020

	2019	2020
Average household	**84**	**85**
Household type		
1 adult, no dependent children	69	76
1 adult with dependent children	71	84
3 or more adults with dependent children	87	90
Deprivation quintile		
First quintile – very disadvantaged	80	82
Second quintile – disadvantaged	75	80
Third quintile – average	81	83
Region		
Border	71	73
Midlands	69	80
Mid-East	83	90
Mid-West	77	81

Source: CSO, 2019, 2020a.

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[31] In contrast, 72 per cent got this information from television, and 39 per cent from newspapers (Lalor *et al.*, 2020).

[32] The 2020 data is from quarters 1 and 2.

[33] Examples include DSL, ADSL, VDSL, cable, optical fibre, and satellite connections. Other types of connection are mobile (through, e.g., smartphone or dongle) or narrow band (through a non-mobile phone line). Fixed broadband is generally the fastest, most reliable and least subject to datacaps.

The geographic changes may reflect the rollout of the National Broadband Plan. Meanwhile the increases among single person, lone-parent and lower-income households may result from connection to broadband being prioritised for work and education reasons, and because other locations in which people could previously access the internet (such as workplace, school, library) were no longer accessible.

There was a slight increase in the proportion of the population using the internet 'in the last three months': from 88 per cent in 2019 to 89 per cent in 2020. Once more, larger changes were evident among particular groups. For example, there was a strong increase in recent use among those aged 65–74 (from 68 to 75 per cent). There was also an increase in use among the unemployed (from 83 to 91 per cent), probably reflecting the closure of Intreo offices and move to online applications where possible (although the composition of the unemployed may also have changed over the year) (CSO, 2020a, Table 2.1).

The pandemic has also led to strong growth overall in particular types of internet activity – see Table 2.5.

Table 2.5: Percentage of individuals taking part in various online activities, Ireland, 2019 and 2020

Activity	2019	2020
Purchasing goods in the last three months	13%	18%
Doing an online course	13%	18%
Downloading/printing official forms	48%	50%
Submitting completed forms online	60%	63%
Internet telephoning (e.g. zoom, skype)	48%	73%

Source: CSO, 2019, 2020a; CSO, 2020c

Again, some variation among groups was evident. For example, the proportion of those aged 16–24 and 65–74 engaging with government online (e.g. finding information, downloading and submitting forms) increased, but it declined among those aged between 30 and 44. Significant increases in this engagement were also seen in the Border and Midland areas, perhaps reflecting increased connectivity there. However there was a noticeable decline in this use in Dublin.[34] This data may reflect variations in the groups and areas most affected by Covid-19 lockdowns.

The move to more online work, education and socialising means that it is likely that many people's digital skills have increased in the past year, although data is not yet available to confirm that.

2.7.2 Businesses

Many more businesses moved online due to Covid-19. There was a 30 per cent increase in the registration of .ie domain names in 2020 compared to 2019. Altogether, more than 65,000 new .ie domain names were registered in 2020 (RTE, 2021).

There was related strong growth in retail sales transacted online. Before Covid-19, the highest percentage of retail sales[35] transacted online was 4.1 per cent, in December 2019. But by April 2020, when the highest online share of retail sales was recorded, this figure was 15.3 per cent. However, there is variation between sectors: in February 2021, clothing, footwear & textiles retail sales had an online share of 64.2 per cent, but specialised stores, which include supermarkets, sold only 3 per cent of their turnover online.[36]

Remote working expanded greatly, particularly among office-based workers. Overall, in late August 2020, 65 per cent of staff were in their usual workplace, with 25 per cent working remotely, compared with 35 per cent and 58 per cent,

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[34] See https://www.cso.ie/en/releasesandpublications/ep/p-ictc19/impactofcovid-19onictusagebyhouseholds/internetpurchases/: Table 4.1, accessed 21.04.21.

[35] This percentage relates to retail businesses, excluding motor trade and bars.

[36] Personal communication from the CSO.

respectively, for office-based workers. Overall, 23 per cent of companies at the time planned to make remote work of some type permanent, with this figure rising to 40 per cent for office-based workers (CSO, 2020d).

Companies also invested much more heavily in cloud computing services during 2020, partly as it facilitates remote working, particularly collaborative remote working (Hall, 2020). See Table 2.6.

Table 2.6: Purchase of Cloud Computing services by enterprises, 2018 and 2020

	2018 (%)	2019 (%)
Purchase of any cloud computing services, *of which*	45	51
• Storage of files	35	44
• Email	35	43
• Hosting the enterprise's database	24	30
• Finance or accounting software applications	20	24

Source: CSO, 2020e.

Telecommunications companies also responded to the demand for connectivity with removal of datacaps, to assist people in accessing online resources (Earley, 2020).

2.7.3   Digital inclusion during Covid-19 lockdowns

Difficulties accessing online resources among certain groups also became apparent during the Covid-19 lockdowns. In August 2020, 29 per cent of parents in rural areas stated that broadband was not adequate for home-schooling (compared to 12 per cent on average), while 23 per cent of all parents said they did not have adequate devices in the household for home schooling. This was particularly the case for children in primary school (CSO, 2020b). In November 2020, 24 per cent of those using mobile broadband and 13 per cent of those using fixed broadband did not find it adequate for work during Covid-19 lockdowns. Some 82 per cent in Leinster but only 72 per cent in Munster found it sufficient (ComReg, 2021).

Those on lower incomes also encountered difficulties. Mohan *et al*. (2020) show that DEIS secondary schools and other secondary schools in low-income areas were more likely to report that pupils did not have adequate access to ICT devices, as well as less access to broadband, and lower broadband speeds. This has led to more severe impacts from school closures being reported among DEIS schools, and students from low-income backgrounds. Other students who faced particular challenges include those with special educational needs, and those studying English as a foreign language.

Youth workers found that young people they worked with faced challenges accessing supports online, due to lack of devices, skills and/or connectivity (National Youth Council of Ireland, 2020). This was particularly the case for more marginalised young people. In May 2020, a survey of 1,064 parents of children with intellectual disabilities showed that 11 per cent had no access to any technology at all for schoolwork, and 45 per cent did not have high-speed broadband (Inclusion Ireland, 2020).[37]

Also, as outlined above, few older people used the internet to stay informed on Covid-19, relying much more on offline communication methods.

Digital exclusion of various types was so evident in requests for support under Community Call (Department of the Taoiseach, 2020) that several local authorities set up specific supports to help people with digital access (NESC

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37   This survey also showed that online education was not suitable for some of the children, as they lacked capacity to use it.

Secretariat, 2021). These supports tended to be financial support with access to devices and broadband (particularly for low-income families), and supports with skills and devices to help older people get online.

2.8 Conclusion

This section has shown that there is variation in connectivity, access to devices, skills and confidence to engage with ICT. These variations are geographic and socio-economic when it comes it connectivity; mainly socio-economic when it comes to access to devices; and age-related and socio-economic when it comes to skills and confidence. For businesses and farms, size, age and sector are important determinants of digital engagement.

The proportions affected may seem small, but the numbers affected are quite large. Some 8.7 per cent of Irish people had never used the internet in 2019;[38] extrapolating from Census 2016 data that is over 300,000 people. The impacts for the groups affected can also be large. As noted in Chapter 1, these variations in ICT engagement and access have important implications for individuals, businesses and farms and for the future development of the Irish economy, society and public services.

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[38]   Analysis of Eurostat DESI databases, at https://digital-agenda-data.eu/charts/analyse-one-indicator-and-compare-breakdowns, accessed 04.05.2021.

Chapter 3

Digital inclusion:
Irish Policy and Programmes

3.1 Introduction: Key Policies and Programmes

The Programme for Government includes a range of commitments to support business, society and the public sector into a digital future. This includes the completion of a new National Digital Strategy, enhancing rural broadband, developing skills, enhancing digital safety, further digitalisation of public services, and support for the EU Digital Single Market.

A range of organisations connected to and more distant from government also work to promote digital inclusion, including the Citizens Information Board, the National Disability Authority, Age Friendly Networks, Age Action, the Disability Federation of Ireland, businesses, etc.

The following section summarises the main over-arching policies affecting digital inclusion.

***National Digital Strategy* (2013):** The strategy was designed to encourage and help more people and businesses to get online, under three strands: trading online and entrepreneurship; citizen engagement; and education & learning. The Programme for Government has committed to commencing a public consultation on a new National Digital Strategy, with a view to completing and publishing it within six months.

***National Broadband Plan* (NBP):** Under this plan, a contract was awarded in 2019 to provide 100 per cent broadband coverage throughout the country, at a minimum of 30 Mbps, within seven years. The plan also includes a commitment to provide approximately 300 broadband connection points (BCPs) in public places in more isolated rural areas, at the early stages of the plan.

***Future Jobs Ireland* (2019):** The plan commits to reaching, and if possible exceeding, the EU average in terms of the percentage of the Irish population with at least basic digital skills. It references a range of programmes to address gaps in digital (and other) skills among those most likely to be negatively affected by transformation in low-skill sectors.

Local authority strategies: Every city and county council is required[39] to develop a digital strategy, focusing on seven areas: digital skills, digital economy and employment, community and culture, digital services, transitioning to digital, infrastructure and innovation, and entrepreneurship. Local authorities have been preparing digital strategies since 2017, with a number now complete. In general, those which are available show a trend of focusing on how to increase digital connectivity infrastructure, digital skills, the digital economy, and provision of digital services by the local authority.[40] Box 3.1 provides some examples.

National Action Plans on Social Inclusion, and SICAP: Previous National Action Plans on Social Inclusion have included digital skills training, awareness-raising, accessible public services, and action targeted at particularly disengaged groups (McCaffrey, 2007). However, the current *Roadmap for Social Inclusion 2020–2025* does not have a strong developmental focus on this; it contains only two references to digital inclusion. First, it states that the Government has proceeded with the *National Broadband Plan* as digital connectivity is critical to sustaining rural communities and combatting social isolation, and second, that digital skills will be developed through Education & Training Boards Ireland (ETBI) provision (Government of Ireland, 2020a).

Meanwhile, the Social Inclusion and Community Activation programme (SICAP) aims to reduce poverty and promote social inclusion and equality. Part of its provision is IT-related training. By autumn 2020, over 2000 people had benefitted from its IT training, which prepares people for jobs and increases their digital skills.[41]

The remainder of this chapter analyses the impact of these and other more specific policies and programmes on four dimensions of digital inclusion: connectivity, material access to devices, skills, and confidence/motivation.

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[39] This was a recommendation of the National Mobile Phone and Broadband Taskforce, established in 2016 to provide a high-level co-ordinating structure for the rollout of mobile-phone and broadband infrastructure.

[40] *Our Rural Future* also refers to developing and implementing local digital strategies in each local authority area to maximise the potential of improved rural digital connectively for businesses and communities.

[41] Personal communication from Pobal.

Box 3.1: Examples of commitments to promote digital inclusion in local authority digital strategies

Cork County's Digital Strategy 2020–2022 includes commitments on digital skills training, one-to-one support sessions in libraries, supporting the rollout of broadband connection points and the development of a digital rights charter. It also commits to more services being available online, while offline services will be available for those who do not use ICT (Cork County Council, 2020).

Tipperary County Council has a number of actions in its digital strategy to support rollout of high-speed broadband, to increase e-commerce use among businesses, and to ensure that the number of people not engaging with digital technologies is reduced (Digital Strategy Steering Group, 2018).

Fingal County Council's digital strategy commits to improving digital inclusion and digital engagement among minority groups; to supporting digital education and training to increase citizen digital skills and digital literacy; and to supporting the development of digital hubs for business (Fingal County Council, 2020).

3.2 Connectivity

In the last decade, the *National Broadband Plan* (NBP) (2011) aimed to extend high-speed broadband coverage nationally, [42] estimating that such intervention would need €175m from public funds. In hindsight, the plan perhaps placed too much emphasis on private providers expanding provision of broadband to poorly served areas, with little funding committed to by government to assist this. Given the straitened circumstances of the Irish Exchequer at the time, this emphasis was perhaps not surprising.

Although there was an increase in broadband provision after the NBP was published, coverage rates in areas with low population density remained poor, with only 25 per cent of those in rural areas able to access 30mps in 2015. Providing coverage in rural areas has been a problem in nearly all EU countries, but is particularly difficult for Ireland, with one of the lowest population densities in Europe (Feldmann *et al.*, 2014).

As a result, an updated version of the NBP, the *National Broadband Plan Intervention Strategy* (NBPIS), was published in 2015. It aimed for 100 per cent coverage of minimum 30 Mbps throughout the country by 2020. In May 2019, a contract worth almost €3bn was awarded to Granahan McCourt to provide this coverage, over a seven-year period. The high level of state investment provoked concerns (Houses of the Oireachtas Joint Committee on Communications, 2019), but, on the other hand, this level of investment does provide a strong impetus for the goals of the tender to be achieved. The European Commission (2020a) describes the awarding of the contract as 'a major development for Ireland, [which] can help bridge the geographical divide and expand the footprint of ultrafast broadband networks in rural Ireland'. The views of stakeholders interviewed for this study also indicate that the current policy would address nearly all broadband connectivity issues as it is rolled out, although it will take seven years to do so.

The NBP also included a commitment to provide approximately 300 BCPs in public places in more isolated rural areas, in 2020. Each BCP will be connected to high-speed broadband, and communities will be able to access this broadband free of charge, in advance of the main NBP deployment. The Department of Rural and Community Development is currently engaging with the 150 BCP locations which are already operational on developing activities that the community can engage in (see Box 3.2). The proposed recruitment of local digital development workers would also offer an opportunity to develop digital inclusion through the BCPs.[43]

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[42] In December 2010, 87 per cent of enterprises and 58 per cent of households in Ireland subscribed to broadband, predominantly in urban areas. At the time, the number of broadband prescribers per 100 people in Ireland was below the OECD average (27.3 per 100 in the OECD on average, compared to 21. 1 in Ireland) (Forfás, 2011).

[43] This is a proposal under a Digital Empowerment for Inclusion programme which the Department of Community and Rural Development is developing and seeking funding for.

Box 3.2: How BCPs can develop community connectivity

Four themes for activities in BCPs are being developed: e-Health, arts and culture, remote work, and education and skills. Other themes may be added later. The Department of Rural and Community Development is engaging with other organisations that work on programmes relevant to these themes, to see how they can use the BCPs as a location for their work, etc. The aim is to allow BCPs to act as an ICT community hub, where a range of supports and services can be accessed using its connectivity. For example, e-health consultations could be facilitated through BCPs.

Some of the BCPs will have facilities to allow remote working. The Programme for Government has committed to developing digital hubs that can support remote working in as many of the BCPs as possible, and the *National Remote Work Strategy* and the new rural development policy, *Our Rural Future*, both commit to investing in remote work hubs and infrastructure. Currently, the Department of Rural and Community Development is engaging with all premises offering remote work facilities across Ireland, to gauge the type of facilities on offer and their relative locations. *Our Rural Future* also notes that many of the hubs will be made available for community-based activities.

Another relevant issue is the new EU European Electronic Communications Code (EU Directive 2018/1972), which makes access to adequate broadband at home a right.[44] As outlined in the directive, this is because 'affordable adequate broadband internet access … is essential for economic and social development, participation in public life and social and territorial cohesion'. It is up to member states to define 'adequate broadband', which will vary depending on various criteria and national conditions. However, the type of online services which consumers must be able to access is defined, including for example video calls, internet banking, and e-government services. [45] Currently, Eir, the universal service provider until June 2021, has to provide functional internet access, with a minimum dataspeed of 28.8kbps.[46] However, this minimum is not adequate to access some of the services required, although the broadband rollout under the NBPIS will change this. The Department of Environment, Climate and Communication is working on the directive's transposition into Irish law.

The European Electronic Communications Code (EU Directive 2018/1972) also requires that particular attention be paid to ensuring that end-users with disabilities have equivalent access to adequate, affordable broadband.

In light of the increased demand for high-speed broadband due to Covid-19, the Programme for Government has committed to seeking to accelerate the rollout of the *National Broadband Plan*, a commitment reiterated in the *National Remote Work Strategy* and in *Our Rural Future*.

Finally, it is relevant here to refer to the National Mobile Phone and Broadband Taskforce, established in 2016. It provides a high-level co-ordinating structure, and some other policies outlined in this chapter arise from its work.

The taskforce is chaired by two ministers and includes several assistant secretaries from government departments. It also engages with industry representatives. It was set up to identify and address barriers—such as road opening licences and associated charges—to improved mobile phone and broadband services in areas with poor connectivity, ahead of the rollout of the *National Broadband Plan*.

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44 This Universal Service Obligation would only come into effect where neither commercial provision nor public policy (in that order) had been able to provide adequate broadband.
45 These are e-mail, search engines enabling search and finding of all type of information, basic training and education online tools, online newspapers or news, buying or ordering goods or services online, job searching and job searching tools, professional networking, internet banking, eGovernment service use, social media and instant messaging, and calls and video calls (standard quality).
46 See https://www.comreg.ie/consumer-information/home-phone/universal-service-obligations/, accessed 12.04.21.

The taskforce's 2016 report[47] contained a number of commitments on governance and access to infrastructure that paralleled those in the 2012 NBP,[48] but with a stronger implementation and reporting structure. For example, timelines and implementing bodies were listed for all actions, and an implementation group was set up to report to the minister every 90 days. However, the taskforce has not reported since Q3 2019, although the Programme for Government has a commitment to continue to support its work.

3.3 Material Access

Although the *National Digital Strategy* (2013) recognises and addresses financial barriers for businesses, it does not note that the cost of gaining and maintaining access to ICT equipment can be a barrier for individuals and households, and does not contain any commitments on subsidising these costs for them.

In this, Ireland is not that unusual. The OECD (2020b) stated that direct and indirect financial support to promote ICT usage by individuals and households was used less often than non-financial measures. Nonetheless, there has been increasing recognition among service providers and by the EU of the importance of costs in accessing ICT, and some initiatives have been put in place to help address this issue.

The new EU European Electronic Communications Code (EU Directive 2018/1972), referred to above, which makes access to adequate broadband at home a right, also specifies that this broadband should be affordable. It states that, where the price of adequate broadband is not affordable to consumers on low incomes or with particular needs, [49] member states can require broadband providers to offer basic tariffs to those consumers, or such consumers can be provided direct support, such as direct payments, vouchers, or a social allowance. Currently, there is no definition of 'affordable' in relation to broadband, but the Department of Environment, Climate and Communications is working on the transposition of the directive and its requirements into Irish law.

The European Union is also co-funding Wifi4EU with the Department of Rural and Community Development. This project allows local authorities to provide free access to WiFi in public spaces (Kennedy, 2018). The setting up of BCPs under the *National Broadband Plan* will also help.

Meanwhile, the Citizens Information Board and a number of local authority digital strategies have noted the impact of cost on people's ability to engage online (see e.g. South Leinster CIB, 2019; Wicklow County Council, 2019; Clare County Council, 2019). However, the outbreak of Covid-19 and the move towards remote working and schooling have spurred a number of schemes to address the costs of accessing digital devices and connectivity. Examples are outlined in Box 3.3.

In addition, the Department of Community and Rural Development is developing proposals for a Digital Empowerment for Inclusion programme. One strand of this proposes the provision of a digital inclusion voucher, which would contribute to the equipment, data and connectivity needs of those participating.

These schemes are useful, and could provide a basis on which to develop more comprehensive, nationally available schemes. They may provide models to help transpose aspects of the EU European Electronic Communications Code (EU Directive 2018/1972) into Irish law.

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[47] See https://merrionstreet.ie/en/category-index/communications/mobile_phone_and_broadband_taskforce_publishes_final_report_outlining_measures_to_accelerate_rollout_of_telecoms_infrastructure.120616.shortcut.html, accessed 19.04.2021.

[48] For example, both the NBP and the report of this taskforce contained commitments in relation to local authority development contributions for telecoms, exempting 4G masts from planning permission, easier access to state-owned lands to put down broadband and electricity supply networks, etc.

[49] The directive specifically refers to older people, end-users with disabilities and consumers living in rural or geographically isolated areas.

Box 3.3: **Examples of schemes put in place to address the cost of accessing ICT during Covid-19 lockdowns**

Wicklow County Council set up a Covid-19 Digital Poverty Grant Scheme worth €45,000, inviting organisations to purchase equipment such as laptops and dongles so that those most in need can access them. The supports are to enable online education, access to mental health supports, support for vulnerable families, and combatting isolation among older people (Buchanan, 2020). Fingal County Council announced a similar scheme in November 2020.[50]

Facebook donated over €800,000 to Meath County Library to buy laptops and dongles, to be loaned to Leaving Certificate students facing affordability constraints in accessing ICT during the Covid-19 lockdown (Donohoe, 2020).

The Government allocated €15m to buy more than 16,000 laptops for college students who did not have access to them, to address the digital divide.[51]

A pilot partnership project between Microsoft, local authorities and the library service is being rolled out to provide connectivity to households with a Leaving Certificate student from a DEIS school (DRCD, 2020).[52]

3.3.1   Accessibility for People with a Disability

The Centre for Excellence in Universal Design (CEUD) was established by the National Disability Authority (NDA) under the Disability Act 2005. The centre raises awareness, sets standards and educates to support the design of environments that can be accessed, understood and used regardless of a person's age, size, ability or disability. One of the centre's three key areas of work is on ICT and technology, and it has developed National IT Accessibility Guidelines for ICT products, along with an IT Procurement Toolkit. In 2017, in conjunction with the Department of Public Expenditure and Reform, it published the Customer Communications Toolkit for the Public Service — A Universal Design Approach.

At EU level, the EU Web Accessibility Directive (2016/2102) requires public bodies to ensure that their websites and apps are accessible to persons with disabilities. Websites must have complied by 23 September 2020, and all mobile applications will have to be accessible by 23 June 2021.

Such inclusive, accessible ICT design helps to develop solutions that work for people with disabilities, and are likely to work for many others. For instance, the use of text-to-speech tools, live webchat support and screensharing support on websites can help not just people with a visual disability to use websites, but also those with literacy difficulties or digital literacy problems.

3.3.2   Access to Public Services

A key underlying principle of the Government's eGovernment Strategy 2017–2020 is 'digital by default', which means that government services will be delivered digitally as the preferred option. There is demand for this from many groups. However, the strategy recognises that some people have difficulties accessing online services, and therefore states: 'we will still keep other channels open for those who are disconnected by choice or necessity, and we will explore "assisted digital" for those who feel they would benefit from such a service' (p.6-7). This is positive, but reports from the Citizens Information Board indicate examples, from before Covid-19, where services were moved online only, while during the

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[50]   See https://www.fingaldublinchamber.ie/news/details/fingal-county-council-launches-grants-to-fight-digital-poverty-under-the-covid-19-emergency-fund-sch, accessed 12.04.21.

[51]   See https://www.heanet.ie/news/heanet-announced-the-delivery-of-16700-laptops, accessed 12.04.21.

[52]   Since the announcement, local development companies have also become involved, providing ICT devices.

Covid-19 lockdown and initial reopening (admittedly unusual circumstances) multiple channels to access some public services were not available (CIB, 2020). This raises the question of how the commitment in the eGovernment Strategy to keep a range of channels open is being operationalised and monitored, in the work of government departments and agencies.

It is also worth noting that public-sector bodies are themselves at different stages on their digital journey, and not all currently provide the same online access or facilities. In this regard, the forthcoming Civil Service Renewal Strategy, Building on Success, contains commitments to invest in staff's digital skills, to promote innovation, and to digitise more public services and working methods.

3.4 Skills

At an overarching level, the National Digital Strategy (2013) identifies skills training as one key way to increase online engagement by individuals in Irish society. In addition, a range of sectoral strategies and plans recognise the need for skills to make the most of the opportunities offered by the digital revolution. These include *Future Jobs Ireland* and reports from the Expert Group on Future Skills Needs, the National Policy Statement on Entrepreneurship, the National Skills Strategy, and the Digital Strategy for Schools. These policies recognise the need for different levels of digital skill, in a variety of sectors and over the life-course, from high-tech industry to SMEs, from schools to higher and further education. A range of supports have been put in place arising from these policy documents and strategies. Many are focused on meeting the demand for skills in industry and employment, while a number focus on the need for disadvantaged groups to gain digital skills. Key programmes include:

Digital Skills for Citizens: This provides 10 hours of free group classroom training on basic ICT, in locations in every county. The classes are delivered by 12 not-for-profit organisations,[53] including a number of rural partnerships and Irish Rural Link. Since 2017, almost 60,000 people have benefitted from this training;[54] €5.5m was spent on it over the first two years.[55] However, the scheme is currently being wound down. It has been criticised for limiting the number of hours of training a person can receive to 10. Some would like to see training provision that allows for progression, as well as technical support (Age Action, 2020). Meanwhile, the Programme for Government has committed to continuing the Digital Skills for Citizens scheme, as well as exploring development of it focusing on one-to-one training, although details on this are not yet publicly available.

Upskilling Pathways—New Opportunities for Adults: This incorporates the Explore and Skills to Advance programmes. Explore addresses low levels of participation in lifelong learning, particularly by those aged over 35 in manufacturing employment. One of the objectives of the programme is to address the lack of digital skills in this cohort. Skills to Advance is for workers in sectors undergoing transformation, older people and those working in low-skilled jobs. It includes courses focused specifically on digital skills, although other courses focus on different skills.

Other Education & Training Boards (ETB) training: This includes apprenticeships and traineeships, as well as Springboard+ and Skillnet Ireland training that benefit some more disadvantaged groups. Digital skills are also integrated into all other training either carried out in ETBs, or carried out by other providers and funded by ETBs. Such training includes the Skills for Work (SFW) training programme targeted at workers with relatively low qualifications, community training, and the Back to Education Initiative.

National Adult Literacy, Numeracy and Digital Literacy Strategy (ALDN): This is currently under preparation by SOLAS. It will include a focus on digital literacy to address some of the gaps in digital skills among different cohorts. This strategy focuses on those without foundational-level digital skills (e.g. the ability to use smartphones, access day-to-day information on the internet, etc).

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53   Age Action Ireland; Ballyhoura Development; County Sligo Leader Partnership Company; ECDL Ireland Ltd t/a ICS Skills; Fast Track into Information Technology (FIT); IE Domain Registry; Irish Rural Link Co-operative Society; Meath Community Rural & Social Development Partnership; Roscommon Integrated Development Company; South East Community Training & Education Centre; St. Catherine's Community Services Centre; Third Age Foundation.

54   See https://www.kildarestreet.com/wrans/?id=2020-05-20a.2658&s=%22digital+skills+for+citizens%22#g2660.r, accessed 12.04.21.

55   See https://www.kildarestreet.com/wrans/?id=2019-12-18a.965&s=%22digital+skills+for+citizens%22#g967.r,accessed 12.04.21.

There are a variety of training programmes offered by other state bodies, charities and businesses. Some provide training only, and some link with partners to provide devices. Examples are outlined in Box 3.4.

Box 3.4: Training provision by other state bodies, charities and businesses

Public libraries are being funded to develop digital learning centres, which will provide access to digital technologies and learning opportunities across the country (DRCD, 2019). Funding of €8m was allocated for this in 2018, to allow library staff to assist users. It will also allow those with greater levels of skill, but lack of access to devices, to learn and experiment with new technologies.

An Cosán Virtual Community College is developing Digital Stepping Stones, an online assessment based on DigComp 2.1.[56] This tool can be used to help learners assess their level of digital competence, and to direct them towards appropriate training as part of their Digital Path to the Future. This programme is being funded and supported by Accenture and Microsoft Ireland.

When the European Commission required all those applying for the Basic Payment Scheme[57] to apply online, the Department of Agriculture, Food and the Marine provided one-to-one ICT training clinics, and other support to farmers, in various locations nationwide (DPER/DAFM/IPA, 2020).

Age Action has provided basic computer training to older people countrywide since 2006. It has trained over 35,000 people through the Getting Started Computer Training programme, which is funded by the State (via the Digital Skills for Citizens scheme), and through corporate and public donations. It uses volunteer tutors to provide one-to-one training. [58]

Age Friendly Limerick has set up a programme which provides older people with an Acorn tablet, and with training to use it. The tablet is designed especially for older people who are unfamiliar with ICT. It is simple to navigate, provides easy access to a help button, and provides remote technical assistance when required. A user can start with only one or two apps loaded, but over time additional elements can be added according to the user's preferences.[59]

The DELSA project is an ERASMUS+-funded two-year initiative (2019–2020), which has developed and provided basic digital skills training modules for low-skilled people of all ages living in rural areas. The project partnership is co-ordinated by Irish Rural Link.

Google has provided some training in ICT skills to older people living locally (O'Connell, 2012). In response to Covid-19, Vodafone set up a Smartphone Support dedicated helpline for over-70s (using any network) (TechCentral.ie, 2020).

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[56] DigComp is a digital reference framework developed by the European Commission that sets out 21 competences, grouped in 5 key areas, over 8 proficiency levels, to describe what it means to be digitally competent. DigComp 2.1 is the most recent iteration of the framework, which has been revised over time to include further competences that new ICT developments require. See also Chapter 4.
[57] This EU-funded scheme provides basic income support to farmers on condition that they adhere to strict rules on human and animal health and welfare, plant health and the environment. Around 130,000 farming families apply for the payment in Ireland, which amounts to approximately €1.2bn a year.
[58] See https://www.ageaction.ie/how-we-can-help/getting-started-computer-training/about-getting-started-computer-training, accessed 12.04.21.
[59] See https://www.limerick.ie/council/newsroom/news/tablets-older-limerick-citizens-help-combat-social-isolation#:~:text=The%20Acorn%20is%20a%20specialised,both%20social%20and%20commercial%20level, accessed 12.04.21.

3.5 Confidence and Motivation

The need for people to feel confident in their use of ICT is referred to a number of times in the National Digital Strategy (NDS), and is an aim of the Digital Skills for Citizens programme.

The NDS also aims to motivate businesses and people to use ICT, and to run awareness campaigns for this purpose. As noted earlier, people are influenced to adopt ICT by those around them, so it is relevant that the Digital Empowerment for Inclusion programme, for which the Department of Rural and Community Development is seeking funding, proposes recruiting local digital development workers. They could help engage those from disadvantaged target groups and communities. A range of training under SICAP and the ETBs also has this aim.

3.5.1 Risk and Security

A range of legislation and policies has been put in place to promote better digital security and privacy, and thus trust in ICT.

- European legislation and agreements to tackle cybercrime [60] (Brady and Heinl, 2020) have led to new Irish laws such as the Criminal Justice (Offences relating to Information Systems) Act 2017. There are also plans for a further Cybercrime Bill (Brennan, 2020). There have been two National Cyber Security Strategies, the latest for the 2019–2024 period. This commits to developing a public awareness campaign on cyber security and cybercrime prevention (Government of Ireland, 2019b).

- For data privacy, GDPR legislation, such as the Data Protection Acts, stipulates financial penalties for organisations that do not comply with its requirements, as well as more information and choice for online users on how their data is used.

- In terms of psychological harms, the *Action Plan for Online Safety* outlines a number of steps towards greater digital safety, which can help increase people's confidence in engaging with ICT.[61] These steps include the gov.ie Be Safe Online page, which lists a variety of resources to promote online safety. Other resources include Webwise's parenting and youth hubs, the Media Literacy Centre, and a Junior Cycle module on digital literacy. The Programme for Government commits to increasing digital literacy among citizens and businesses to better enable the identification of threats online.

- An Online Safety and Media Regulation Bill is being drafted to comply with the EU's Audiovisual Media Services Directive. This aims to reduce the posting of harmful material online.[62] It will establish a Media Commission, including an Online Safety Commissioner, funded through industry levies. Criminal as well as financial sanctions (of up to 10 per cent of annual turnover) will be applicable to companies not complying with the requirements of the legislation (DTCAGSM, 2020).

- The Electoral Reform Bill 2021 aims to regulate online political advertising (Lynch, C., 2021). This will require online political adverts to be clearly labelled and accompanied by a transparency notice. This notice will detail information about the advertising, including who placed it, whether micro-targeting was used, and the amount paid for it (Horgan-Jones, 2021).

There are also plans for new legislation at EU level which will be transposed into Irish law – see Box 3.5.

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[60] E.g. the Council of Europe Convention on Cybercrime, the EU's Data Governance Act, the Directive on attacks against information systems, the NIS (Networks and Information Systems) Directive, Regulation (EU) 2016/ 794 on Europol, and the 2017 Cyber Security Package.

[61] Including education and training, legislation and guidance, governance structures, and funding to resource it.

[62] For example, the posting of criminal material (e.g. abuse of children), material which bullies or which promotes suicide or eating disorders.

Box 3.5:   Recent EU work in relation to the digital future

Two new Acts are being prepared by the European Commission to better protect individuals and businesses operating online. First, the Digital Services Act contains measures to counter sales of illegal/counterfeit goods online, provide effective safeguards for users of online platforms, and introduce regulations for online service providers, etc. [63] These measures will chiefly protect consumers and individuals.

The Digital Markets Act (DMA) will provide more protection for businesses, by regulating large online platforms which act as 'gatekeepers', requiring them to provide a fairer business environment, and greater transparency on how they operate. Large financial penalties (up to 10 per cent of the company's worldwide turnover) can be levied against gatekeepers who do not comply. [64]

These Acts should become law by 2023. They are part of measures under *Shaping Europe's Digital Future*, a far-reaching strategy published in February 2020. This strategy includes actions to promote technology that works for people, a fair and competitive [digital] economy, and an open, democratic and sustainable society. Since then, the *Digital Compass*, which sets out the digital ambitions for the EU for 2030, has been published. The four main areas of work under this are: a digitally skilled population and highly skilled digital professionals; secure and performant sustainable digital infrastructures; digital transformation of businesses; and digitalisation of public services (EC, 2021a, 2020e).

3.6 Business and Farming

3.6.1 Business

The *Action Plan on Jobs*, 2018, contained a number of commitments to increase digitalisation and use of ICT in businesses, including a commitment to produce a new National Digital Strategy (NDS). Enterprise 2025 also referred to the development of the NDS, seeing it as setting out a vision and medium-term strategy for Ireland's digital economy. The *Action Plan on Jobs* included commitments on regulatory developments, intensive management of the *National Broadband Plan*, and an updated *ICT Skills Action Plan* to ensure the development of an adequate pool of high-level ICT skills. Since then, further investment in the NBP and an updated *ICT Skills Action Plan* have been put in place, although the NDS has not yet been finalised and published.

However, a number of strategies to progress digitalisation of business have been published. The *Industry 4.0* strategy, committed to in the *Action Plan for Jobs* and published in 2020 (Government of Ireland, 2020b), puts in place supports for the digital transformation of the manufacturing sector and its supply chains in Ireland.[65] It commits to raising company awareness of digitalisation possibilities, and providing guidance, finance and upskilling training to companies adopting *Industry 4.0* technology. A co-ordination mechanism and a stakeholder forum to oversee implementation of the strategy will also be set up.

In January 2021, the report of the SME Taskforce, *The SME and Entrepreneurship Growth Plan,* was published. This contains a number of commitments to progress the digitalisation of Irish SMEs, including helping the digital transformation of businesses, and supporting digital exports. This will be done by expanding the work of, and eligibility for, existing schemes; digital skills and mentoring supports in LEOs; and developing partnerships with larger companies

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[63]   See https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-services-act-ensuring-safe-and-accountable-online-environment_en, accessed 21.04.21.

[64]   See https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en, accessed 21.04.21.

[65]   *Industry 4.0*, or the Fourth Industrial Revolution, is the ongoing automation and digitalisation of traditional manufacturing and industrial practices, using smart technology.

to help exports from digitally enabled companies. The commitments in these new strategies should overcome some of the blocks to businesses becoming more digitalised: access to finance, awareness of technology, and the skill to use it.

Nonetheless, Innovation Finance Advisory (2019) argues that the range of government initiatives to support the use of technology in businesses in Ireland are not fully co-ordinated between government entities, and are not embedded in a holistic national digital strategy. Enterprise 2025 contains a commitment to 'develop a digital business action plan, to realise a step change in enterprise productivity performance and growth'. This and the NDS, once published, could provide such co-ordination and an overarching strategic approach.

There are other supports to address barriers such as finance and skill gaps. On finance, various types of funding for companies to digitalise are already available from Enterprise Ireland, LEOs, Microfinance Ireland and Brexit loan schemes (Innovation Finance Advisory, 2019). The Future Growth Loan Scheme, which provides funding over eight to ten years for strategic investment of any type, can be accessed for digital processes and innovation. It is available to eligible SMEs, including those in the agriculture and seafood sectors.[66]

Financial support for businesses to engage in e-commerce is recognised in the Trading Online Voucher Scheme. This began in 2013, when only a quarter of small Irish businesses were trading online. The scheme is implemented by Local Enterprise Offices, and provides up to €2,500, along with training and advice, to help businesses trade online. It is targeted at businesses with limited or no e-commerce presence, 10 or fewer employees, and turnover of under €2m. In 2018, just under 1,000 businesses received a voucher.[67] The funding available was greatly expanded during Covid-19, leading to over 12,000 applications for the scheme being approved in 2020.[68] Another response to the pandemic has been Enterprise Ireland's €5 million fund for the Covid-19 Online Retail Scheme. This is to enable somewhat larger Irish-owned retailers to enhance their digital capability and develop a more competitive online offer, domestically and internationally.[69]

A range of training supports is provided also. The Trading Online Voucher scheme provides training as well as financial support to companies. *Future Jobs Ireland* commits to supporting digital skills development in micro and SME management teams through existing e-marketing supports, although a range of skills apart from e-marketing are needed. Some of the supports referred to above, such as digital education through apprenticeships and traineeships, Springboard+, Skillnet Ireland and the SOLAS Skills to Advance programme, also assist the development of digital skills in business.

However, stakeholders interviewed for this research noted that, while some companies—particularly companies set up in the last ten years—have staff with good levels of digital skills, many older small businesses do not. The expansion in e-commerce arising from Covid-19 means that there is now a need for training and supports to help companies do business online. Increasingly, companies need to know how to market, network, communicate and manage online in order to develop their businesses.

3.6.2   Farming

Farmers are one of the target groups for the Digital Skills for Citizens training programme. Irish Rural Link and a number of rural-based local development companies provide this training to farmers. The IFA (2019) has also published a model of how training supports can lead to progression in digital skills, and is discussing with Skillnet Ireland how to develop courses to help farmers progress up the digital literacy curve, from boosting confidence to engage with ICT right through to lifelong learning in use of ICT. Its model of how to do this is outlined in Figure 3.1.

The IFA/Skillnet (2019) argue that this would provide a roadmap to help people 'ascend the digital experience curve'. This would help Ireland move from what the report calls 'reactive and isolated occurrences of digital upskilling programmes' to a more integrated, systematic approach.
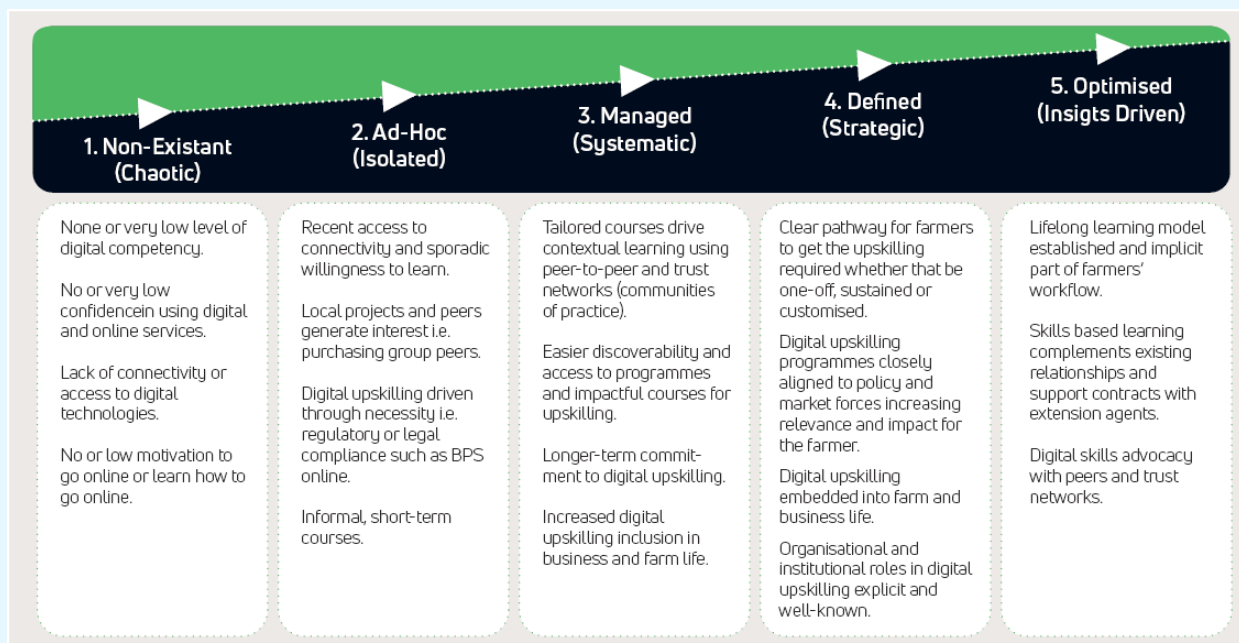
66   See https://sbci.gov.ie/products/future-growth-loan-scheme#, accessed 12.04.21.
67   See https://www.kildarestreet.com/wrans/?id=2019-11-12a.1169, accessed 12.04.21.
68   See https://www.kildarestreet.com/wrans/?id=2020-12-17a.656, accessed 12.04.21.
69   See https://www.enterprise-ireland.com/en/funding-supports/Online-Retail/Online-Retail-Scheme/, accessed 13.04.21.

Figure 3.1: The IFA/Skillnets proposed Digital Skills Development Maturity Model

1. Non-Existant (Chaotic)	2. Ad-Hoc (Isolated)	3. Managed (Systematic)	4. Defined (Strategic)	5. Optimised (Insigts Driven)
None or very low level of digital competency. No or very low confidencein using digital and online services. Lack of connectivity or access to digital technologies. No or low motivation to go online or learn how to go online.	Recent access to connectivity and sporadic willingness to learn. Local projects and peers generate interest i.e. purchasing group peers. Digital upskilling driven through necessity i.e. regulatory or legal compliance such as BPS online. Informal, short-term courses.	Tailored courses drive contextual learning using peer-to-peer and trust networks (communities of practice). Easier discoverability and access to programmes and impactful courses for upskilling. Longer-term commitment to digital upskilling. Increased digital upskilling inclusion in business and farm life.	Clear pathway for farmers to get the upskilling required whether that be one-off, sustained or customised. Digital upskilling programmes closely aligned to policy and market forces increasing relevance and impact for the farmer. Digital upskilling embedded into farm and business life. Organisational and institutional roles in digital upskilling explicit and well-known.	Lifelong learning model established and implicit part of farmers' workflow. Skills based learning complements existing relationships and support contracts with extension agents. Digital skills advocacy with peers and trust networks.

Source: IFA, 2019: 60.

Support for digital skills development is also available through Teagasc. Its *Technology Foresight 2035* (Teagasc, 2016) identified five new areas of technology that will drive the Irish agri-food sector over the next twenty years, including digital technologies in the farming sector.[70] This will require multi-skilled farmers, who have been educated to use new technologies. The publication therefore commits to developing a knowledge transfer programme with advice, training and mentoring.

As part of Horizon 2020, Teagasc is also working on the FairShare 2020 programme,[71] which will support farm advisors and their organisations to adopt and effectively use digital tools and services, to support more productive and sustainable agriculture.

On finance, farmers can access most of the funding outlined above for companies to digitalise. Examples include LEOs, Microfinance Ireland, Enterprise Ireland supports for agri-manufacturing and agri-tech development, and the SBCI's Future Growth Loan Scheme.[72]

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[70] Such technologies enable the use of data in management systems, the automation of tasks (e.g. milking, herd management, feeding, identification of oestrus, weed and plant disease management), and the simplification and automation of administration.

[71] See https://www.h2020fairshare.eu/objectives/, accessed 12.04.21.

[72] See https://sbci.gov.ie/products/future-growth-loan-scheme#, accessed 12.04.21.

3.7 Conclusion

This outline of strategies and supports shows that there is a wide range of policies and programmes to address many issues relevant to digital inclusion. Table 3.1 provides an overview.

These policies and programmes range from strategic investment to ensure connectivity countrywide right down to pilot programmes addressing cost and skill deficits at local level. The need for greater engagement with ICT due to Covid-19 lockdowns has also spurred development of new supports for those who are not well engaged digitally. However, gaps and challenges remain.

One key challenge is the co-ordination of the range of policies and programmes, both within the statutory sector and beyond it. Digital issues are relevant to many areas of government, leading to responsibilities spread across many government departments.

Chapter 5 returns to the question of how Irish policy might be improved. Before doing so, Chapter 4 provides an overview of lessons drawn from an analysis of digital inclusion in a select number of countries.

Table 3.1: Key policies and programmes to promote digital inclusion in Ireland

Strategy	Connectivity – Household	Connectivity – Business	Material Access – Household	Material Access – Business	Skills – Household	Skills – Business	Confidence/Motivation – Household	Confidence/Motivation – Business
National Digital Strategy 2013				Y	Y	Y	Y	Y
National Broadband Plan (including BCPs)	Y	Y	Y	Y				
Universal Service Obligation	Y		Y*					
WiFI4EU	Y		Y					
Roadmap for Social Inclusion	Y				Y	Y		
Various Covid-19-inspired schemes to address material access			Y		Y		Y	
Digital Skills for Citizens					Y	Y**	Y	Y**
SICAP					Y		Y	
Future Jobs Ireland						Y		
Public libraries	Y		Y		Y		Y	
Action Plan for Online Safety							Y	Y
Industry 4.0 Strategy				Y		Y		Y
Trading Online Voucher				Y		Y		Y

*   Planned
**   For farmers

Chapter 4

International experience:
Some Lessons for Ireland

4.1 Introduction

In preparing this report, research was carried out on mechanisms used internationally to support digital inclusion. These included the overarching approaches adopted, together with specific actions for households and businesses focused on material access, skills, confidence and motivation.

This chapter summarises the key lessons. A more detailed Secretariat paper will be produced which describes this material in more detail.

4.2 Lesson 1: Leading countries have strategies in place specifically to support digital inclusion

Many countries have a multiannual action plan to address digital exclusion, with specific target groups, shared responsibility among a range of government departments, and a mechanism to support collaboration among statutory organisations, and with community and business. Some strategies are underpinned by legislation, and some by a specific budget. Others focus on households only, or include business as well. Several have specific targets and target groups, and often focus on infrastructure, skills, access and the provision of public services to those who are not digitally engaged.

Overall, the OECD (2020b) recommends the use of the 'Going Digital Integrated Policy Framework'. It includes seven interrelated policy dimensions: access, use, innovation, jobs, society, trust and market openness. The OECD argues that all these policy dimensions must be considered to make digital transformation work for growth and well-being. Ireland currently does not have an up-to-date strategy to prioritise, co-ordinate, fund and govern work on digital inclusion, although the Programme for Government commits to reviewing and publishing the draft National Digital Strategy.

4.2.1 Data and Measurement

Several countries have developed sophisticated ways to measure digital inclusion. These measurements provide an evidence base which can be used to develop programmes that address these gaps, and to monitor their effectiveness.

For example, South Korea has a Digital Divide Index (DDI) which measures the gap between ICT use by the population in general, and by four disadvantaged groups: the disabled, older people, those on low incomes, and agriculture/fishery workers (Park & Kim, 2014; Jun, 2020).[73] The DDI measures gaps in access, utilisation and skills (see Appendix), and shows the relative difference in the level of use by a disadvantaged group, compared to that of the general population. As it is a relative measure, it allows for improvement among the general population, while still showing the relative position of disadvantaged groups. Between 2003 and 2012, the DDI shows, the gap in access between the general and disadvantaged populations dropped from 36 per cent to 6 per cent. The gaps in skills and use also fell, from around 70 per cent to around 40 per cent, but remain high, reflecting the greater difficulties in tackling these issues.

Australia has had a Digital Inclusion Index since 2014, publishing yearly reports. The index measures three key dimensions of digital inclusion: access, affordability and digital ability (see Appendix). It shows how these dimensions change over time, according to people's social and economic circumstances, as well as across geographic locations. The data shows that the rate of digital inclusion is growing, but more slowly over time. In fact, the gap between employed and unemployed has widened. The largest gaps are between the average Australian user and users relying on mobile connections, followed by the gap between those with low and high incomes, and then the gap between average users and those aged over 65 (Thomas *et al.*, 2020).

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[73]   In 2011, new types of digital exclusion groups were added, including North Korean refugees and transnational marriage migrants.

New Zealand supplements its measurement with in-depth research with seven digitally excluded groups. The goal is to understand key difficulties for individuals, and to identify improvements to ensure a more equitable digital environment for all (New Zealand Government, 2020).

While Ireland uses the DESI index, and its related ICT Usage in Households survey to monitor digital engagement in Ireland, the sample size used for these surveys is not large enough to effectively monitor several groups which are not well engaged with ICT, such as people aged over 65, those with literacy difficulties, and those who are not native-English speakers.

4.3 Lesson 2: Financial support aimed at particular groups is used to facilitate 'material access'

Non-financial support is the most widespread instrument used by OECD countries to promote use of digital technologies by households and individuals. Direct financial support is rare, but where it exists it takes the form of loans, grants, vouchers or specific training (OECD, 2020b). It is often targeted at particular groups. For example, England and Singapore both have national programmes which provide devices and connectivity to disadvantaged school students (Lynch, S. *et al.*, 2010; SQW *et al.*, 2011; Lim, 2009). Some countries are also looking at how to link social housing to broadband (e.g. New Zealand Government, 2020). In the UK, there has been a focus on providing social housing with low-cost or free broadband, sometimes through commercial companies and sometimes through state funding, or a mix. For example Community Fibre, a commercial broadband provider, has connected many social housing estates and blocks to fibre broadband, at competitive prices (Housing Technology, 2020).

Some countries have put in place exemptions from telecommunication fees. In New Zealand, a 'sponsored data' initiative has been developed. This allows the public to access key health sector websites via mobile-phone networks without incurring data-use charges. Some similar provision was made in Ireland during the spring 2020 Covid-19 lockdown.[74]

These approaches are interesting to reflect on considering two recent changes in Ireland: first, the move to online learning during Covid-19; second, the requirement in the new European Electronic Communications Code for affordable, accessible broadband in all households, which is currently being transposed into Irish law.

4.4 Lesson 3: A framework approach to training is needed to capture the diversity of needs and facilitate progression

It is clear that there is a range of different needs and modes of training provision, including community-based approaches. Reflecting this, the European Commission has developed the *European Digital Competence Framework for Citizens*, known as DigComp, which defines digital competence as involving the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It has been revised over time to reflect technological developments, with the current iteration called DigComp 2.1. The competences include information and data literacy; media literacy; safety; and problem-solving and critical thinking, among others, organised into eight levels. Figure 4.1 provides an overview of these levels.

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[74] E.g. several telecommunications companies did not charge for visits to health and educational websites – see
https://www.siliconrepublic.com/comms/broadband-ireland-wifi-coronavirus-covid19, accessed 15.03.2021.

Figure 4.1: The Digital Competence Framework for Citizens
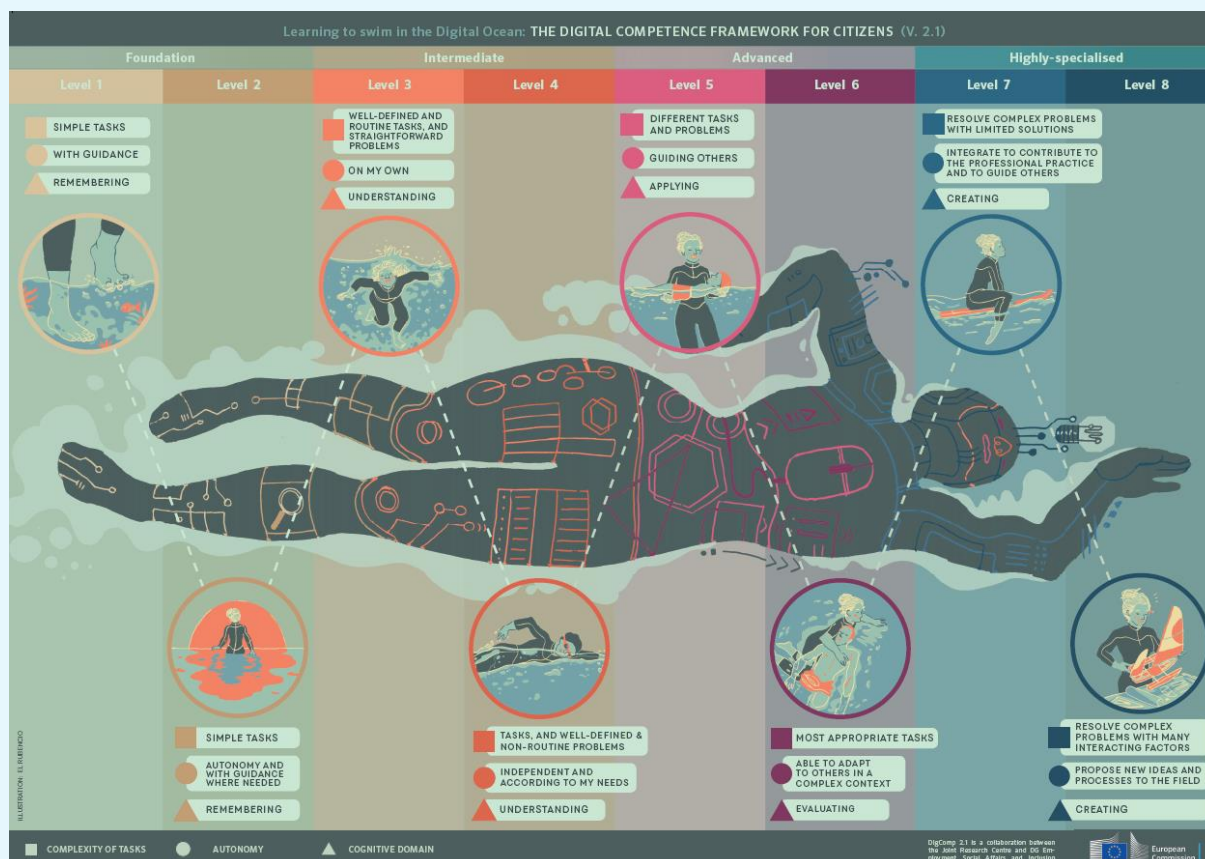
The DigComp model helps to align training, certification, and the needs of the job market, as well as facilitating progression and mastery of a range of specific digital skills. For example, DigComp has been used in Flanders, Belgium, in a review of the content of ICT programmes in the adult education sector. Based on the review, eight educational programmes were developed with different sets of modules, each including a set of competences derived from DigComp.

The UK has a similar framework under which National Standards for Essential Digital Skills have been developed. These are intended for use by awarding organisations developing new essential digital skills qualifications, and to inform the development of new subject content for digital functional skills qualifications.

Ireland does not have such a framework in relation to digital skills, although the forthcoming *National Adult Literacy, Numeracy and Digital Literacy Strategy* may change this.

In addition, Park (2017) has argued that ground-up, demand-led programs, involving community trainers and multi-stakeholder initiatives, can allow a more customised approach to providing appropriate ICT training, support and infrastructure than top-down programmes, which find it difficult and expensive to support individuals.

There are international examples of different approaches to providing skills at community level. Sometimes these approaches are for the whole community, and sometimes they are targeted at groups with poor digital skills, to provide them with trusted, local, upskilling opportunities. These supports include community ICT centres which provide devices, tailored one-to-one or group training and technical support, and staff to support this (Park *et al.*, 2013; OECD, 2020b;

New Zealand Government, 2020). Some centres train and resource volunteers to provide ICT support to local people.[75] Government can drive the funding of such centres, their ongoing management and their collaboration with others, but centres can also link to business (e.g. for funding) and to charities to run the centres. Lloyds Bank in the UK works with the Good Things Foundation to fund training on online banking and security, and to train bank staff as volunteers to teach digital skills.[76]

Some similar work takes place at community level in Ireland, but it has been small-scale to date, and is generally unconnected to national overarching approaches. It is unclear how well it meets the needs of groups who are not well engaged with ICT. It is interesting to consider the potential role of BCPs in Ireland in this context.

In France an innovative programme to support older people online has been developed, connecting a number of organisations. The Ardoiz tablet, which was specially designed for older people, is delivered and set up by the older people's postal worker, who shows them how to use it. The tablet has a simplified user interface and is offered at a competitive price, with the option to return it and be reimbursed within 30 days.[77] There is a telephone helpline for queries, open six days a week. A remote-access option is also offered, so that a relative or friend can access the tablet and help the older person with any difficulties. The Ardoiz was developed by the Tikeasy company, which is now part of the publicly owned French postal company. Tikeasy's goal is to help older people live more comfortably at home through their ICT products, and so to become more integrated into the new digital world.[78] As noted earlier, a similar tablet, the Acorn, has been developed and piloted in Ireland (English, 2019),[79] although to date it does not have the national reach which the Ardoiz does.

4.5   Lesson 4: Wide-ranging policies to support business focus on needs of SMEs

An OECD (2020b) survey of 30 member countries found that all but three had policies to promote the use of digital technologies by businesses. Policy objectives vary greatly. They range from fostering uptake of productivity-enhancing digital technologies in firms, and developing knowledge and skills, to supporting development of innovative products and social services.

Small and medium-sized enterprises (SMEs) are the most common target for policies aiming to increase digital skills, technology awareness and adoption. In contrast to support for households, direct financial support measures are the most widely used. These measures include grants to help targeted companies cover the costs of accessing digital technologies and tools. Non-financial supports also exist, including advice, mentoring and counselling (OECD, 2019; Innovation Finance Advisory, 2019).

There are also many demonstrator projects which provide advice on how to incorporate digital technologies into companies, often in conjunction with advice from larger companies.[80]

While elements of this are available in Ireland, there are some gaps in skills and demonstrator projects.

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[75]   See e.g. https://www.goodthingsfoundation.org/projects/lloyds-banking-group-digital-inclusion-programme, and https://www.lloydsbank.com/banking-with-us/whats-happening/consumer-digital-index/key-findings.html, accessed 12.04.21.

[76]   The bank also publishes the annual UK Consumer Digital Index, which draws on Lloyds Bank customer data, as well as a survey commissioned from Ipsos/MORI.

[77]   The basic model costs €219, with SIM and support services available for an extra €20 a month.

[78]   See https://www.ardoiz.com/?_ga=2.206953044.677068752.1614599523-223161722.1614599523, accessed 12.04.21.

[79]   Also see https://myacorn.ie/, accessed 12.04.21.

[80]   E.g. Belgian MadeDifferent, Austrian Plattform Industrie 4.0 and German Mittelstand 4.0 programmes; see OECD, 2019.

4.6 Lesson 5: Access to public services requires digital, assisted-digital and traditional channels

Pietersen (2017) has argued that groups which face difficulties accessing services online—due to lack of connection, devices, skills and motivation—need other 'channels' to access them, for example traditional channels such as face-to-face and telephone.

Some countries provide a range of channels to access public services: online, assisted online and offline public services. For example, the 2014 UK *Digital Inclusion Strategy* argued that around 10 per cent of the adult population might never gain basic digital capabilities, due to disabilities or lack of literacy skills (HM Government, 2014). Therefore, the strategy committed to providing an assisted digital approach for those needing to access government services online. People who need this support can access a service face-to-face, by phone or in another appropriate non-digital way, with a third party either inputting data into the digital system on their behalf, or helping them to input data into the digital service themselves (HM Government, 2013).

The UK provides guidance to public-sector bodies on how to provide assisted digital support to users who need it.[81] This includes identification of nine groups, ranging from the 'never have, never will [go online]' people, to expert users. The types of support each group needs are related to their levels of access, skills and confidence. Similarly, the way in which a public service is provided needs to be adapted to the skill and attitude of each of these groups.

Denmark recognises that not all individuals will be able to access public services. Its *Digital Strategy 2016–2020* commits to continuing to provide assistance to those with poor digital skills. Individuals who cannot use digital technology will be able to receive correspondence by post, and support from a third party. However, such individuals must apply for and receive an exemption from digital-only access to public services.[82]

Chapter 5 will now outline approaches which Ireland could adopt to promote digital inclusion further.

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[81] See https://www.gov.uk/service-manual/helping-people-to-use-your-service/designing-assisted-digital, and
https://www.gov.uk/government/publications/government-digital-inclusion-strategy/government-digital-inclusion-strategy#actions, accessed 04.05.2021.

[82] People who are eligible for an exemption include the following: those with a disability that prevents them from receiving post digitally, those do not have access to a computer with sufficient internet connection in their home, the homeless, and those with language difficulties. See https://en.digst.dk/policy-and-strategy/mandatory-digitisation/digital-post/#:~:text=Individuals%20can%20be%20exempt%20from,as%20having%20left%20Denmark%20permanently, accessed 28.01.2021.

Chapter 5

Digital Inclusion:
An agenda for action

5.1 Introduction

This report began by making the case for digital inclusion as a spur to support economic growth, and as a key facet of social inclusion. Irish policy and programmes to support digital inclusion across a number of dimensions—connectivity, material access, and skills and training—were outlined.

This closing chapter considers how policy and programmes in Ireland might be improved. It draws on a range of interviews with Irish stakeholders, and on experience and lessons drawn from a selected number of countries.

It also outlines a number of actions which could be useful to incorporate into Irish policy, to promote digital inclusion more effectively. Given the range of reasons why households and businesses do not engage more fully with ICT, the actions to address this are varied.

This chapter is structured around five overarching recommendations:

- Develop a national strategy for digital inclusion, with a key focus on co-ordination, and a strong commitment to fine-grained measurement of progress. The strategy should also aim to combat online threats, and to boost confidence and engagement of the digitally excluded.

- Create a comprehensive framework for digital skills progression.

- Support digital inclusion at community level.

- Deliver targeted supports for material access to key groups.

- Enhance guidance for digital and assisted digital public services and 'complementary' channels.

5.2 National Strategy for Digital Inclusion and Measurement of Progress

The Programme for Government has committed to a public consultation on the National Digital Strategy, with a view to completing and publishing it within six months.

In this context, the Council notes that the *National Broadband Plan* will provide high-speed broadband to almost every home in the country over the next seven years, and the BCPs will provide connectivity in community locations which will not see broadband rollout immediately. Given the need for broadband caused by Covid-19 restrictions, it is important that all possibilities to accelerate the NBP rollout be investigated and implemented. In its recent research report on remote working, the Western Development Commission (2020) recommends that mobile coverage black spots be eliminated—so that mobile broadband can be used where fixed broadband is not available—and that high-quality broadband speeds be available at hubs close to home in rural areas. Creating a supportive regulatory environment for the rollout of 5G and broadband will assist this. Such 5G rollout is particularly important for isolated rural areas and farms. In addition, a re-established Mobile Phone and Broadband Taskforce would help address any obstacles to the rollout of telecommunications infrastructure. There is a commitment in the Programme for Government to continue supporting the work of the taskforce.[83]

However, the Council believes that, while digital inclusion should be part of such a National Digital Strategy, there should also be a stand-alone Strategy for Digital Inclusion.

Such a strategy would require an appropriate level of investment, which is likely to be very cost-effective. UK studies show an estimated return of £15 for every £1 invested (CEBR, 2018). The EU's recently published Digital Compass recommends that 20 per cent of the Recovery and Resilience Facility in each EU member state be dedicated to the

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[83] *Our Rural Future* also refers to the taskforce continuing to identify solutions to broadband and mobile-phone coverage deficits, and investigating how better services can be provided to consumers.

digital transition. This funding stream can help deliver greater digital inclusion in Ireland, and build on the increased funding devoted to digital inclusion by the State, since the onset of the Covid-19 pandemic in 2020.

Ireland has a range of government commitments and actions to promote digital inclusion, which are not co-ordinated into a structured whole. This means that duplication can occur, while some groups that need support may not receive it. The lack of a collaborative structure also makes it difficult to pull together, and build on, the learning from a variety of local approaches.

The responsibility for digital inclusion in government is spread across a range of departments. At least five deal directly with different elements of the digital agenda. See Table 5.1.

Table 5.1: Key policies and programmes to promote digital inclusion in Ireland

Issue	Organisations
Connectivity	DECC, DRCD, EU
Material access	DETE, DRCD, Dept of Education and Skills, local authorities, LDCs, EU
Skills	DECC, DETE, SOLAS, ETBs, LDCs, public libraries, EU
Business	DETE, LEOs, Enterprise Ireland
Farming	DAFM, Teagasc, DETE, LEOs, DECC, EU

In addition, the following organisations are working on digital inclusion at local level: local authorities (through their digital strategies), BCPs, digital hubs, libraries, Citizens Information Centres, community training organisations, and ETBs.

The OECD (2020b) notes that digital strategies are increasingly being co-ordinated at the highest levels of government, such as prime-ministerial level, while several have a ministry dedicated to digital affairs. The lead ministry then works with other key ministries to ensure implementation and monitoring of the strategy. IBEC suggests that co-ordination in Ireland could be led by a dedicated minister of state, co-ordinating with the Taoiseach and colleagues. It is likely that a minister with clear responsibility for delivering on digital inclusion could help provide leadership for a disparate range of work.

Such leadership is needed to ensure that responsibility is shared across government departments, and that structures are put in place for co-ordination within and beyond statutory bodies. This would allow regular information-sharing, as well as a framework under which the disparate funds (for training, material access, etc) could be co-ordinated to reduce gaps and duplication.

A strategy on digital inclusion would also support wider collaboration. As disruptive technologies come increasingly to the fore, the Expert Group on Future Skills Needs (EGFSN) has argued that cross-societal collaboration could help to identify the steps needed to reap the fullest reward from the adoption of digital technologies (EGFSN, 2018). Ideally, such collaboration involves groups representing business (both the tech sector and more widely) and citizens (particularly those who are not digitally included).

A national digital inclusion strategy would also help to ensure that wraparound supports, targeted at particularly disengaged groups such as older people, are in place. The French experience of the Ardoiz tablet, noted in Chapter 4, provides an interesting model.

Given the rapid pace of change in technology, any digital inclusion plan should allow for revision on a regular basis, such as every two years. The rapid pace of change means that a continuous-improvement approach is needed, to ensure that digital inclusion is addressed.

Another benefit of a national digital inclusion strategy is that its vision and goals can be incorporated as appropriate into other relevant strategies, such as those on education, workforce development, or social inclusion. To address this topic fully, mainstream strategies should include a focus on digital inclusion issues.

Such a strategy should also include actions to scan for, mitigate and protect against the potential risks accompanying an increasingly digitalised world, in order to support and enhance engagement in ICT by all. Legislation and regulation have a role to play, as do innovation to develop technological solutions, and education to help individuals and enterprises identify and avoid threats.

5.2.1 Data and Measurement

Finally, measurement is a key element of a Digital Inclusion Strategy, as metrics allow gaps to be identified, programmes to be targeted, and success to be measured. Box 5.1 notes the data currently available, and highlights a number of gaps. In addition to plugging gaps in data, metrics could be used to expand existing Irish data into a digital divide index, similar to those used in South Korea and Australia. Such indices help to identify groups left behind, and to monitor relative progress on inclusion of different groups over time.

Box 5.1: Digital Inclusion—Data Needs and Gaps

The most detailed data available in Ireland on various dimensions of digital inclusion is the EU's DESI Index. This draws on the CSO's surveys of *ICT Usage by Households* and *ICT Usage by Enterprises*. The data collected includes a range of socio-economic information for households (e.g. age, rural/urban, employment status, education level, income, nationality),[84] and questions a variety of businesses of different size and from different sectors.

There are some gaps. For example, the sample size is too small to provide a breakdown on use by, e.g., those aged over 65, a group who are not well engaged digitally.[85] PIAAC data, often used to measure adult skill levels, does not cover people over 65 at all. The *ICT Usage by Households* data also does not capture information on people with a disability, non-native-English speakers, and those with literacy difficulties. These are some of the groups identified as having difficulties accessing public services online (Norris *et al.*, forthcoming).

The *ICT Usage by Enterprises* survey does not include businesses with fewer than 10 staff. This is a gap, as such companies account for almost 20 per cent of the gross added value[86] of Irish companies, and small companies are more likely to be poorly engaged with ICT.

The European Commission's (2021a) recent Digital Compass proposes enhancing the data included in the DESI Index, offering welcome opportunities to refine the data collected. It would also help to ensure that evaluations of the impacts and outcomes of digital inclusion programmes are available, showing what types of intervention work best. Currently, there is little information on the outcomes of, e.g., digital skills training in Ireland.

More granular quantitative data, as well as qualitative data, provides greater understanding of the needs of different groups, and the appropriate policy responses required. For example, the Eurobarometer survey on digital skills at EU level highlighted specific issues, such as that retired people were most likely not to feel the need to improve their digital skills, and that students were most likely to say they did not know which digital skills to improve (EC, 2020b).

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84   See EC, 2020a, link to data in Table 2.3, section 3a1, at https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=67082, accessed 12.04.21.

85   Currently, detailed ICT-use questions are put only to those who take part in one of the five seasonal waves of the annual Labour Force Survey (LFS). This amounted to 1,155 people in 2020. A larger sample could provide adequate breakdowns by group. This could be achieved by asking the questions in more waves of the survey. A total of 25,211 people took part in the five LFS waves in 2020.

86   This is a measure of the value of goods and services produced in an area, industry or sector of an economy.

The new EU Code on Electronic Communications states that 'Member States should monitor the situation of consumers with respect to their use of adequate broadband internet access and voice communications services and in particular with respect to affordability'. While the CSO, and ComReg in particular, collect data on adequacy of broadband, there is little data on affordability. This new requirement may provide the impetus to develop this data.

The OECD (2019) has also recommended that better data be collected by the CSO on digitalisation (among other factors) in Irish companies, to better capture the varied experience of different SMEs.

5.3 Develop a comprehensive framework to support digital skills progression

Lifelong learning, training and education is the best way to prepare for and address the complex and uncertain changes associated with climate action and digitisation (NESC Secretariat, 2020). This requires upskilling and new skills development. For businesses, the upskilling of the workforce can help sustain resilient enterprises during these transitions.

For digital inclusion, such lifelong learning is important for those outside the labour force, such as older people, who are at risk of certain aspects of social exclusion due to lack of digital engagement.

The EU's DigComp can provide a framework for digital training in Ireland. Different types of training provision could indicate where they fit into the DigComp framework. This would also help identify any gaps in provision, and provide a framework to help individuals progress from one level of skills training to the next. It would also provide a structure for the training of trainers.

In Ireland, a variety of training in digital skills is provided by a range of organisations, both statutory and non-statutory. However, there is currently no overall strategy to draw together the disparate digital skills training provision, and the provision is fragmented. The European Commission (2020) has noted that 'Ireland has not so far published a detailed plan on how to achieve the specific digital skills objective' to move Ireland to the EU average for basic digital skills. The Commission's (EC, 2021b) target is for 80 per cent of adults to have at least basic digital skills in 2030. This provides a further impetus to develop more comprehensive digital skills training in Ireland, and will require a strong focus on those who currently have poor digital skills.

It is also not clear whether the digital skills training provision in Ireland adequately meets the increasing requirements for digital competence, or how an individual can progress from one level of skills training to the next. The Digital Skills for Citizens programme offers 10 hours' training in basic skills. However, since it was devised in 2013, technological developments, the need for greater skills to deal with increasing risks in the online world, and the changes arising from Covid-19 all require training that offers more progression through various levels of skill. Indeed, *Our Rural Future* notes that further work is needed on digital skills, with a particular focus on the scale, effectiveness and co-ordination of efforts.

Existing digital training does not reach all groups, and needs greater awareness and advertisement. In addition, existing eligibility rules should not disincentivise those who are not digitally engaged, such as over-65s, from participating in different levels of training.

There is no standard pre-training assessment of a person's level of digital skills, which would direct them towards training for the next level. The Digital Stepping Stones model (see Box 3.4), based on Dig Comp, should be explored as a model for such assessment.[87]

The Dig Comp framework facilitates a more structured training pathway for progression in digital skills. The *Strategy for Adult Literacy, Numeracy and Digital Literacy*, currently under development, may provide a blueprint, and should be aligned with any digital inclusion strategy. Age Action has called for the necessary funding to support outcomes-focused digital skills training to be costed. Any plan to improve the skill level of particular groups should be linked to a budget.

The Council also notes that more one-to-one and tailored training should be provided, to meet the particular needs of trainees. Other countries use phone helplines, and remote access for helpline workers, family members and friends, in providing personalised technological support. Such supports should be considered in Ireland.

As suggested by Chambers Ireland, the National Training Fund could be used to improve digital literacy, thus providing a ready-made fund for digital skills training.

In addition, collaborative work with companies, community groups and volunteers is important. The development of the BCPs and initial work on how they can offer support at community level offer interesting opportunities to engage with groups who have few ICT skills, and lack confidence and direct motivation to learn more. Such supports would help to address the need identified by the Expert Group on Future Skills Needs (2018): 'it is vital that our skills architecture can be responsive on an individual level'.

Although there is certification of high-level digital skills, such as master's degrees and apprenticeships in ICT, and also ECDL certification, there is a gap in relation to the certification of more mundane digital skills, which would allow individuals, employers and trainers to know a person's level. Ideally, certification and/or RPL (recognition of prior learning) would be developed for each module/level of training, linking into the QQI framework.

Many training programmes and one-off schemes, including the Digital Skills for Citizens programme, lack comprehensive, publicly available evaluation. This is also common in Europe. The Medici Mapping Digital Inclusion project notes that 'most interventions [to tackle digital exclusion] have no or limited evaluation results, and there is a poorly-developed evaluation culture and evidence base in the field on "what works"'. It attributes this to the over-representation of NGOs, and other intermediary organisations, as key drivers of innovation in digital inclusion, as they have limited evaluation skills and resources.[88] As a result, there is no central repository of information on what works most effectively, and for which groups. This gap should be addressed.

5.4 Support digital inclusion at community level

The value of digital inclusion work in the community, both in Ireland and internationally, is clear. It helps to provide digital skills and technical support, increase access to devices and connections, develop volunteers, and build trust and confidence with disengaged groups.

In this regard, the existing Irish infrastructure should continue to be supported and developed. Libraries, ETBs and community centres already engage groups, and provide access to devices and upskilling. BCPs and remote work hubs are currently being developed. In particular, BCPs offer exciting opportunities as community-based ICT centres, to engage and develop many groups as part of Ireland's digital future. The issues of connectivity, material access, skills, enhancing confidence, and drawing in groups with poor ICT engagement could be key elements of BCP work.

The relative roles of government, community and business in these centres should be considered, in order to draw on the relative strengths of each in terms of funding, management and developing volunteers. While BCPs are targeted at rural locations, disadvantaged urban areas should also have access to community ICT engagement and provision.

Each local authority employs a broadband officer. To date, their role has mainly focused on facilitating development of broadband infrastructure in their area. It is interesting to consider what role these staff can play on digital development and inclusion, as infrastructure rollout is finalised in the next few years.

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88   See https://medici-project.eu/about-medici-project/, accessed 12.04.21.

5.5 Deliver targeted supports for material access to key groups

Several Irish programmes, some spurred on by Covid-19, offer support to households with the cost of devices and broadband. Many of these supports have, of necessity, been focused on the needs of school students. However, there may be a gap in relation to older people.

The Council notes that the transposition into Irish law of the EU European Electronic Communications Code (EU Directive 2018/1972) may offer new possibilities to support households with broadband costs. Age Action has called for a digital allowance—a €2.50 increase in the Telephone Support Allowance—and a broadening of eligibility criteria to help older people access digital technology (Age Action, 2020b). The research for this NESC report supports this recommendation, while bearing in mind that groups other than older people also need support.

The experiences of the UK and Singapore show that groups such as students in low-income families can be helped to access devices and connectivity. Given the difficulties experienced by low-income families trying to work and study remotely during Covid-19, the pilot schemes already in place for this purpose in Ireland should be built on. Such schemes are also likely to improve digital skills. The Council believes that the lessons from these schemes could provide a basis for more comprehensive, nationally available schemes.

In terms of access, Covid-19 has alerted more Irish businesses to the benefits of trading online, and led to an increase in e-commerce in many sectors. However, there is a range of digital opportunities with which businesses and farms could engage more strongly.

The Council acknowledges the strong commitment in *Enterprise 2025* to 'develop a digital business action plan'. It also supports the DigitalSME programme, suggested by the Innovation Finance Advisory (2019), to address lack of awareness in traditional sectors about the business opportunities of digitalising.

Drawing on the examples of other countries, the OECD and Innovation Finance Advisory reports both recommend funding for digitalisation of business, such as targeted loans or vouchers. NESC (2020) has also argued for consideration of a new Transition Voucher scheme, to provide expertise to firms that would help them respond to the low-carbon and digital transitions.

Feasibility assessment support for farmers would help them identify which agri-tech supports would work well for them. This could be provided by Teagasc or other providers, possibly using a voucher scheme similar to the Trading Online Voucher. Irish farmers in the IFA/Skillnet (2019) study sought a range of training supports, including face-to-face training, discussion and knowledge transfer groups, and technical advisers.

As agri-tech products rely heavily on the gathering and analysis of farm data, good governance on data ownership is essential to ensure it is used safely, so that farmers can trust this data use, and be more confident in engaging with these products.

Ireland also has potential as a hub for international agri-tech businesses to use new products. This would extend knowledge about and use of agri-tech on Irish farms. The Council recommends that further research be carried out on the potential to develop such a hub.

5.6 Enhance guidance for digital and assisted-digital public services and 'complementary' channels

Government policy commits to providing various forms of access to public services, be these online, offline or assisted digital. However, a small number of services have been temporarily moved wholly online. There does not appear to be central guidance on how to ensure that these commitments are met. It is important that services be accessible to all. A number of international researchers argue that public investment in e-government projects will only achieve cost-efficiency when the digital divide in their use is bridged (Pérez-Morote *et al.*, 2020). A number of suggestions on this issue are outlined below, drawing heavily on Norris *et al.* (forthcoming).

A central source of advice for all public bodies providing online services would be useful, on how to make online services easier for disengaged groups to use. Such a guide exists in the UK,[89] and is being developed in New Zealand. Such a guide is available in Ireland in relation to the difficulties faced by people with a disability, but not in relation to the difficulties faced by other groups.

Options are needed for those who cannot access digital services, such as written applications for benefits, and the ability to make enquiries via a public desk or telephone. Pietersen (2017) also found that, while most people prefer 24/7 access to online public services and email, they prefer face-to-face or phone contact when their needs are complex or urgent (see also Reddick & Anthopoulos, 2014). This suggests that people use 'channels' as complements, and for different parts of the same customer journey. For all these reasons, a range of channels should be available to access public services.[90]

The Council believes that a mechanism should be put in place to ensure more consistent online and offline provision of public services. For example, all public-sector organisations should offer the facility for both online and offline payments.

The development of mobile technology in e-government services is also helpful, as this is the most affordable, accessible and ubiquitous mode of digital interaction (Norris *et al.,* forthcoming).

Where e-government services are being developed, the Council recommends that they be piloted prior to their establishment, particularly with groups who are likely to have digital capacity problems, such as older people. E-government allows easy monitoring of the use of services and the collation of data on, for instance, the number of unsuccessful attempts to use a service, and on client error. This information can be taken into account when designing and refining online services (Norris *et al.,* forthcoming).

Another factor is the language used for public services. Those with literacy difficulties, and those who are non-native-English speakers, find it hard to navigate online public services. Providing services in Plain English, in a number of key languages spoken by migrants to Ireland, and through text-to-speech applications, would therefore be useful.

Assisted digital public services are provided in some countries. Such support raises issues such as safeguarding, consent, GDPR and security. It also indicates a need for assisted digital recognition and protocols in organisations, such as recognition that a third party may be the email contact, as the service user does not have an email address. Guidance should be developed on this in Ireland, as well as clarity around which groups could provide assisted digital series here. Current and potential groups providing such support include the Citizens Information Centres, libraries, An Post and BCPs.

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[89] See https://www.gov.uk/service-manual/helping-people-to-use-your-service/designing-assisted-digital, accessed 04.05.2021.

[90] An example is the National Driver Licensing Service providing offline methods to allow those without internet access to book driver licence renewal appointments during Covid-19 (CIB, 2021).

5.7 Conclusion

Digital inclusion is necessary to ensure that Ireland's households, businesses and public sector are ready for a just transition towards the Fourth Industrial Revolution. Information and communications technology is changing the shape of enterprise, employment and living conditions. Being prepared for this will allow Ireland to compete effectively with other small open economies.

Full digital inclusion is the next logical step to build on Ireland's large investment in broadband connectivity, and in e-government. International studies show that the return for such investment in digital inclusion is high. From a social cohesion point of view, such investment ensures that digital divides do not persist, and thus combats social exclusion.

In the context of Covid-19, the identification of the digital divide as a critical threat, and the European Commission's recommendation to Ireland to address its digital divide, the recommendations in this report offer a concrete way forward.

Appendix

Digital Divide Indices

The Australian Digital Divide Index (ADDI)

This index measures three issues—access, affordability and ability—through nationally representative surveys carried out each year by a market research company.

Access is measured through three components:

- Internet Access: frequency, places, and number of access points;

- Internet Technology: computers, mobile phones, mobile broadband, and fixed broadband; and

- Internet Data Allowance: mobile and fixed internet.

Affordability is measured through two components:

- Relative Expenditure: share of household income spent on internet access; and

- Value of Expenditure: total internet data allowance per dollar of expenditure.

And *Digital Ability* is measured through three components:

- Attitudes: including notions of control, enthusiasm, learning, and confidence;

- Basic Skills: including mobile phone, banking, shopping, community, and information skills; and

- Activities: including accessing content, communication, transactions, commerce, media, and information.

The ADDI compiles numerous variables into a score ranging from 0 to 100. The higher the overall score, the higher the level of inclusion. Scores are benchmarked against a 'perfectly digitally included' individual—a hypothetical person who scores in the highest range for every variable. While rare in reality, this hypothetical person offers a useful basis for comparison. This individual:

- accesses the internet daily, both at home and away;

- has multiple internet products (fixed and mobile);

- has a cable or NBN fixed broadband connection;

- has a mobile and fixed internet data allowance greater than our benchmarks (i.e. the benchmark of the 'perfectly digitally included' individual);

- spends less money on the internet (as a proportion of household income) and receives more value (data allowance per dollar) than our benchmarks; and

- exhibits all the positive Attitudes, Basic Skills and Activity involvement listed.

The scores are relative and so they allow comparisons across sociodemographic groups and geographic areas, and over time. The socio-demographic data collected includes age, income, employment status, educational attainment, health/disability, and ethnic background. See Thomas *et al.*, 2020.

The Korean Digital Divide Index (DDI)

The DDI measures the gap between ICT use by the population in general, and by four disadvantaged groups: the disabled, older people, those on low incomes and agriculture/fishery workers (see Park & Kim, 2014; Jun, 2020).[91] Three dimensions of the digital divide—access, skills and utilisation—are measured to fully understand where the gaps exist. See Table A1 for further detail.

Table 5.1: Key policies and programmes to promote digital inclusion in Ireland

Access	Utilisation
• Desktop access at home and other places	• Quantitative: frequency of computer use
• Laptop access at home and other places	• Frequency of internet use
• Wireless internet access	• Frequency of wireless internet use
• Type of home internet access	• Qualitative: Diversity of use—information for work, document management, information for personal use, documents for personal use, internet use for shopping/trade, education/learning, content consumption
• Motivation to get access: information, meeting people, entertainment, self-development, self-expression	• Perceived benefits of using the internet for personal/home uses, entertainment/ leisure, social engagement, communication/socialising

Skill

- Use the option function in a computer web browser, upload files to internet, use internet for job or study, distinguish text/audio/video files
- Create and upload text/music/video/photos, book/purchase tickets, use e-tax and similar applications, online banking, microblog, online groups or communities, online discussions, post on e-government/public sites, online shopping, link digital devices to computer
- Virus check/clean, stop spam, change security level in browser, block content, report identity theft/privacy infringement
- Use smartphone to transfer files to PC, use apps, change options, send files to others, upload files to internet, use augmented-reality function

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[91] In 2011, new types of digital exclusion groups were added, including North Korean refugees and transnational marriage migrants.

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