<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background and methodology</td>
<td>3</td>
</tr>
<tr>
<td>Key findings</td>
<td>9</td>
</tr>
<tr>
<td>Disconnected Doubters</td>
<td>16</td>
</tr>
<tr>
<td>Basic Browsers</td>
<td>23</td>
</tr>
<tr>
<td>Tentative Techies</td>
<td>30</td>
</tr>
<tr>
<td>Enthusiastic Explorers</td>
<td>37</td>
</tr>
<tr>
<td>Digital Champions</td>
<td>44</td>
</tr>
<tr>
<td>Digital Pioneers</td>
<td>51</td>
</tr>
<tr>
<td>Appendix</td>
<td>57</td>
</tr>
</tbody>
</table>
Background and methodology
Background

The Scottish Government has an ambition for Scotland to be a world leading digital nation by 2020. Key to achieving this ambition is developing internationally competitive, digitally mature businesses across all sectors of the Scottish economy and a workforce that has the digital skills required to support continued growth.

In 2017, the Scottish Government, in partnership with Highlands and Islands Enterprise, Scottish Enterprise and Skills Development Scotland, commissioned the Digital Economy Business Survey (DEBS). The survey aimed to build upon the findings from a previous survey conducted in 2014 and to provide an understanding of the level of digitisation of Scotland’s businesses, allowing for benchmarking and progress to be measured over time.

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.

This report presents details of the Digital Economy Maturity Index for 2017.
Aims

- To measure the level of digitisation of Scottish businesses and segment the business population into levels of digital maturity.

- To establish the characteristics of businesses in each segment and identify the opportunities to develop their use of digital technologies based on their strengths and challenges.

- To measure progress of digitisation of Scotland’s businesses over time.
Methodology

- Scotland’s Digital Economy Maturity Index (DEMI) has been constructed using a range of indicators from the Digital Economy Business Survey 2017 (DEBS).

- The original DEMI used in 2014 has been updated to reflect new areas that were included in the 2017 survey, namely use of the collaborative economy and views on cyber resilience. This change in indicators means findings are not directly comparable with those of 2014.

- The new index consists of five main strands (Adoption, Usage, Benefits, Skills and Cyber Resilience), under which there are a total of 15 indicators.

- Each indicator has been given a score based on its relative importance in terms of digital maturity.

- A maximum score of 100 can be achieved.
## DEMI indicators

<table>
<thead>
<tr>
<th>ADOPTION</th>
<th>USAGE</th>
<th>BENEFITS</th>
<th>SKILLS</th>
<th>CYBER RESILIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of internet connection</td>
<td>Technologies used</td>
<td>Benefits experienced from using digital technologies</td>
<td>Digital technology skills gaps</td>
<td>Equipped to deal with cyber security threats</td>
</tr>
<tr>
<td>Importance of digital technology to current operations of business</td>
<td>Integration of technology into business</td>
<td>Use of technology to help innovation</td>
<td>Plans to develop employees' digital skills</td>
<td>Use of cyber security controls</td>
</tr>
<tr>
<td>Engagement with the collaborative economy</td>
<td>Proportion of sales made over the internet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engagement with public services online</td>
<td>Internationalisation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy for use of digital in delivering business</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Maturity segments and scores

<table>
<thead>
<tr>
<th>Segment</th>
<th>Digital Economy Maturity Index Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disconnected Doubters</td>
<td>0-10</td>
</tr>
<tr>
<td>Basic Browsers</td>
<td>11-30</td>
</tr>
<tr>
<td>Tentative Techies</td>
<td>31-49</td>
</tr>
<tr>
<td>Enthusiastic Explorers</td>
<td>50-66</td>
</tr>
<tr>
<td>Digital Champions</td>
<td>67-80</td>
</tr>
<tr>
<td>Digital Pioneers</td>
<td>81-100</td>
</tr>
</tbody>
</table>
Key findings
Summary of key findings (1)

Overall profile of DEMI

- Businesses exhibit a wide range of digital maturity. Overall, most businesses lie within the lower end of the maturity index, with the largest segments being *Basic Browsers* and *Tentative Techies*. Only a small minority are at the very lowest end of the scale (*Disconnected Doubters*), or the highest (*Digital Champions* or *Digital Pioneers*).

- Findings are broadly similar to those seen in 2014. However, since 2014, there has been a slight upward movement in digital maturity. In particular, there has been a decrease in the proportion of businesses in the least mature segment.

Variation by key characteristics

- Businesses differ in terms of their size, sector, location, length of operation and future growth aspirations.

- Digitally mature businesses tend to be larger, operating for less than five years, and with expectations of growth in the next 12 months. They are more likely than average to be working in business activities or transport/communications, and to be based in the Lothians or Glasgow.

- Conversely, the less mature tend 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 are more likely than average to be working in agriculture, and to be based in the South of Scotland.
Summary of key findings (2)

Key opportunities by segment

- For the least digitally mature, findings suggest a lack of interest in digital technologies and lack of appetite for growing digital engagement in the future. *Disconnected Doubters* have low use of digital technologies, and are least likely to view them as important. This is reflected in the absence of plans or strategies for future use of technology. It could therefore be argued that *Disconnected Doubters* are unlikely to benefit from efforts to increase their digitisation.

- However, there may be opportunities to encourage greater cyber security among the two least mature groups, *Disconnected Doubters* and *Basic Browsers*. Businesses in these segments are the least equipped for cyber security threats and least likely to have any controls in place to deal with such issues.

- Businesses in the middle range of the index may benefit from future skills development. For example, while most *Tentative Techies* and *Enthusiastic Explorers* consider digital technology as important to their business, a significant proportion of these businesses identify digital skills gaps in their organisations.

- By nature of being the most mature *Digital Champions* and *Digital Pioneers* represent those businesses with arguably less need for further digital development. However, among some of these businesses there is still potential to increase certain aspects of digitisation, such as more widespread high speed internet connection, and more uptake of lesser-used digital technologies such as data analytics, cloud computing, and online collaborative platforms.
Proportion in each maturity segment

- The majority of businesses (70%) are classified as either Basic Browsers (36%) or Tentative Techies (34%).

- Only 6% are classified as Disconnected Doubters; and 7% are classed as either Digital Champions (6%) or Digital Pioneers (1%).

- The mean score overall was 36, out of a maximum of 100.
Findings are broadly in line with those from 2014. However, there was a small increase in maturity overall, with the mean score increasing from 33 to 36.

The most significant change was in the least mature segment, *Disconnected Doubters* which decreased from 14% to 6%, while the mid-level segment, *Tentative Techies* increased from 30% to 34%. The two highest segments, *Digital Champions* and *Digital Pioneers* saw an increase overall, from 3.2% to 7% combined.
# Key characteristics of each segment

<table>
<thead>
<tr>
<th>Types of business that are over represented in each segment</th>
<th>Disconnected doubters</th>
<th>Basic Browsers</th>
<th>Tentative Techies</th>
<th>Enthusiastic explorers</th>
<th>Digital Champions</th>
<th>Digital Pioneers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
<td>Micro</td>
<td>Micro</td>
<td>-</td>
<td>Small, medium &amp; large</td>
<td>Small, medium &amp; large</td>
<td>Large</td>
</tr>
<tr>
<td><strong>Sector</strong></td>
<td>Agriculture wholesale/retail</td>
<td>Agriculture construction</td>
<td>Business activities</td>
<td>Business activities Transport/communications</td>
<td>Business activities Transport/communications</td>
<td>-</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>South of Scotland</td>
<td>South of Scotland</td>
<td>-</td>
<td>Lothians</td>
<td>Lothians</td>
<td>-</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>10 years or more</td>
<td>10 years or more</td>
<td>-</td>
<td>5 years or less</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Growth expectations</strong></td>
<td>Remain the same or contract</td>
<td>Remain the same</td>
<td>Grow</td>
<td>Grow</td>
<td>Grow</td>
<td>Grow</td>
</tr>
</tbody>
</table>
## Levels of activity in each segment

<table>
<thead>
<tr>
<th>Findings for each segment</th>
<th>Disconnected doubters</th>
<th>Basic Browsers</th>
<th>Tentative Techies</th>
<th>Enthusiastic explorers</th>
<th>Digital Champions</th>
<th>Digital Pioneers</th>
<th>All businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of technologies used</td>
<td>0.2</td>
<td>1.8</td>
<td>3.4</td>
<td>4.7</td>
<td>5.6</td>
<td>6</td>
<td>3.1</td>
</tr>
<tr>
<td>% using e-commerce</td>
<td>3%</td>
<td>14%</td>
<td>36%</td>
<td>47%</td>
<td>57%</td>
<td>97%</td>
<td>30%</td>
</tr>
<tr>
<td>% trading internationally</td>
<td>3%</td>
<td>11%</td>
<td>25%</td>
<td>40%</td>
<td>58%</td>
<td>81%</td>
<td>24%</td>
</tr>
<tr>
<td>% with skills gaps</td>
<td>47%</td>
<td>64%</td>
<td>74%</td>
<td>72%</td>
<td>65%</td>
<td>72%</td>
<td>67%</td>
</tr>
<tr>
<td>% equipped for cyber security threats</td>
<td>38%</td>
<td>69%</td>
<td>82%</td>
<td>90%</td>
<td>94%</td>
<td>84%</td>
<td>77%</td>
</tr>
</tbody>
</table>
Findings by segment

Disconnected doubters
Disconnected doubters: characteristics

**Size:** More likely than average to be micro (94% vs 76% overall)

**Sector:** Higher than average proportion of businesses in:
- Agriculture (22% vs 10%)
- Wholesale/retail (32% vs 16%)

**Location:** Businesses in **South of Scotland** are over-represented (26% vs 15%)

**More likely** than average to
- be the only establishment in the organisation (92% vs 83%)
- have operated more than 10 years (86% vs 74%)
- expect to remain the same (62% vs 42%) or contract (15% vs 6%) in next 12 months.
Disconnected doubters: adoption

- Disconnects doubt have lower than average levels of internet connection, and lower connection speeds.

- They are less likely than average to view digital technology as important to the current or future operation of their business.

- Of those without internet, most (76%) are unlikely to get it in the future. The main reason given is a lack of business need (64%)

84% have internet connection (vs 97% overall)

23% have a high speed connection* (vs 46% overall)

*for the purpose of this report, “high speed” internet connection is defined as speed of at least 24 MBits/s. The %s shown exclude those saying “don’t know”
Disconnected doubters: usage

- Only a minority use any type of digital technology. Of those that do use technologies, websites are the most common, but only among 8%.

- One in five (18%) have engaged with public services online (vs 51% overall).

- No businesses in this segment operate as or use an online collaborative platform.

- None have a plan or strategy in place for use of digital technology (vs 23% overall).

Average number of technologies used = 0.2

vs 3.1 overall

% using each type of technology

- Website: 8% (Disconnected Doubters) vs 72% (All)
- Mobile internet and technologies: 7% (Disconnected Doubters) vs 73% (All)
- Social media: 7% (Disconnected Doubters) vs 66% (All)
- Data analytics: 1% (Disconnected Doubters) vs 40% (All)
- Cloud computing: 0% (Disconnected Doubters) vs 38% (All)
- Management software: 0% (Disconnected Doubters) vs 18% (All)
Disconnected doubters: benefits

• Reflecting their lower level of use, only a minority have experienced benefits from any digital technologies (8% vs 92% overall).

• Only 1% have used digital technologies to gain insights to guide development of products or services.

• Disconnected doubters are less likely than average to carry out e-commerce (3% vs 30% overall) and to trade internationally (3% vs 24%).

• No businesses in this segment have seen an increase in international trade as a result of e-commerce.

% carrying out e-commerce and international trade

- Use e-commerce
  - Disconnected doubters: 3%
  - All: 30%

- Carry out international trade
  - Disconnected doubters: 3%
  - All: 24%
Disconnected doubters: skills

• Half of businesses in this segment (47%) have ‘considerable’ or ‘some’ skills gaps (vs 67% overall). However, a third (32%) feel they do not require digital skills.

• They are less likely than average to be taking action to improve skills gaps (87% not taking/planning actions, vs 45% overall)

47% have skills gaps
87% not taking action to improve skills

Skills needs

Disconnected doubters

- No skills gaps: 19%
- Considerable skills gaps: 28%
- Some skills gaps: 19%
- Do not require these skills: 32%

All

- No skills gaps: 26%
- Considerable skills gaps: 48%
- Some skills gaps: 19%
- Do not require these skills: 5%
Disconnected doubters: cyber security

- Disconnected doubters are less equipped to deal with cyber security threats than businesses are overall. A third feel they are not at all prepared for cyber security threats (35% vs 9% overall).

- They are less likely to have cyber security controls in place (55% vs 92% overall).

55% have cyber security controls in place

Equipped to deal with cyber security threats

<table>
<thead>
<tr>
<th></th>
<th>Fully</th>
<th>Somewhat</th>
<th>Poorly</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disconnected doubters</td>
<td>15%</td>
<td>23%</td>
<td>9%</td>
<td>35%</td>
</tr>
<tr>
<td>All</td>
<td>30%</td>
<td>47%</td>
<td>11%</td>
<td>9%</td>
</tr>
</tbody>
</table>
Findings by segment

Basic browsers
**Basic browsers: characteristics**

**Size:** More likely than average to be micro (86% vs 76% overall)

![Size Distribution](chart)

**Sector:** Higher than average proportion of businesses in:

- **Agriculture** (16% vs 10%)

**Location:** Businesses in **South of Scotland** are over-represented (18% vs 15%)

**More likely** than average to

- be the only establishment in the organisation (90% vs 83%)
- have operated more than 10 years (79% vs 74%)
- expect to remain the same (58% vs 42%) in next 12 months.
Basic browsers: adoption

- Basic browsers have average levels of internet connection, but lower connection speeds.
- They are slightly less likely than average to view digital technology as important to the current or future operation of their business.

96% have internet connection (vs 97% overall)

31% have a high speed connection (vs 46% overall)
Basic browsers: usage

- The most commonly used technologies in this segment are mobile, websites and social media, but at lower than average levels.

- Half (55%) have engaged with public services online (vs 51% overall).

- 1% operate as or use an online collaborative platform (vs 8% overall).

- Only a small minority have a plan or strategy in place for future use of digital technology (5% vs 23% overall).

Average number of technologies used = **1.8**

vs 3.1 overall
Basic browsers: benefits

- A majority (90%) had experienced benefits from using digital technologies (vs 92% overall).

- 42% had used digital technologies to gain insights to guide development of products or services (vs 62%).

- Basic browsers are less likely than average to carry out e-commerce (14% vs 30% overall) and to trade internationally (11% vs 24%).

- Among those that carry out e-commerce, 13% said that doing so had increased the number of international markets they export to (vs 36% overall).
Basic browsers: skills

- Two thirds of businesses in this segment (64%) have ‘considerable’ or ‘some’ skills gaps, in line with the average (67%).

- They are less likely than average to be taking action to improve skills gaps (67% not taking/planning actions, vs 45% overall)

64% have skills gaps  
67% not taking action to improve skills

Skills needs

<table>
<thead>
<tr>
<th></th>
<th>No skills gaps</th>
<th>Some skills gaps</th>
<th>Considerable skills gaps</th>
<th>Do not require these skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic browsers</td>
<td>27%</td>
<td>38%</td>
<td>26%</td>
<td>8%</td>
</tr>
<tr>
<td>All</td>
<td>26%</td>
<td>48%</td>
<td>19%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Basic browsers: cyber security

- Basic browsers are less equipped to deal with cyber security threats than businesses are overall. A quarter feel they are poorly prepared or not prepared for cyber security threats (27% vs 19% overall).

- The majority (89%) have cyber security controls in place (vs 92% overall).

89% have cyber security controls in place

Equipped to deal with cyber security threats

<table>
<thead>
<tr>
<th></th>
<th>Fully</th>
<th>Somewhat</th>
<th>Poorly</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic browsers</td>
<td>23%</td>
<td>45%</td>
<td>13%</td>
<td>14%</td>
</tr>
<tr>
<td>All</td>
<td>30%</td>
<td>47%</td>
<td>10%</td>
<td>9%</td>
</tr>
</tbody>
</table>
Findings by segment

Tentative techies
### Tentative techies: characteristics

**Size** profile is in line with that of all businesses surveyed.

**Sector:** Higher than average proportion of businesses in:

- Business activities (36% vs 30%)

**Location:** No particular location is over or under-represented within this segment.

**More likely** than average to

- have turnover between £100,000 and £1 million (40% vs 36%).
- expect to grow (54% vs 50%) in next 12 months.
Tentative techies: adoption

- Tentative techies have average levels of internet connection, and average levels of connection speed.
- They are slightly more likely than average to view digital technology as important to the current or future operation of their business.

98% have internet connection (vs 97% overall)

50% have a high speed connection (vs 46% overall)

% essential/very important/important

- Importance of digital technology to current operations:
  - Tentative techies: 91%
  - All: 78%
- Importance of digital technology for future growth:
  - Tentative techies: 93%
  - All: 79%
Use of each digital technology is higher than average in this segment, with the exception of management software. The most commonly used technologies are mobile, websites and social media.

Tentative techies are in line with the average in relation to:

- engaging with public services online (53% vs 51% overall).
- operating as or using an online collaborative platform (6% vs 8% overall).
- having a plan or strategy in place for future use of digital technology (20% vs 23% overall).

Average number of technologies used = 3.4 vs 3.1 overall
Tentative techies: benefits

- All businesses in this segment have experienced benefits from using digital technologies (vs 92% overall).

- Three quarters (72%) have used digital technologies to gain insights to guide development of products or services (vs 62%).

- Tentative techies are more likely than average to carry out e-commerce (36% vs 30% overall) but as likely as average to trade internationally (25% vs 24%).

- Among those that carry out e-commerce, 26% say that doing so has increased the number of international markets they export to (vs 36% overall).
Tentative techies: skills

- Three quarters of businesses in this segment (74%) have ‘considerable’ or ‘some’ skills gaps, higher than average (67%).

- They are more likely than average to be taking action to improve skills gaps (60% taking/planning action, vs 53% overall)

74% have skills gaps  
60% are taking/planning action to improve skills

Skills needs

- Tentative techies: 23% No skills gaps, 56% Some skills gaps, 18% Considerable skills gaps
- All: 26% No skills gaps, 48% Some skills gaps, 19% Considerable skills gaps
Tentative techies: cyber security

- Tentative techies are more equipped to deal with cyber security threats than average. A majority (82%) feel they are prepared for cyber security threats (vs 77% overall).

- The majority (96%) have cyber security controls in place (vs 92% overall).

96% have cyber security controls in place
Findings by segment

Enthusiastic explorers
Enthusiastic explorers: characteristics

**Size:** More likely than average to be small (21% vs 15% overall), medium (5% vs 3%) or large (10% vs 6%), rather than micro.

**Sector:** Higher than average proportion of businesses in:

- Business activities (35% vs 30%)
- Transport/communications (14% vs 9%)

**Location:** Higher than average proportion of businesses from **Lothians** (21% vs 16%) and **Glasgow** (13% vs 10%).

**More likely** than average to

- be operating for 5 years or less (16% vs 13%)
- have turnover of over £1 million (23% vs 13%)
- expect to grow (73% vs 50%) in next 12 months.
Enthusiastic explorers: adoption

- Enthusiastic explorers have average levels of internet connection, and higher than average connection speeds.
- They are more likely than average to view digital technology as important to the current or future operation of their business.

99% have internet connection (vs 97% overall)

55% have a high speed connection (vs 46% overall)
Enthusiastic explorers: usage

- Use of each digital technology was higher than average in this segment. All were used by at least two thirds of businesses, with the exception of management software.

- They are more likely than average to
  - engage with public services online (62% vs 51% overall)
  - operate as or use an online collaborative platform (20% vs 8% overall).
  - have a plan or strategy in place for future use of digital technology (46% vs 23% overall).

Average number of technologies used = 4.7 vs 3.1 overall

% using each type of technology

- Website: 96% (Enthusiastic explorers) vs 72% (All)
- Mobile internet and technologies: 94% vs 73%
- Social media: 91% vs 66%
- Data analytics: 82% vs 40%
- Cloud computing: 68% vs 38%
- Management software: 40% vs 18%
Enthusiastic explorers: benefits

• All businesses in this segment have experienced benefits from using digital technologies (vs 92% overall).

• Enthusiastic explorers are more likely than average to have used digital technologies to guide development of products or services (90% vs 62%).

• They are more likely than average to carry out e-commerce (47% vs 30% overall) and to trade internationally (40% vs 24%).

• Among those that carry out e-commerce, half (49%) said that doing so had increased the number of international markets they export to (vs 36% overall).
• A majority of businesses in this segment (72%) have ‘considerable’ or ‘some’ skills gaps, higher than average (67%).

• They are more likely than average to be taking action to improve skills gaps (82% taking/planning action, vs 53% overall)

82% are taking/planning action to improve skills
Enthusiastic explorers are more equipped to deal with cyber security threats than average. A majority (90%) feel they are prepared for cyber security threats (vs 77% overall).

The majority (98%) have cyber security controls in place (vs 92% overall).

98% have cyber security controls in place
Findings by segment

Digital champions
Digital champions: characteristics

Size: More likely than average to be small (24% vs 15% overall), medium (8% vs 3%) or large (19% vs 6%), rather than micro.

Sector: Higher than average proportion of businesses in:

- Business activities (39% vs 30%)
- Transport/communications (23% vs 9%)

Location: Higher than average proportion of businesses from Lothians (26% vs 16%).

More likely than average to

- have turnover of over £1million (35% vs 13%)
- expect to grow (82% vs 50%) in next 12 months.
Digital champions: adoption

• Digital champions have higher than average levels of internet connection, and higher than average levels of connection speed.

• Almost all view digital technology as important to their current operation, and all view it as important for the future of their business.

100% have internet connection
(vs 97% overall)

75% have a high speed connection
(vs 46% overall)

Importance of digital technology to current operations

% essential/very important/important

- Digital champions: 99%
- All: 78%

Importance of digital technology for future growth

- Digital champions: 100%
- All: 79%
Digital champions: usage

• Use of each digital technology was higher than average in this segment. All were used by at least eight in ten businesses.

• They are more likely than average to
  - engage with public services online (67% vs 51% overall)
  - operate as or use an online collaborative platform (32% vs 8% overall).
  - have a plan or strategy in place for future use of digital technology (67% vs 23% overall).

Average number of technologies used = 5.6 vs 3.1 overall

% using each type of technology

- Website: 100% for digital champions, 72% overall
- Mobile internet and technologies: 97% for digital champions, 73% overall
- Social media: 99% for digital champions, 66% overall
- Data analytics: 97% for digital champions, 40% overall
- Cloud computing: 83% for digital champions, 38% overall
- Management software: 86% for digital champions, 18% overall
Digital champions: benefits

• All businesses in this segment have experienced benefits from using digital technologies (vs 94% overall).

• Almost all have used digital technologies to guide development of products or services (99% vs 62%).

• Digital champions are more likely than average to carry out e-commerce (57% vs 30% overall) and to trade internationally (58% vs 24%).

• Among those that carry out e-commerce, 59% say that doing so has increased the number of international markets they export to (vs 36% overall).
Digital champions: skills

- In this segment, 65% of businesses have ‘considerable’ or ‘some’ skills gaps, similar to the average (67%).

- A majority are taking action to improve skills gaps (91% taking/planning action, vs 53% overall)

91% are taking/planning action to improve skills

Skills needs

<table>
<thead>
<tr>
<th>Skills needs</th>
<th>Digital champions</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>No skills gaps</td>
<td>35%</td>
<td>26%</td>
</tr>
<tr>
<td>Considerable skills gaps</td>
<td>59%</td>
<td>48%</td>
</tr>
<tr>
<td>Some skills gaps</td>
<td>6%</td>
<td>19%</td>
</tr>
<tr>
<td>Do not require these skills</td>
<td></td>
<td>5%</td>
</tr>
</tbody>
</table>
Digital champions: cyber security

- Digital champions are more equipped to deal with cyber security threats than average. A majority (95%) feel they are prepared for cyber security threats (vs 77% overall).

- The majority (99%) have cyber security controls in place (vs 92% overall).

99% have cyber security controls in place

Equipped to deal with cyber security threats:

- Digital champions: 52% fully equipped, 43% somewhat equipped, 4% not at all equipped.
- All: 30% fully equipped, 47% somewhat equipped, 10% poorly equipped, 9% not at all equipped.
Findings by segment

Digital pioneers
**Digital pioneers: characteristics**

Note: due to the small number of businesses in this segment (33), apparent differences between their findings and the average are often not statistically significant. Where it is not possible to compare with the average, findings are presented for this segment alone, without any comparison with others.

**Size:** More likely than average to be large (20% vs 6%).

- **Micro:** 43%
- **Small:** 26%
- **Medium:** 11%
- **Large:** 20%

**Sector:** Within this segment, the largest proportions of business are in:

- **Business activities (42%)**
- **Transport/communications (17%)**

**Location:** Within this segment, the largest proportions of businesses are from **Lothians (33%)**

Digital pioneers are more likely than average to expect to grow (88% vs 50%) in next 12 months.
Digital pioneers: adoption

- All digital pioneers have internet connection, and two thirds have high connection speed.
- All businesses in this segment view digital technology as important to the current operation, and for the future of their business.

100% have internet connection

68% have a high speed connection

% essential/very important/important

<table>
<thead>
<tr>
<th></th>
<th>Digital pioneers</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of digital technology to current operations</td>
<td>100%</td>
<td>78%</td>
</tr>
<tr>
<td>Importance of digital technology for future growth</td>
<td>100%</td>
<td>79%</td>
</tr>
</tbody>
</table>
Digital pioneers: usage

- Almost all digital technologies are used by all digital pioneers, the only exception being cloud computing which is used by 97%.

- They are more likely than average to
  - engage with public services online (78% vs 51% overall)
  - operate as or use an online collaborative platform (61% vs 8% overall).

- 86% have a plan or strategy in place for future use of digital technology (vs 23% overall).

Average number of technologies used = 6 vs 3.1 overall

% using each type of technology

- Website: Digital pioneers 100% vs All 72%
- Mobile internet and technologies: Digital pioneers 100% vs All 73%
- Social media: Digital pioneers 100% vs All 66%
- Data analytics: Digital pioneers 100% vs All 40%
- Cloud computing: Digital pioneers 97% vs All 38%
- Management software: Digital pioneers 100% vs All 18%
Digital pioneers: benefits

- All businesses in this segment have experienced benefits from using digital technologies.
- Almost all have used digital technologies to guide development of products or services (97% vs 62%).
- Digital pioneers are more likely than average to carry out e-commerce (97% vs 30% overall) and to trade internationally (81% vs 24%).
- Among those that carry out e-commerce, 88% say that doing so has increased the number of international markets they export to (vs 36% overall).

% carrying out e-commerce and international trade

- Use e-commerce
  - Digital pioneers: 97%
  - All: 30%

- Carry out international trade
  - Digital pioneers: 81%
  - All: 24%
Digital pioneers: skills

- In this segment, 72% of businesses have ‘considerable’ or ‘some’ skills gaps.

- All are taking action to improve skills gaps (100% taking/planning action, vs 53% overall)

![Bar chart showing skills needs]

- Digital pioneers: 72% have skills gaps, 100% are taking/planning action to improve skills.

- All: 26% have no skills gaps, 48% have some skills gaps, 19% have considerable skills gaps, 5% do not require these skills.
Digital pioneers: cyber security

• Digital pioneers are more equipped to deal with cyber security threats than average. A majority (89%) feel they are prepared for cyber security threats (vs 77% overall).

• All have cyber security controls in place (vs 92% overall).

100% have cyber security controls in place

Equipped to deal with cyber security threats

<table>
<thead>
<tr>
<th></th>
<th>Fully</th>
<th>Somewhat</th>
<th>Poorly</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital pioneers</td>
<td>22%</td>
<td>62%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>30%</td>
<td>47%</td>
<td>10%</td>
<td>9%</td>
</tr>
</tbody>
</table>
## Profile of businesses surveyed

<table>
<thead>
<tr>
<th>Size (number of employees)</th>
<th>%</th>
<th>Location</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (1-9)</td>
<td>76</td>
<td>Lothians</td>
<td>16</td>
</tr>
<tr>
<td>Small (10-49)</td>
<td>15</td>
<td>South of Scotland</td>
<td>15</td>
</tr>
<tr>
<td>Medium (50-249)</td>
<td>3</td>
<td>North-East Scotland</td>
<td>15</td>
</tr>
<tr>
<td>Large (250+)</td>
<td>6</td>
<td>Mid-Scotland and Fife</td>
<td>14</td>
</tr>
<tr>
<td><strong>Sector</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business activities</td>
<td>30</td>
<td>Glasgow</td>
<td>10</td>
</tr>
<tr>
<td>Wholesale/retail</td>
<td>16</td>
<td>West of Scotland</td>
<td>8</td>
</tr>
<tr>
<td>Construction</td>
<td>11</td>
<td>Central Scotland</td>
<td>8</td>
</tr>
<tr>
<td>Agriculture</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport/communications</td>
<td>9</td>
<td>Under 1 year</td>
<td>2</td>
</tr>
<tr>
<td>Hotels/restaurants</td>
<td>8</td>
<td>1 - 3 years</td>
<td>6</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>5</td>
<td>3 - 5 years</td>
<td>5</td>
</tr>
<tr>
<td>Health/social work</td>
<td>4</td>
<td>5 - 10 years</td>
<td>12</td>
</tr>
<tr>
<td>Other services</td>
<td>8</td>
<td>Over 10 years</td>
<td>74</td>
</tr>
</tbody>
</table>
# DEMI indicators and sub indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Sub-indicator</th>
<th>Score</th>
<th>Max score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADOPTION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of internet connection</td>
<td>NGA (&lt;24 Mbit/s)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Standard broadband</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Internet not broadband</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No internet connection</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Overall importance of digital technology to current operations of business</td>
<td>Essential</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Very important</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Important</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not important</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>BENEFITS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits experienced from using digital technologies</td>
<td>Website</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Social media</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mobile internet and technologies</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cloud computing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data analytics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management software</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Using digital technology to help innovation</td>
<td>Research competitor products online</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Researching and gathering market data online</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collecting consumer feedback via website or social media</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>USAGE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technologies used</td>
<td>Website</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social media</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mobile internet and technologies</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cloud computing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data analytics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management software</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Proportion of sales made over the internet</td>
<td>All - 100%</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>80-99%</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60-79%</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40-50%</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>20-39%</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;20%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>None</td>
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<td></td>
</tr>
<tr>
<td><strong>SKILLS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital technology skills gaps</td>
<td>No skills gaps</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Some skills gaps</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Considerable skills gaps</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Operate as or use collaborative platforms</td>
<td>Yes - operate and use</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Yes - use, but don’t operate</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No - neither</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Engagement with public services online</td>
<td>Yes, engage with service online</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No, do not</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Strategy for use of digital in delivering business</td>
<td>Yes</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>CYBER RESILIENCE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipped to deal with cyber security threats</td>
<td>Fully</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Somewhat</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poor</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Cyber security controls</td>
<td>Have technical controls in place and cyber security accreditation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Have controls in place and planning to obtain cyber security accreditation</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have controls in place, but no accreditation or</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No controls in place and no</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL MAX</strong></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>