Digital Economy Business Survey 2021

Office of the Chief Economic Adviser

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Riaghaltas na h-Alba
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Office of the Chief Economic Adviser
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This report presents the key findings from the 2021 Digital Economy Business Survey.

The Scottish Government, in partnership with Scottish Enterprise, Highlands and Islands Enterprise, South of Scotland Enterprise and Skills Development Scotland, commissioned Ipsos MORI to carry out a Digital Economy Business Survey at the start of 2021.

The aim of this survey was to provide an update to the 2014 and 2017 Digital Economy Business Surveys, to assess how the level of digitisation amongst Scottish businesses has evolved over time, and to provide insight into new areas of focus.

Digital Economy Business Survey 2021

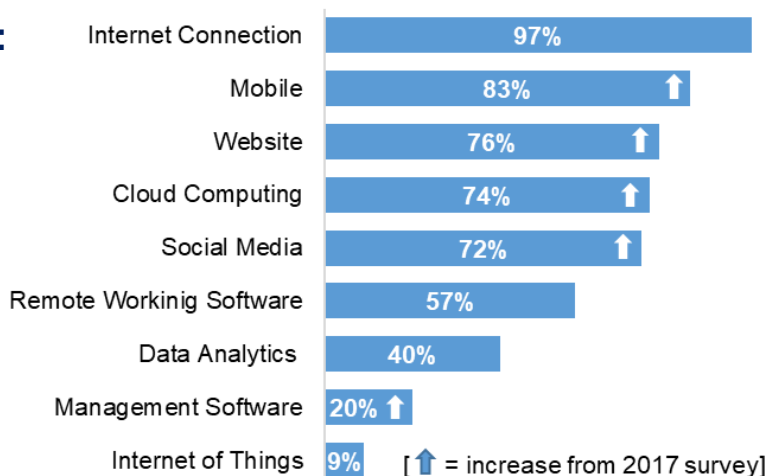**97%** of businesses have an internet connection

3 in 4 state that digital technologies had positively impacted productivity, innovation and/or low carbon working

Adoption of Key Technologies:

Almost all technologies saw an increase in use between 2017 and 2021

Share of businesses using Cloud computing has almost doubled

Technology	Percentage
Internet Connection	97%
Mobile	83% ⬆
Website	76% ⬆
Cloud Computing	74% ⬆
Social Media	72% ⬆
Remote Workinig Software	57%
Data Analytics	40%
Management Software	20% ⬆
Internet of Things	9%

[⬆ = increase from 2017 survey]

3 in 10 businesses are fully equipped with the relevant skills to protect against and deal with cyber security threats

35% of businesses sold their goods or services online

1 in 5 businesses are fully equipped with digital technology skills

1 in 4 businesses stated that digital technology was essential in their response to the Covid-19 pandemic

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[1] Icons from www.flaticon.com

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Introduction

Scottish Government's Programme for Government 2020-2021 recognises the importance of digital infrastructure and technology in supporting economic growth, boosting productivity, driving innovation and supporting business resilience in the face of economic crisis.

Scotland's refreshed Digital Strategy, [A changing nation: how Scotland will thrive in a digital world,](#) published in March 2021, sets out the Scottish Government's vision for Scotland as a vibrant, inclusive, greener, open and outward-looking digital nation. Key to achieving these ambitions is supporting the development of internationally competitive, digitally mature businesses that are inclusive, ethical and user focused across all sectors of the Scottish economy and a workforce that has the digital skills required to support continued growth.

As part of Scotland's Digital Strategy, the Scottish Government and its agency partners committed to monitoring developments in the level of digitisation amongst Scottish businesses, and to measure changes in digital maturity.

The first Digital Economy Business Survey was conducted in 2014 with the purpose of providing a baseline understanding on the level of digitisation of Scotland's businesses, allowing for benchmarking and progress to be measured over time. In order to assess digital progress amongst Scottish businesses since the baseline survey in 2014, the Scottish Government, together with its partners Scottish Enterprise, Highlands and Islands Enterprise, South of Scotland Enterprise and Skills Development Scotland, commissioned Ipsos MORI to carry out the follow-up 2017 and 2021 Digital Economy Business Surveys.

The purpose of the 2021 Digital Economy Business Survey was to:

- Track how Scottish businesses have evolved in relation to digital adoption, usage, exploitation and skills, since the baseline survey in 2014 and follow-up survey in 2017;

- Provide an insight into the areas businesses may require extra support to improve their adoption and exploitation of digital technology; and

- Provide an insight into new areas of focus, such as digital skills, productivity, cyber resilience and E-Commerce.

This report presents the high-level results from the survey. Comprehensive results from the survey, including breakdowns by firm size, sector, and area are available in the accompanying data tables which can be found as a supporting file alongside this publication.

Additional breakdowns are provided for the first time in the 2021 data tables including: number of establishments, location, organisation type, internet connection, use of digital technologies, number of technologies, investment in digital technologies, exporting markets, E-Commerce, cyber security, digital skills, annual

turnover, private sector growth plans and length of time business has been operating.

Using data from the Digital Economy Business Survey, the Scottish Government has developed a Digital Economy Maturity Index (DEMI), which allows for the segmentation of businesses in Scotland according to their level of digitisation. DEMI is constructed using a range of indicators from the Digital Economy Business Surveys. The original DEMI was developed in 2014 and has since been updated for 2017 and 2021 to reflect new areas of interest. The 2021 DEMI can be found as a supporting file alongside this publication.

[Highlands and Islands Enterprise](#) and [South of Scotland Enterprise](#) have published summaries of relevant regional findings, available on their websites.

Key findings from the survey

Businesses differed in terms of their size, sector, location, length of operation and future growth aspirations. Digitally mature businesses tended to be larger, operating for less than ten years, and with expectations of growth in the next 12 months. They were more likely than average to be working in business activities, and to be based in Glasgow, Lothians, Central Scotland or the North East. Conversely, the less mature tended to be smaller, established for at least 10 years, and with expectations to remain at the same level or contract in the next 12 months. They were more likely than average to be working in agriculture or construction, and to be based in the South of Scotland.

This report presents high level findings from the survey. The data tables published alongside this report contain breakdowns by a number of factors, including business size, sector, location, turnover, and business growth, as well as cross-references with key findings in other sections of the survey. It is recognised that there is significant variation across businesses in different sectors and different parts of Scotland, and that digital maturity is not static. Additional analysis is being undertaken and findings from this survey will be important in informing the development of current and future policy in Scotland.

- **Internet connection:** 97 per cent of businesses surveyed in 2021 had an internet connection, unchanged from 2017, but higher than 94 per cent of businesses surveyed in 2014.

- **Adoption of technologies:** As in 2014 and 2017, the most widely adopted digital technologies were making use of mobile technologies (83 per cent), and having a company website (76 per cent). The share of businesses using Cloud computing almost doubled from 2017 (74 per cent up from 38 per cent) and overtook social media (72 per cent) as the third most used technology in 2021.

- **Importance of specific technologies:** Businesses using mobile internet and technologies (59 per cent), remote working tools (55 per cent) and the company website (54 per cent) were most likely to rate these technologies as essential to the way the business operates.

- **Reasons for not using technologies:** 2 per cent of businesses used none of the listed digital technologies, compared to 6 per cent in 2017 and 10 per cent in 2014. The most commonly cited reason for not using any of the listed technologies was that the technology in question was not relevant to the business (65 per cent).

- **Benefits of using technologies:** The perceived benefits from making use of digital technologies were similar to those cited in 2014 and 2017. Benefits range from:
  - technologies generating exposure of the company and that it has increased responsiveness to customers (website and social media); to
  - allowing for greater flexibility and remote working (mobile internet and technologies and cloud computing); and
  - better marketing (data analytics) and increased efficiency (management software).

- **Productivity:** Three quarters (75 per cent) of businesses reported that digital technologies had positively impacted their productivity, innovation and/or low carbon working. The greatest impact experienced by businesses was that digital technologies helped make their processes more efficient (59 per cent).

- **Innovation:** A third (33 per cent) of businesses reported that digital technology had impacted innovation by helping the business create new or significantly improved products or services.

- **Environment:** A third (34 per cent) of businesses reported that digital technology has supported a shift to low carbon working. Businesses in the business activities (48 per cent) and health/ social work (40 per cent) sectors were more likely than average to report that it has helped a shift to low carbon working.

- **E-commerce:** Overall, 35 per cent of businesses surveyed in 2021 made sales via e-commerce in the last 12 months, an increase from 30 per cent in 2017. Of those businesses, 63 per cent had made e-commerce sales to other businesses (B2B). The most common action being taken by businesses using e-commerce to maximise their digital presence and support e-commerce activity was search engine optimisation (53 per cent).

- **Internationalisation:** 27 per cent sold their goods or services to markets internationally (outside of the UK). 24 per cent of businesses sold within the EU and 20 per cent outside of the EU. A variety of challenges were perceived by businesses using e-commerce that would affect their ability to deliver international e-commerce services, including UK exit from EU (10 per cent) and the Covid-19 pandemic (8 per cent).

- **Cyber security skills:** 30 per cent of businesses felt that they were fully equipped with the relevant skills to protect against and deal with cyber security threats. 14 per cent felt poorly or not at all equipped to deal with cyber security threats.

- **Cyber security attack:** 28 per cent of businesses have experienced a cyber-attack in the last 2-3 years. The most common attacks were being directed to fake websites (15 per cent) and emails being hacked (11 per cent).

- **Skills in the workforce:** 21 per cent of businesses stated that their employees were fully equipped with the skills to meet the business' digital technology needs, down from 26 per cent in 2017 and 37 per cent in 2014.

- **Digital skills gaps:** A quarter (26 per cent) of businesses reported that they needed to improve basic technology skills such as email, internet navigation, Microsoft Office and Excel.

- **Skills development:** 29 per cent of businesses were taking action to develop their existing employees' digital technology skills, down from 34 per cent in 2014. When asked why businesses are not planning to develop their employees' digital skills, the most common reason was that it was not applicable for business needs (65 per cent).

- **Covid-19 Response:** 40 per cent of businesses stated that digital technology was essential to the operation of the business in responding to the Covid-19 pandemic and 38 per cent stated that it was important or very important in their response.

Detailed survey methodology

Fieldwork approach

The survey fieldwork was conducted between 22 February and 23 April 2021. In total 3,346 businesses took part in the survey. The majority of surveys (3,316) were carried out using telephone interviewing, with the remainder (30) being completed online (businesses could choose to complete the survey online if a telephone interview was not suitable).

The interviews were targeted at the most relevant person in each business: for smaller business (less than 10 employees) interviews were carried out with the owner of the business; for larger businesses, interviews were carried out with the person responsible for making decisions about the IT systems in the business (Managing Director, IT Manager or equivalent). Sole traders were excluded from the survey.

Survey sample

The survey sample was sourced from the Dun and Bradstreet business database and was stratified by sector and size to reflect the population of Scottish businesses as a whole. The survey sample included additional boost of 1,000 interviews within

the Highlands and Islands, and of 500 interviews in the South of Scotland, to allow for further analysis of findings for these regions.

Quotas were set for recruitment and interviewing so that the achieved sample reflected the population of eligible organisations as defined by the Inter-Departmental Business Register. Eligible organisations were defined by Standard Industrial Classification (SIC) code.

For all quotas, a 20% leeway was allowed for, meaning that a minimum of 80% of each quota had to be reached, but no more than 120% of each quota target could be achieved.

Respondent profile

The achieved sample was broadly representative of the population, notwithstanding some differential non-response due to differences in availability and willingness to participate. Weighting was applied to correct the distribution of sectors and size categories to match the sample counts.

The profile of respondents by area, sector and size is shown below:

Sample profile by region, sector and size

|	Proportion of total (weighted %)	Number of respondents (unweighted)
Region		
Highlands and Islands	12	1,150
South of Scotland	6	610
Rest of Scotland	81	1,586
Total		**3,346**
Sector		
Agriculture	11	512
Business activities	30	912
Construction	12	255
Health / Social Work	4	162
Hotels / restaurants	8	334
Manufacturing	5	293
Other services	8	218
Transport / Communications	9	221
Wholesale / retail	13	439
Total		**3,346**
Employees		
1-9	87	2,266
10-49	10	768
50-249	2	167
250+	1	89
Total		**3,346**

Digital Connectivity

The Scottish Government's refreshed Digital Strategy - A changing nation: how Scotland will thrive in a digital world - sets out the vision for Scotland as a vibrant, inclusive, open, greener and outward-looking digital nation to ensure that it continues to prosper in an increasingly connected and competitive world.

For Scotland to thrive in this digital world, our response must embrace three key opportunities: designing and implementing technology in a secure, efficient and user centred way, realising the potential of data to improve services, increase efficiency and deliver better outcomes, and transforming our culture and the way we work through digital thinking, with its emphasis on openness, networking and agility. We want Scotland to be a fully digitally inclusive nation in which our digital and data infrastructure is recognised as critical national infrastructure and the benefits of technology are available to everyone.

This section looks at the take up of standard and next generation broadband among businesses in Scotland, and the reasons why businesses without internet access are not connected.

Figure 1: Internet connection take up (%)
Base: Businesses with an internet connection (min = 3,271)
Multiple responses allowed
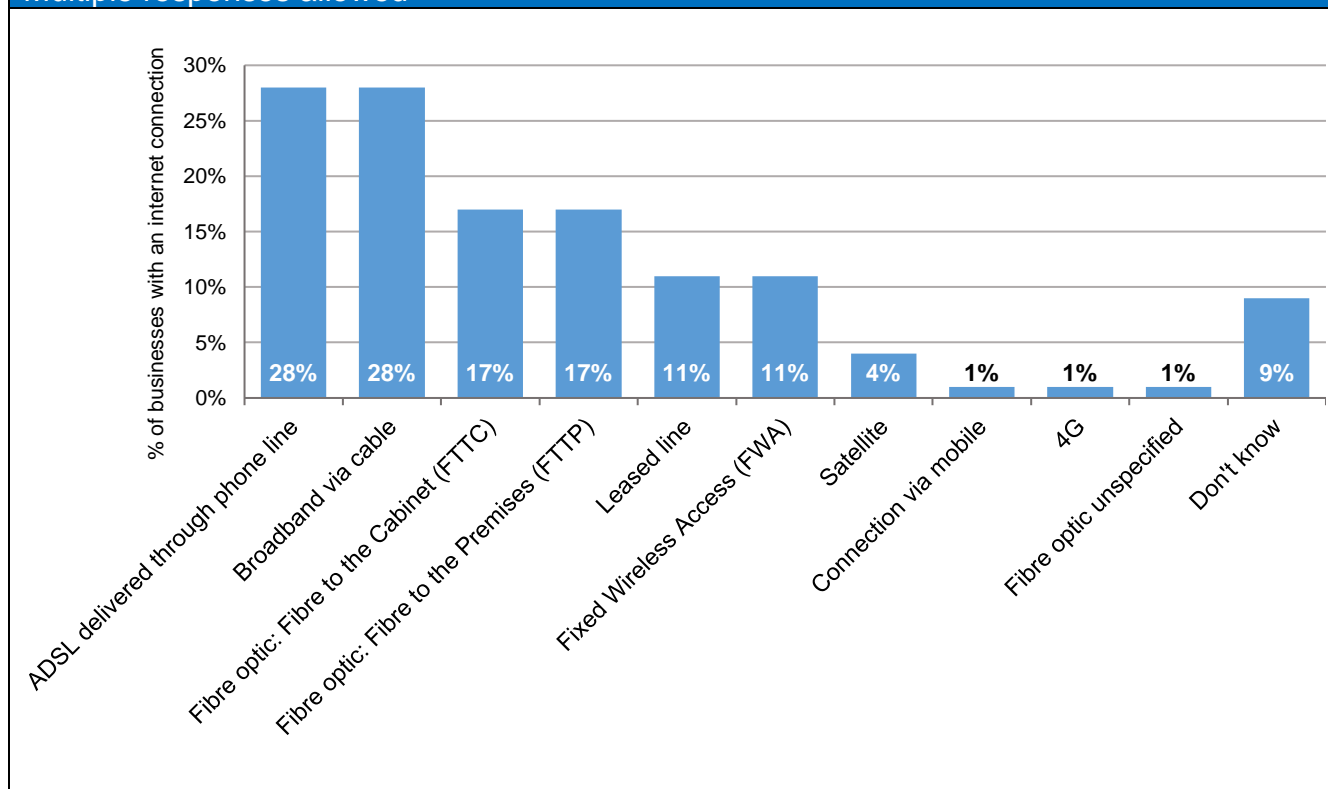
Internet take up (see Figure 1)

- In total, 97 per cent of businesses surveyed in 2021 had an internet connection, unchanged from 2017, but higher than 94 per cent of businesses surveyed in 2014.

- Among businesses with an internet connection, the most common types of connection was ADSL delivered via telephone line (28 per cent) and broadband via cable (28 per cent).

- 33 per cent of businesses had any fibre connection, an increase from 28 per cent in 2017.

- 21 per cent of businesses with an internet connection reported to having a download speed between 30Mbit/s and 1Gbit/s. Two per cent had a download speed up to 2Mbit/s, while three per cent had a download speed over 1Gbit/s. 58 per cent did not know their download speed.

- Among businesses that had internet access, 22 per cent stated that they were fairly or very likely to improve their connection in the next 12 months. Around two-thirds (66 per cent) were fairly or very unlikely to do so.

- Of those businesses planning on getting or improving their internet connection, the majority (85 per cent) reported that they expected their organisation could benefit from increased efficiencies/ productivity. 30 per cent expect to provide a more reliable service for customers by acquiring/ improving their internet connection.

Businesses with no internet connection

- Among those businesses that did not have an internet connection (three per cent), only 19 per cent were very or fairly likely to get an internet connection over the next 12 months, if it were available. Three quarters (74 per cent) were very or fairly unlikely to get an internet connection. These findings matched closely to those in the 2017 and 2014 surveys.

- Among those that were unlikely to get an internet connection, the most commonly cited reason was that there was no business need (78 per cent), an increase from 65 per cent in 2017. This was followed by set up costs/ cost of connection (12 per cent), lack of broadband/ available connection (seven per cent) and can't afford to (five per cent).

Adoption of Key Technologies

Digital technologies are widely recognised as enablers of productivity and drivers of innovation and international trade. They underpin business growth across every sector of the economy and can enhance productivity, allowing for time savings and resources to be freed up and used elsewhere.

This section outlines businesses' adoption of some of the most common digital technologies, including mobile internet, cloud computing, social networking and data analytics. It also details the benefits businesses experience from using digital technology, and cites the most common reasons why some businesses do not make use of digital technologies.

Figure 2: Adoption of key digital technologies (%)
Base: All businesses (2014 = 4,002; 2017 = 3,258; 2021 = 3,346)*
Multiple responses allowed
*Only businesses with an internet connection (min 2017 = 3,160; 2021 = 3,271) were asked whether they make use of cloud computing in 2017 and 2021.
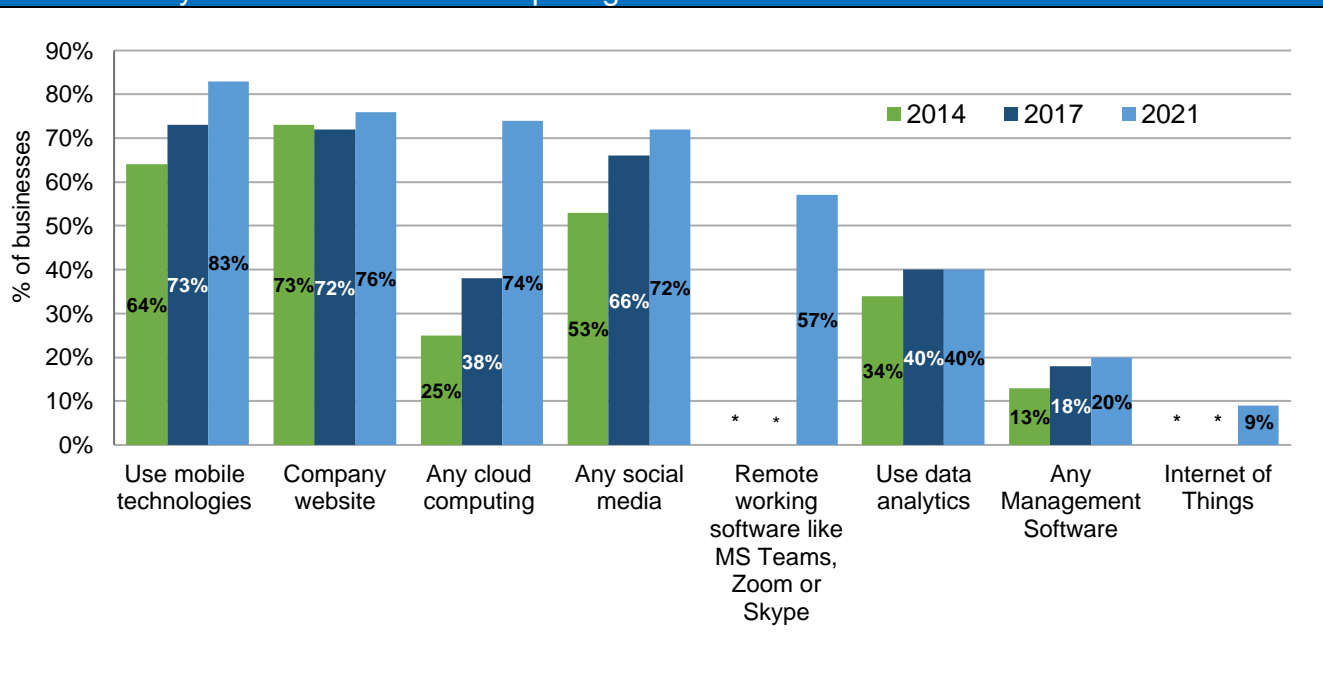
Usage of key digital technologies (see Figure 2)

- The most widely adopted digital technologies were making use of mobile technologies[2] (83 per cent) and having a company website (76 per cent).

- Almost all technologies saw an increase in use between 2017 and 2021. The use of mobile technologies, cloud computing and social media has steadily increased from 2014 to 2021. The share of businesses using cloud computing services has almost doubled since the last survey from 38 per cent in 2017 to 74 per cent in 2021.

- The only technology not to increase in use between 2017 and 2021 was the use of data analytics, which remained unchanged at 40 per cent of businesses. Of those businesses utilising data analytics, a third (34 per cent) used artificial intelligence.

- 57 per cent of businesses surveyed in 2021 made use of remote working software, such as MS Teams, Zoom or Skype.[3]

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[2] Includes mobile broadband connection via portable devices (e.g. tethering to mobile 3G, 4G or 5G networks); portable computers using mobile phone networks (e.g. laptops with inbuilt 3G, 4G or 5G) and other portable devices such as smartphones or tablets.
[3] This option was not listed in the 2017 survey, and so no comparisons are available.

- Of those businesses using cloud computing services, 53 per cent used office software such as word processors or spreadsheets over a cloud computing service and 49 per cent used it to store files.

- Only 2 per cent of businesses did not use of any of the listed technologies, compared to 6 per cent of businesses surveyed in 2017 and 10 per cent in 2014.

Figure 3: Top three most cited benefits of using key digital technologies (%)	
Most Cited Benefits of Using Website and/or Social Media:	
Generated exposure/raised company profile/increased awareness	73
Increased responsiveness/improved customer service	24
Improved sales, turnover and/or profits	14
Base	2,897
Most Cited Benefits of Using Mobile technologies:	
Employees able to work remotely on the go	62
Increased continuity, flexibility, or resilience	23
Increased responsiveness to customers/improved customer service/customer engagement	23
Base	2,698
Most Cited Benefits of Using Cloud computing:	
Can access data or service remotely/from anywhere	49
Improved security	18
Increased efficiency	15
Base	2,382
Most Cited Benefits of Using Data analytics:	
More accurate and targeted marketing	28
Increased responsiveness/improved customer service	20
Drives business decisions/overall strategy	19
Base	1,410
Most Cited Benefits of Using Management software:	
Increased efficiency	56
Collected vital data (e.g. customer details and order histories)	23
Increased responsiveness/improved customer service	23
Base	689

Benefits of using specific digital technologies (see Figure 3)

- Overall, the perceived benefits of using specific digital technologies were broadly similar to those reported in the 2017 and 2014 surveys.

- The most commonly cited benefit of having a website and using social media was that it generated exposure for the organisation (73 per cent stated this).

- Of businesses using mobile technologies, 62 per cent stated employees being able to work remotely as a benefit, up from 53 per cent in 2017. 23 per cent stated that they benefited from increased business continuity/ flexibility/ resilience as a result of using mobile technologies.

- 49 per cent of businesses using cloud computing stated that they benefited from this technology as it allows data to be accessed remotely, while 18 per cent stated that using cloud computing offered improved security (down from 23 per cent in 2017).

- More accurate and targeted marketing was the most frequently cited benefit among data analytics users (28 per cent, down from 34 per cent in 2017).

- 56 per cent of businesses using management software stated that they benefited from increased efficiency from using the software, up from 49 per cent of users in 2017 and 31 per cent in 2014.

Use of digital technologies to guide development of the business

- Of those businesses using at least one of the digital technologies listed in Figure 3, 47 per cent made use of these to capture insights or feedback from customers – unchanged from 2017.

- Other methods of using digital technologies to guide the development of the business included: Researching competitor products (40 per cent) and researching and gathering market data (35 per cent).

- 22 per cent of businesses using any of the listed technologies had a specific plan or strategy for its use of digital technology in delivering the business, broadly in line with 2017 at 23 per cent.

Figure 4: How integral the use of specific digital technologies is to the business (%)
Base: All respondents using each technology (min = 309)

Importance	Company Website	Social Media	Mobile Internet & Technologies	Cloud Computing	Data Analytics	Management software	Remote Working Tools	The Internet of Things
Essential	54%	32%	59%	45%	20%	33%	55%	44%
Important	36%	49%	34%	38%	53%	46%	33%	41%
Not Important	10%	18%	6%	15%	24%	19%	11%	14%
Don't Know	*	*	*	2%	3%	2%	1%	1%
Base	2,496	2,468	2,699	2,383	1,410	689	1988	309

Importance of digital technology (see Figure 4)

- Businesses using mobile internet and technologies (59 per cent), remote working tools (55 per cent) and the company website (54 per cent) were most likely to rate these technologies as essential to the way the business operates. In 2017, mobile internet and technologies, cloud computing and the

company website were more likely to be seen as a central part of the business[4].

- Nearly a quarter (24 per cent) of businesses using data analytics reported that the technology was not important to the businesses – the greatest share of this response in relation to the other listed technologies.

Reasons for not using digital technologies

- 2 per cent of businesses used none of the listed technologies. The most commonly cited reason for not using any of the listed technologies was that the technology in question was not relevant to the business (65 per cent).

- Other reasons for not using any of the listed technologies included: prefer current business model e.g. face-to-face interaction (11 per cent), don't understand IT (10 per cent), and lack of skills in the organisation (5 per cent).

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[4] Note that this question is not directly comparable with 2017 due to the change of scale from a 1-10 format to essential/ important/ not important for 2021.

Productivity and Innovation

Quality broadband and mobile infrastructure is of increasing and central importance to Scotland's economy, enhancing productivity and driving innovation in Scotland's businesses, especially in its more remote and rural areas.
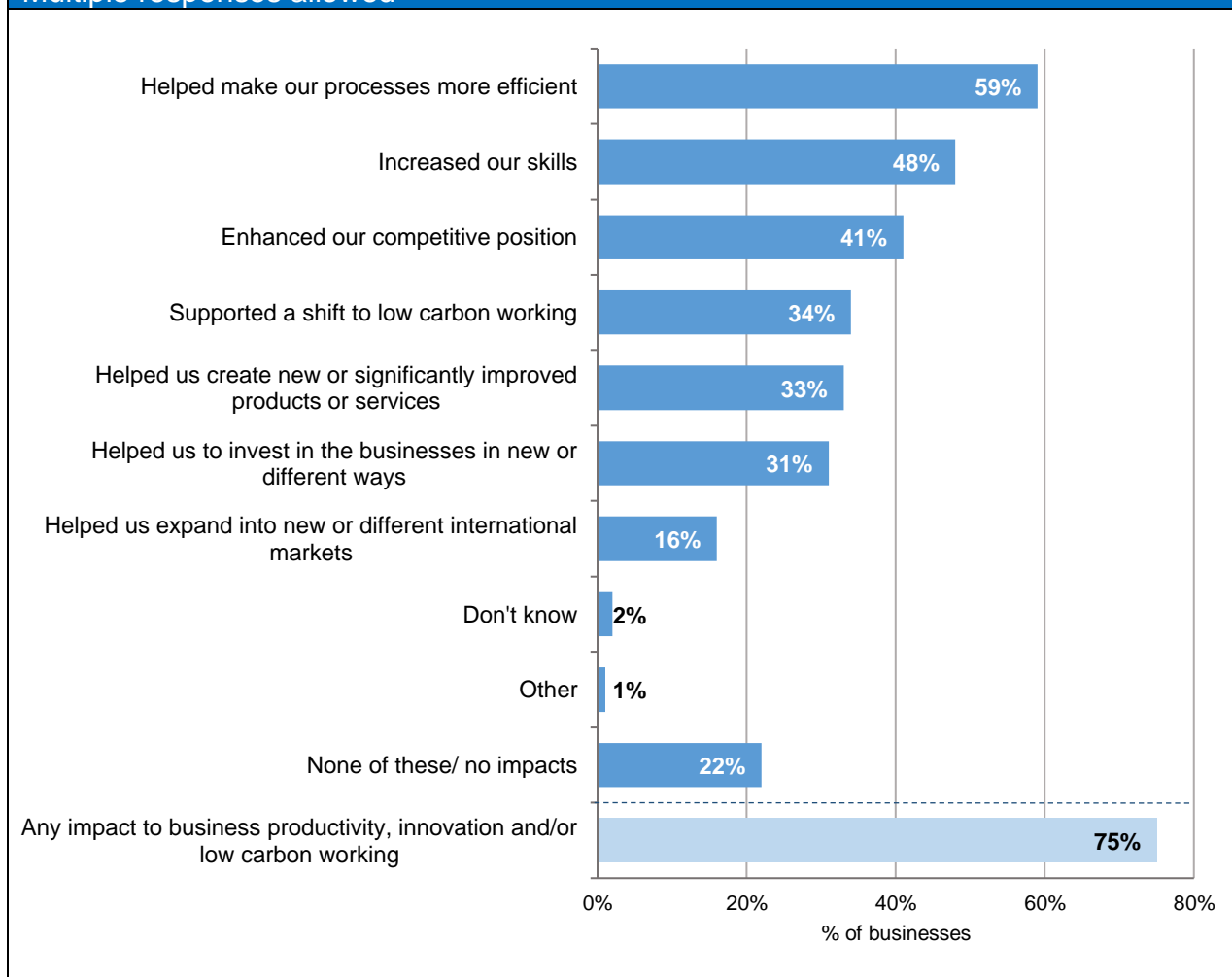
Digital technology is already a source of incredible opportunity and potential for businesses– to open new markets, work in new ways, personalise services, innovate and scale rapidly, tackle climate change and make links across the globe. It shapes the way in which we meet national priorities such as economic recovery, climate change, decarbonisation, wellbeing and social renewal.

This section of the report sets out digital technology's impact on Scottish businesses' productivity and innovation, as well as its contribution to tackling climate change.

Figure 5: Ways digital technology has impacted business productivity, innovation and low carbon working (%)
Base: All businesses (min = 3,346)
Multiple responses allowed

Helped make our processes more efficient — 59%
Increased our skills — 48%
Enhanced our competitive position — 41%
Supported a shift to low carbon working — 34%
Helped us create new or significantly improved products or services — 33%
Helped us to invest in the businesses in new or different ways — 31%
Helped us expand into new or different international markets — 16%
Don't know — 2%
Other — 1%
None of these/ no impacts — 22%
Any impact to business productivity, innovation and/or low carbon working — 75%

% of businesses

Impact of digital technologies (see figure 5)

- Three quarters (75 per cent) of businesses reported that digital technologies had positively impacted their productivity, innovation and/or low carbon working. The greatest impact experienced by businesses was that digital technologies helped make their processes more efficient (59 per cent of businesses).

- A third (34 per cent) of businesses reported that digital technology has supported a shift to low carbon working. Businesses in the business activities (48 per cent) and health/ social work (40 per cent) sectors were more likely than average to report that it has helped a shift to low carbon working.

- 31 per cent of businesses stated that digital technology had a significant impact on productivity over the last 12 months. 23 per cent saw a moderate impact on business productivity while 17 per cent had a slight impact and 26 per cent had no impact at all.

- A third (33 per cent) of businesses reported that digital technology had impacted innovation by helping the business create new or significantly improved products or services.

- 45 per cent of businesses increased the proportion of investment on digital technologies over the past two years. Half (50 per cent) reported that investment in digital technologies remained unchanged. Only two per cent had decreased investment.

Environmental impact

- A quarter (25 per cent) of businesses were committed to reducing their environmental impact (i.e. scored 9 or 10 on scale of 10)[5]. Only five per cent were not committed to reducing their environmental impact (i.e. scored 1 or 2 on scale of 10).

- Businesses that utilise Artificial Intelligence (37 per cent scored 9 or 10), Business Management Software (32 per cent) and Data Analytics (31 per cent) were more likely to be committed to reducing their environmental impact.

- There is a positive relationship between a business's commitment to reducing their environmental impact and the number of technologies adopted by the business.

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[5] Respondents were asked to rate how committed their business is to reducing its environmental impact on a scale of 1 to 10. 1 = not committed at all; and 10 = very committed.

Internationalisation and E-Commerce

The internet and digital technologies enable businesses of any size in any location to access global markets. This creates opportunity for businesses to trade not just with local markets but with the world.

Effective use of digital technologies, including E-Commerce platforms, tailoring company websites to international markets and using digital marketing and social media, can enable businesses across all sectors to easily reach these markets and increase their export potential.

The following section looks at the extent to which businesses in Scotland engage in E-Commerce, and how it is used to enhance their sales outside the UK.

Figure 6: Expected change in sales levels in the next 12 months by market (%) Base: Businesses currently selling in each market (min = 1,172)				
Expected Change	In Scotland	Outside of Scotland, but in the rest of the UK	Outside of the UK, within the EU	Outside of the UK, outside of the EU
Increase	52%	47%	26%	31%
Stay the same	34%	34%	27%	25%
Decrease	8%	8%	19%	11%
Not applicable	2%	8%	24%	28%
Don't know	4%	3%	5%	5%
Base	3,286	1,946	1,255	1,172

Destination of sales made by Scottish businesses (see Figure 6)

- Of all businesses surveyed in 2021, 97 per cent sold their goods or services in Scotland, and half (50 per cent) made sales to the rest of the UK. 27 per cent sold their goods or services to markets internationally (outside of the UK). 24 per cent of businesses sold within the EU and 20 per cent outside of the EU.

- 23 per cent of businesses plan to sell goods or services to new or different markets in the next 12 months. 73 per cent had no plans to do so.

- Of those businesses that reported to selling their goods or services in each market, the most common plan was to increase sales in their current markets in the next 12 months (see figure 6).

Figure 7: Proportion of sales made via e-commerce in last 12 months (%)		
Proportion of sales	Current e-commerce sales (% of all businesses)	Current e-commerce sales made to other businesses (B2B) (% of businesses using E-Commerce)
All - 100%	4	13
80-99%	5	5
60-79%	3	5
40-59%	4	7
20-39%	5	9
Less than 20%	13	23
None	61	34
Don't know	4	3
Any Sales	**35**	**63**
Base	3,346	1,244

## Business use of E-Commerce (see Figure 7)

- Overall, 35 per cent of businesses surveyed in 2021 made sales via e-commerce in the last 12 months, an increase from 30 per cent in 2017. Of those businesses, 63 per cent had made e-commerce sales to other businesses (B2B).

- 13 per cent of businesses made up to one fifth of their sales via e-commerce, while four per cent of businesses made all of their sales via E-Commerce (an increase from one per cent in 2017).

- 13 per cent of businesses using E-Commerce make all of their online sales to other businesses. 23 per cent of businesses made up to one fifth of their E-Commerce to other businesses.

- When asked how sales via e-commerce had changed compared pre-pandemic[6] (i.e. prior to March 2020), 30 per cent of businesses using E-Commerce noted that online sales had increased. 30 per cent of businesses were making a similar proportion of their sales via e-commerce compared to pre-pandemic, and 24 per cent saw a decline in sales.

- Six per cent of businesses starting selling online during the pandemic (i.e. post March 2020) while four per cent stopped selling online.

Figure 8: Steps being taken to maximise digital presence and support E-Commerce activity[7] (%)
Base: All businesses using e-commerce (2017 = 1,006, 2021 = 1,244)
Multiple responses allowed
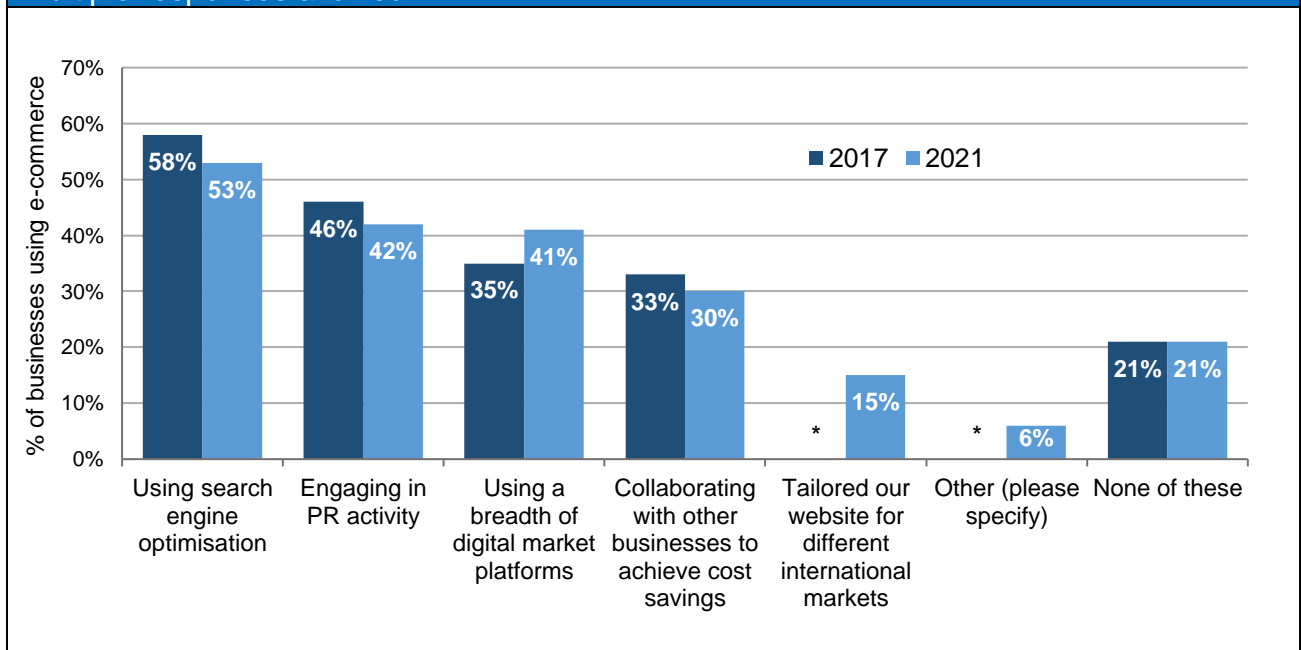
E-commerce tools and methods (see Figure 8)

- The most common action being taken by businesses using e-commerce to maximise their digital presence and support e-commerce activity was search engine optimisation (53 per cent). 42 per cent of businesses using e-

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[6] The first cases of Covid-19 in Scotland were identified in March 2020. Scotland entered a national lockdown on 23rd March 2020 alongside the rest of the UK where many businesses were put under restrictions. Scottish businesses have faced ongoing restrictions of varying degree throughout 2020/2021 impacting businesses' ability to trade.

[7] * These responses were not asked in the 2017 survey.

commerce engaged in PR activity, and 41 per cent used digital marketing platforms.

- 21 per cent of businesses using e-commerce had not taken any steps to maximise their digital presence, unchanged from 2017.

- 18 per cent of businesses used digital marketplaces or platforms (e.g. Amazon, eBay) in 2021.

Figure 9: Key challenges to the business in delivering international E-Commerce Services
Base: All businesses using e-commerce (min = 1,244)
Multiple responses allowed
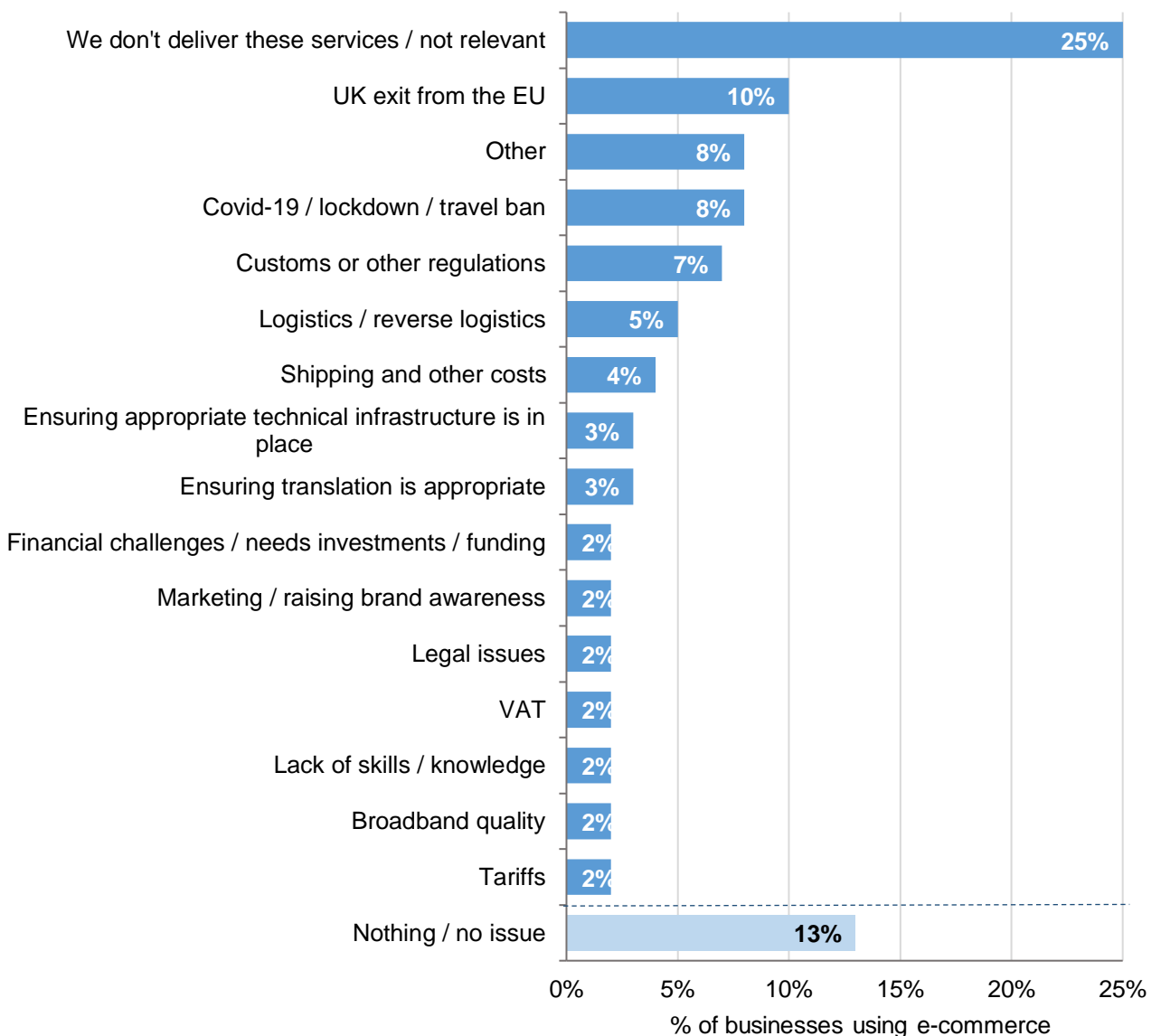
Barriers to E-Commerce and internationalisation

- The most common reason for not engaging in e-commerce was that it was not relevant to the business (83 per cent), broadly in line with 2017 (81 per cent). Three per cent reported that the Covid-19 pandemic was a barrier to their business selling online.

- Thinking about the future, 28 per cent of businesses not currently using E-Commerce expected to make sales via E-Commerce over the next 2-3 years.

- A variety of challenges were perceived by businesses using e-commerce that would affect their ability to deliver international e-commerce services, including: UK exit from EU (10 per cent); Covid-19 pandemic (8 per cent); customs or other regulations (7 per cent); logistics/ reverse logistics (5 per cent); and shipping and other costs (4 per cent) (see Figure 9).

Cyber Resilience

Digital technologies bring enormous opportunities for businesses, but they also bring new threats and vulnerabilities that we must manage safely. It is likely that cyber-crime costs the UK economy billions of pounds each year. Further, the Cyber Breaches Survey 2021 identified that 39% of businesses in the UK and a quarter of charities (26%) reported having cyber security breaches or attacks in the previous twelve months, with an increasing number of businesses experiencing these issues at least once a week.

Scotland's new Digital Strategy positions cyber resilience as key to operational resilience and business continuity, and aims to embed cyber resilience into the design of Scotland's future digital services, The Strategic Framework for a Cyber Resilient Scotland, published in February 2021, seeks to ensure that businesses and organisations are aware of the cyber risks they face, have access to up-to-date information, advice and guidance, and can withstand, respond to and manage incidents, knowing where to find the right kind of support.

The Programme for Government in September 2020 identified cyber security as the critical underpinning factor that would ensure Scotland is safely and securely able to develop smart digital solutions to meet the needs of the immediate and long-term economic future.

This section examines the extent to which the cyber security skills required by business are readily available in the workplace, and the technical controls and accreditation that are in place within businesses to ensure they are digitally resilient and secure.

Figure 10: Type of cyber-attacks experienced by businesses in the last 2-3 years (%)
Base: All businesses (3,346)
Multiple responses allowed
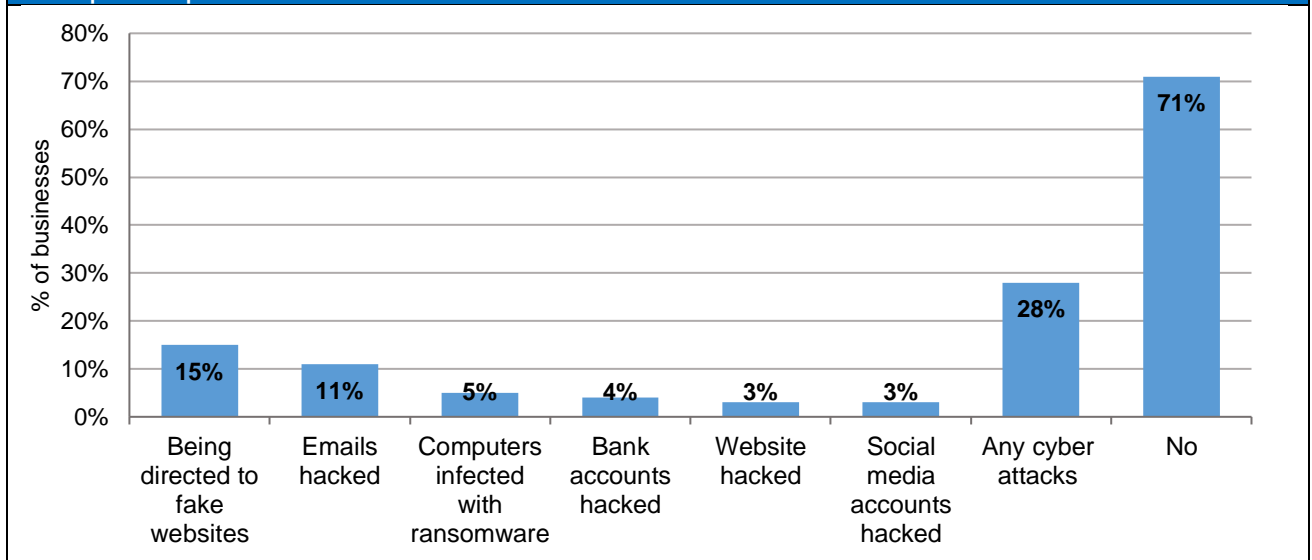
Cyber-attacks (see figure 10)

- Amongst all businesses surveyed, 28 per cent had experienced a cyber-attack in the last 2-3 years. The most common attacks businesses faced was being directed to fake websites (15 per cent) and having emails hacked (11 per cent).

- 71 per cent of businesses experienced no cyber-attacks in the last 2-3 years.

- Of those businesses that experienced a cyber-attack, various implications were reported such as the business requiring specialist services (26 per cent). Other implications included cost of replacing/ upgrading equipment (23 per cent), financial loss (17 per cent), re-training staff (13 per cent), damage to reputation (9 per cent) and data breach of sensitive information (7 per cent).

Cyber-security accreditation

- 6 per cent of businesses had obtained a cyber-security accreditation, such as Cyber Essentials or Cyber Essentials Plus, down from 10 per cent in 2017. 76 per cent did not have accreditation and were not planning to obtain it in the future.

- Amongst those who did not have a cyber-security accreditation, only 9 per cent were planning to obtain accreditation in the next 12 months.

Figure 11: Extent to which the organisation feels equipped with the relevant skills to protect against and deal with cyber-security threats (%)
Base: All businesses (3,346)
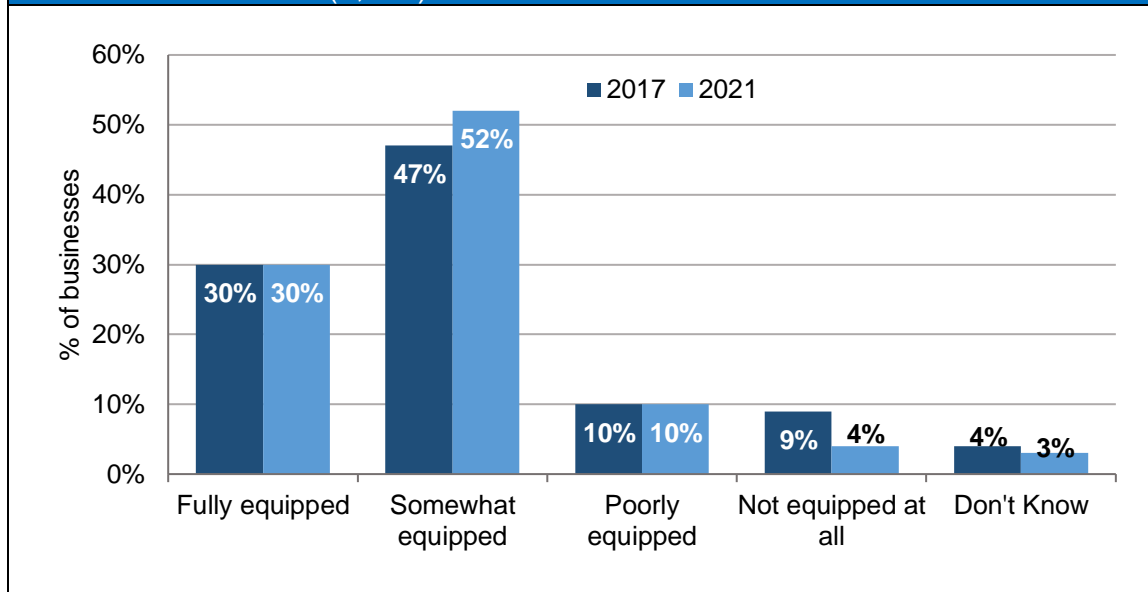
Cyber-security skills (see figure 11)

- Amongst all organisations surveyed, half (52 per cent) were responsible for managing their own IT infrastructure and systems, while 27 per cent did not manage any of their own IT infrastructure and systems.

- 82 per cent felt that they were fully or somewhat equipped with the relevant skills to protect against and deal with cyber security threats. 14 per cent of businesses, on the other hand, felt that they were poorly, or not at all, equipped with the relevant skills to protect against and deal with cyber security threats.

- 81 per cent of businesses feel that their workforce is very or fairly aware of cyber threat and risk and how to mitigate it. 15 per cent reported that their workforce is not very or not at all aware.

- In regards to external advice, guidance and support on cyber security, the most common source reported by businesses was Police Scotland (38 per cent). 19 per cent stated that they would go to the National Cyber Security Centre, 12 per cent would go to the Scottish Business Resilience Centre and 4 per cent would contact an IT company/ consultant/ external provider.
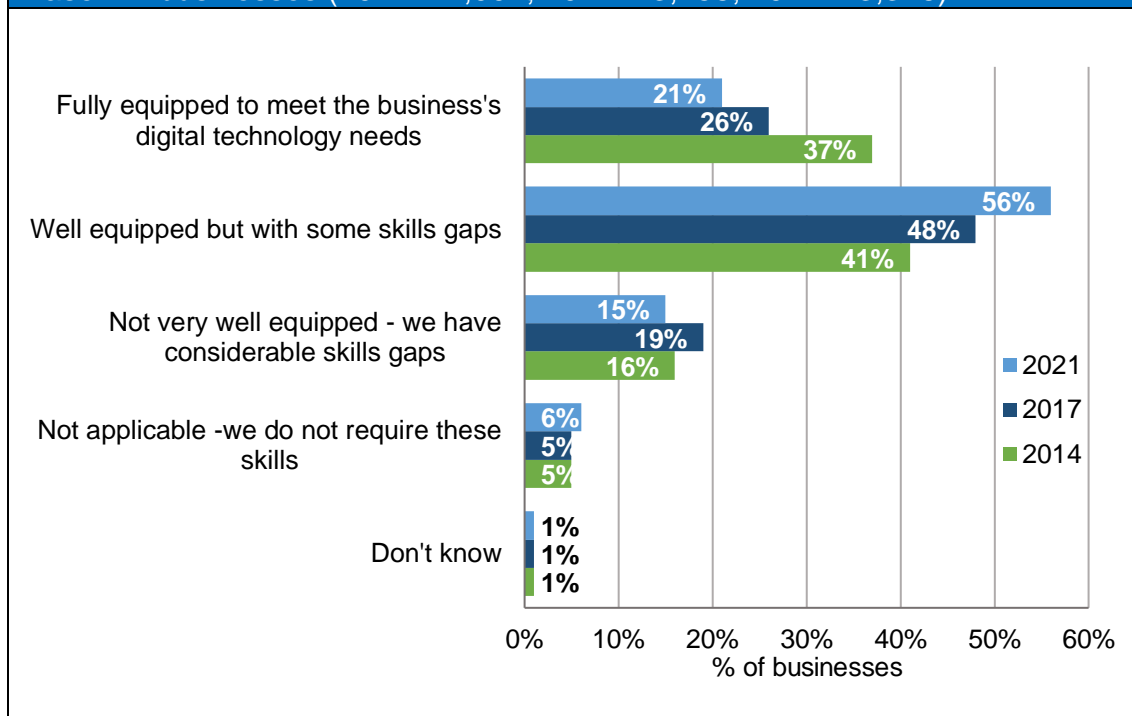
Skills

The refreshed Digital Strategy identifies that Digital skills are fundamental to the life chances of our people and the economic success of our country. Digital skills sit alongside literacy, numeracy and health and wellbeing as the essential platforms for lifelong learning. These skills are required to study almost every subject at school, in further and higher education and training, and in a growing number of roles in the workplace.

For Scottish businesses to be able to fully exploit the opportunities offered by digital technologies to drive growth, improve productivity and stimulate innovation it is essential that the current and future workforce have the skills and confidence to do so.

This section looks at the extent to which the digital skills required by businesses are readily available in the workforce.

Figure 12: How equipped staff as a whole are in terms of skills to meet the business' digital technology needs (%)
Base: All businesses (2014 = 4,002; 2017 = 3,258; 2021 = 3,346)

Category	2021	2017	2014
Fully equipped to meet the business's digital technology needs	21%	26%	37%
Well equipped but with some skills gaps	56%	48%	41%
Not very well equipped - we have considerable skills gaps	15%	19%	16%
Not applicable -we do not require these skills	6%	5%	5%
Don't know	1%	1%	1%

% of businesses

Digital skills of the workforce (see Figure 12)

- 21 per cent of all businesses stated that their existing staff were fully equipped in terms of skills to meet the business' digital technology needs, a decrease from 26 per cent in 2017 and 37 per cent of businesses surveyed in 2014.

- More than half (56 per cent) stated that they were well equipped but with some skills gaps (48 per cent in 2017).

- 15 per cent stated that they had considerable skills gaps, a fall from 19 per cent in 2017.

Type and impact of digital skills gaps

- A quarter (26 per cent) of businesses reported that they needed to improve basic technology skills such as email, internet navigation, Microsoft Office and Excel.

- Some businesses with digital skills gaps were lacking technical skills, including: cyber security skills (11 per cent), software skills (10 per cent), web development skills (5 per cent) and coding skills (4 per cent).

- Businesses also reported that they need to improve business and commercial skills, including: digital marketing (6 per cent), general business and commercial skills (5 per cent), and digital leadership and management skills (2 per cent).

- 43 per cent either lacked a skill that was not listed or did not know which type of skills they were missing. Compared to 2017 (56 per cent), businesses were slightly more certain in 2021 about the specific digital skills gaps that they faced.

- When asked what areas have been affected by their employees' digital skills gaps, the most cited answer was that it prevented the business from fully exploiting business efficiencies (12 per cent). 8 per cent also stated that digital skills gaps were impacting on the business' ability to adopt the latest methods and technologies.

- 5 per cent of businesses stated that their staff's digital skills gaps impacted the business's ability to sell products/ services over the internet.

Figure 13: Whether the business is taking any action to develop its current employees' digital technology skills, for example by providing training (%)
Base: All businesses (2014 = 4,002; 2017 = 3,258; 2021 = 3,346)
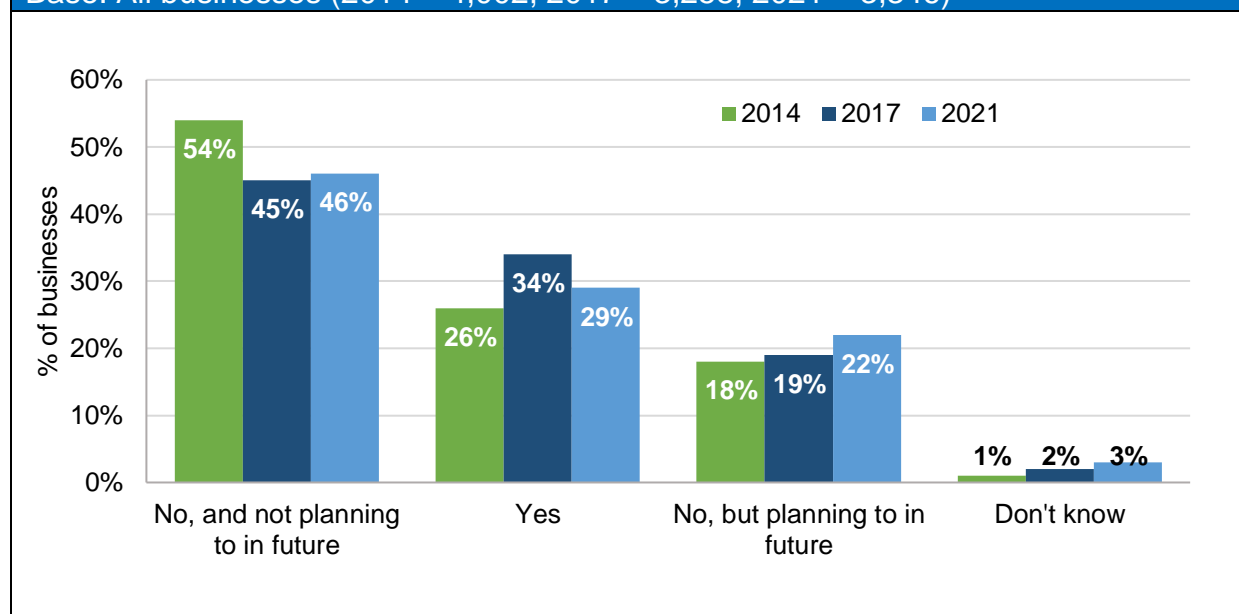
Training and recruitment (see Figure 13)

- 29 per cent of businesses stated that they are doing something to develop their current employees' digital technology skills, compared to 34 per cent in 2017 and 26 per cent in 2014. 22 per cent stated that they are planning to do this in the future.

- 46 per cent stated that they were not currently taking action to develop their employees' digital skills and had no plans to do so in the future, broadly in line with 2017 (45 per cent) but lower than 2014 (54 per cent).

Figure 14: Reason why business is not taking any action to develop current employees' (%)
Base: Businesses not planning to develop skills (min = 1,449)
Multiple responses allowed
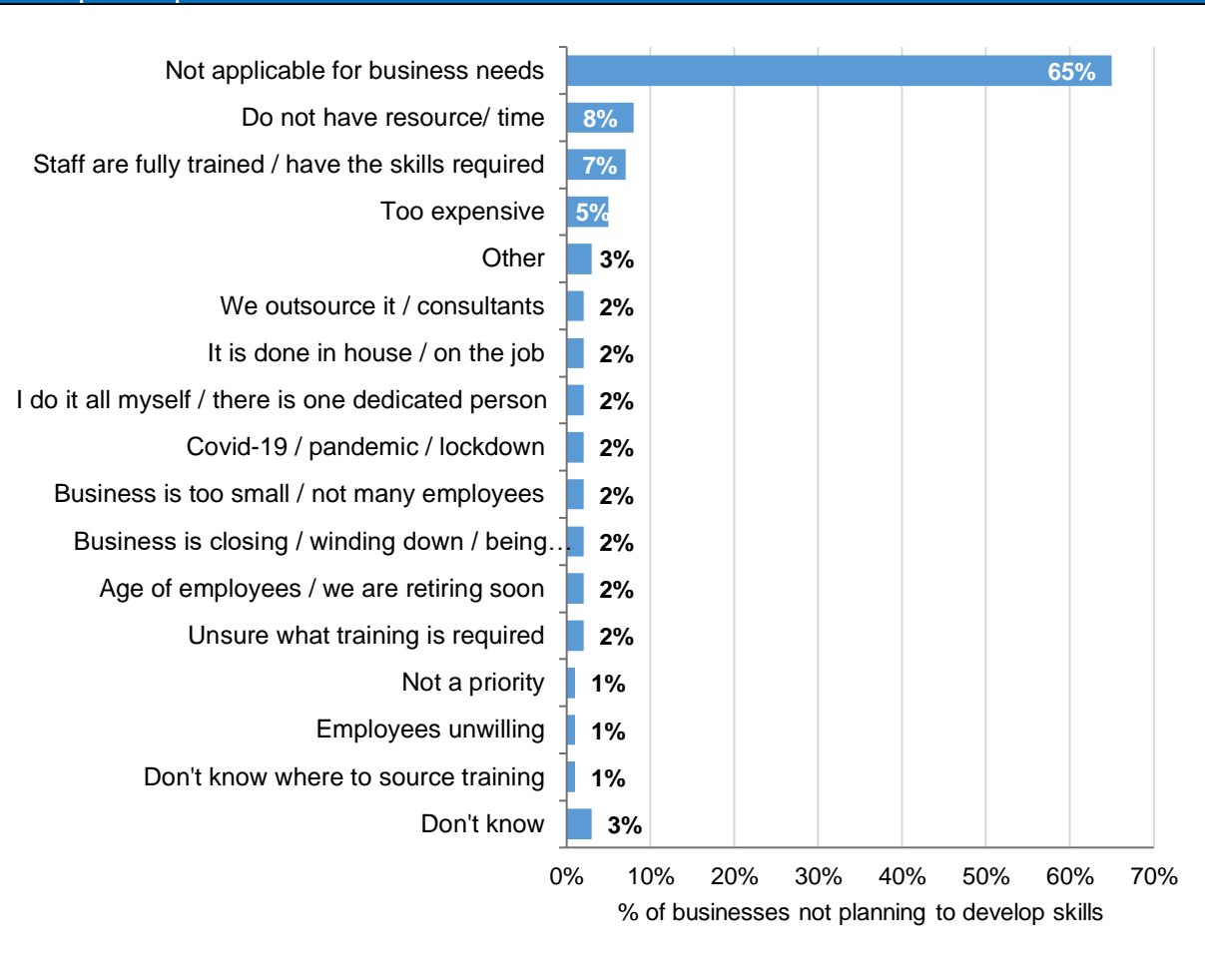
% of businesses not planning to develop skills

- When asked why businesses are not planning to develop their employees' digital skills, the most common reason was that it was not applicable for business needs (65 per cent). Other reasons included: do not have resource/time (8 per cent), staff are fully trained/ have the skills required (7 per cent) and it is too expensive (5 per cent) (see Figure 14).

- 17 per cent of respondents stated that they had not faced any problems in recruiting or retaining digital technology specialists in the past 12 months, while 3 per cent had found some difficulty in finding or keeping candidates with the right skills or the right experience. 75 per cent had not recruited.

- Of those organisations facing recruitment difficulties, 17 per cent stated that they would look to overcome their skills shortage by offering training as part of recruitment such as utilising graduates, 13 per cent planned to outsource recruitment, and 10 per cent were looking to recruit straight from school/ university/ college. 1 in 10 (10 per cent) businesses were planning to re-train current staff.

Covid-19 Pandemic

As we have responded as a nation to the Covid-19 pandemic, the importance of digital connectivity, technology, and skills have become more apparent than ever. The internet has provided access to essential services and up-to-date and accurate information, and allowed many businesses the ability to continue to trade throughout lockdown restrictions.

This final section looks at how important digital technology was to businesses during the pandemic, and also presents businesses' future ambitions of growth in the next year.

Figure 15: Importance of digital technology to the current operation of business in responding to Covid-19 pandemic (%)
Base: All businesses (min = 3,346)
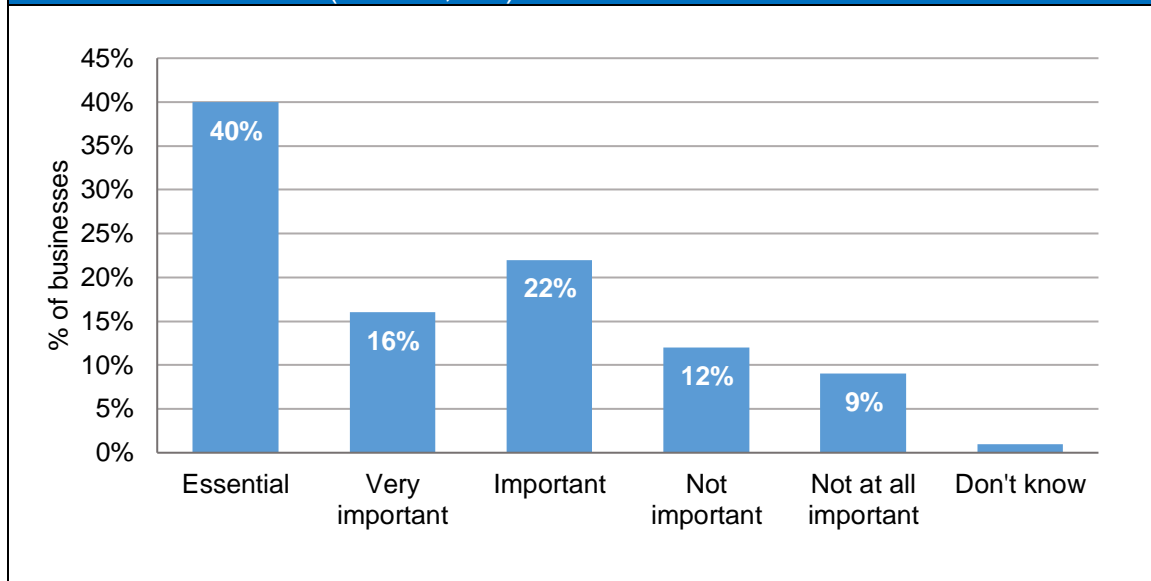
Importance of digital technology (see Figure 15)

- 40 per cent of businesses stated that digital technology was essential to the operation of the business in responding to the Covid-19 pandemic[8], and 38 per cent stated that it was important or very important in their response.

- 21 per cent did not think digital technology was important to the future of their business (responded not important or not at all important).

Covid-19 Support

- A quarter (24 per cent) of respondents had applied for Covid-19 support schemes from the UK or Scottish Governments to enhance their businesses' digital capability.

- 15 per cent had applied to Covid-19 support schemes to enhance their digital capability and were successful, while 5 per cent were partly successful and 3 per cent weren't successful with any support applied for.

- 70 per cent of businesses had not applied for any Covid-19 support schemes to enhance digital capability.

Future outlook

- 15 per cent of all businesses hoped to grow their business substantially (over 20% per year) in terms of turnover over the next 12 months. 34 per cent expect to grow moderately (below 20% per year) in terms of turnover while 38 per cent expect to remain the same.

- 6 per cent of businesses expect to become smaller in the next 12 months and 3 per cent expect to contract significantly or even close down.

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[8] The first cases of Covid-19 in Scotland were identified in March 2020. Scotland entered a national lockdown on 23rd March 2020 alongside the rest of the UK where many businesses were put under restrictions. Scottish businesses have faced ongoing restrictions of varying degree throughout 2020/2021 impacting businesses' ability to trade.