



Cardiff Business School
Ysgol Busnes Caerdydd

Superfast Broadband Business Exploitation Project *Digital Maturity Survey for Wales 2017*

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WELSH ECONOMY RESEARCH UNIT
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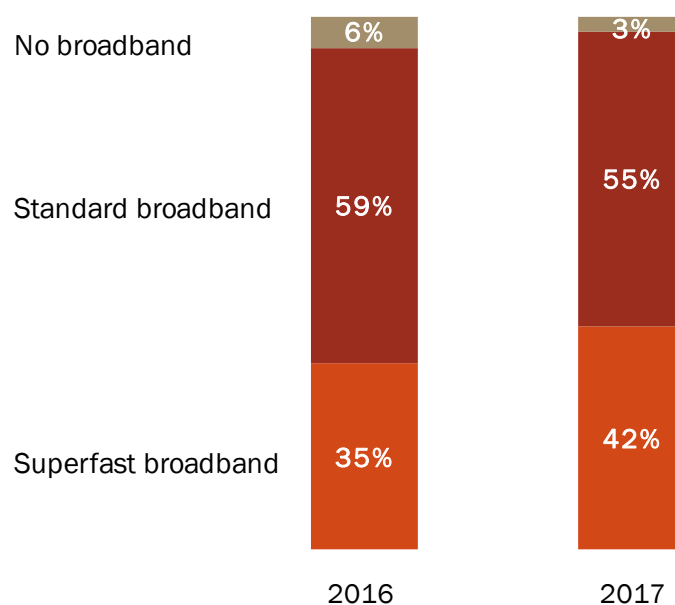
Summary

Improving the performance of Welsh SMEs is a key means of strengthening regional economic prospects. The ability of SMEs to capitalise on the opportunities leveraged by superfast broadband is vital to their performance improvement. The *Digital Maturity Survey for Wales 2017* shows evidence of how Welsh SMEs adopt and use digital technologies enabled by broadband. The *Survey* shows not just how SMEs use the broadband resource, but also how exploitation of enabled technologies works to improve business performance, with positive impacts for the whole Welsh economy.

The *Survey* is structured around a framework of understanding SMEs' ICT **resources** (their infrastructure, investment and capabilities), ICT **use**, and then links to **business performance** and with broadband access a key enabler of performance improvements.

The 2017 *Survey* highlights encouraging trends. For example, 42% of surveyed SMEs had adopted superfast (up 7 percentage points on the 2016 *Survey*). Just 3% of surveyed firms had no broadband in 2017 (Figure 0-1). Clearly, there is still scope to improve the adoption of superfast broadband by the business community in Wales, but the strong trend in adoption in this short period is a welcome finding.

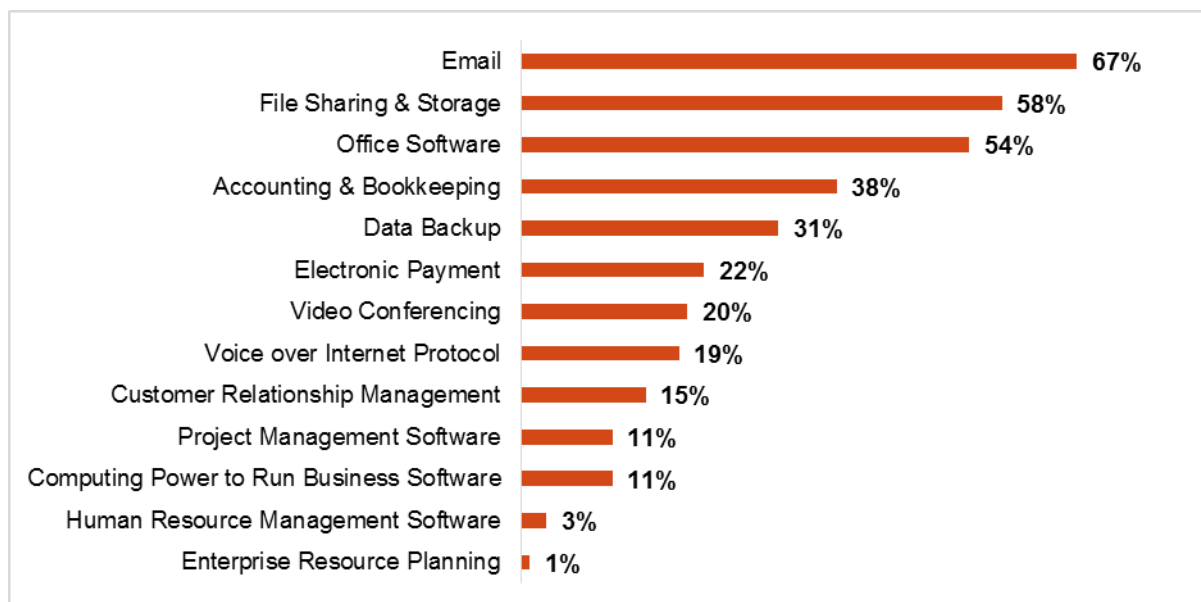
Figure 0-1 SMEs' adoption of broadband in Wales



Adoption is only a first step. Performance improvements depend on how SMEs use the resource. In the 2017 *Survey*, SMEs report using broadband to support cloud applications such as email, file sharing and storage, office software, VOIP and video conferencing (Figure 0-2).

Critically, more extensive use is linked to other positive trends, with 71% of surveyed SMEs reporting that over half of their employees had intermediate or above average IT skills, and with around half reporting that they employed ICT specialists in terms of development and support for web solutions, and maintenance of ICT infrastructure.

Figure 0-2 Proportion of businesses using cloud computing services, by category




SMEs are increasingly engaging in the digital economy through e-commerce transactions. This is one means of reducing business costs, but also of accessing new markets for goods and services at home and abroad. Two thirds of SMEs had sold online in the last financial year, with nine out of ten firms regularly making online purchases.

Analysis of the *Survey* findings shows that four clusters of Welsh SMEs can be identified in terms of their digital maturity: Digitally Embedded, Active Exploiters, Passive Exploiters and Digitally Disengaged (Figure 0-3).

For SMEs in Wales there are important lessons. Higher digital maturity is associated with better business performance in terms of turnover, profitability, employment, and innovation activity (i.e. introduction of new products, processes or services). Among those SMEs that reported growth in their business performance, the increases in performance were likely to be larger among more digitally mature clusters. On average, more digitally mature SMEs reported increases in business performance of 50% or more, while more SMEs in less digitally mature clusters experienced slow to medium growth. Critically differences identified between Digitally Embedded as opposed to Digitally Disengaged SMEs signal a need for the latter to connect with available Welsh Government and other support to assist them in better using the opportunities levered by superfast broadband.

Figure 0-3 Digital maturity clusters in Wales



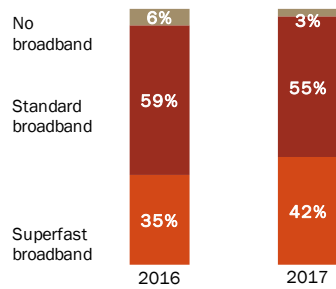
Digital Maturity Clusters	Characteristics
Digitally Embedded	Such businesses are adopters of superfast broadband with a very high proportion of employees with above average ICT skills. They use a high number of digital applications and secure the majority of their sales from online transactions.
Active Exploiters	Such businesses are likely to have adopted superfast broadband, have a high proportion of staff with above average ICT skills, and use a wider range of digital platforms and technologies. Nearly half of businesses in this cluster report online channel as the main source of sales.
Passive Exploiters	Such businesses tend to have adopted standard broadband and are likely to have staff with above average ICT skills. They make use of basic cloud-based applications, but the use of online platforms to generate e-sales is low.
Digitally Disengaged	Such businesses tend to have adopted standard broadband, and have a high proportion of employees with below average ICT skills. The majority do not use digital technologies and report no sales from online transactions.

The 2017 *Survey* shows connections between superfast adoption and performance growth. Poor performance in parts of the Welsh economy is one of the causes of the regional prosperity gap with the UK – it is then critical that surveyed SMEs engage with the opportunities offered by adoption of superfast broadband. The efficient use of the infrastructure is a means for Welsh SMEs to compete effectively, overcome the liability of distance from markets, to improve national and international trade prospects and to grow. The uncertainty caused by the Brexit process exemplifies the needs for SMEs to engage fully with the opportunities from the resource.

Figure 0-4 Digital dashboard for Wales 2017

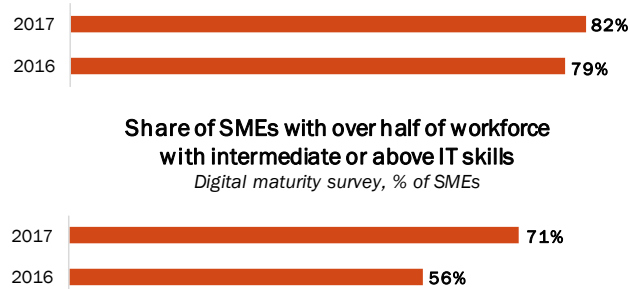
ICT INFRASTRUCTURE

Adoption of broadband
Digital maturity survey, % of SMEs



ICT RESOURCES

Use of cloud computing services
Digital maturity survey, % of SMEs

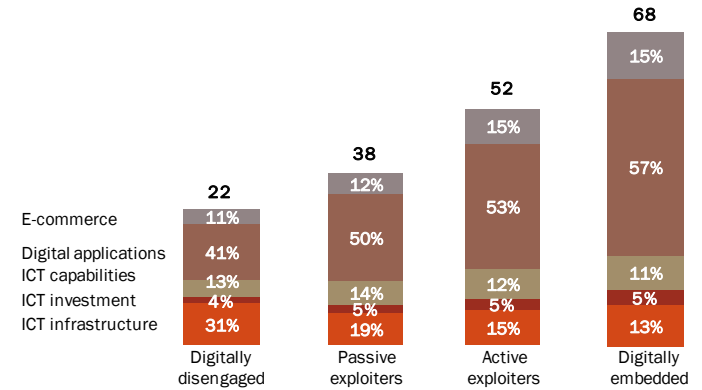


Share of SMEs with over half of workforce with intermediate or above IT skills
Digital maturity survey, % of SMEs



ICT USE

Digital maturity index
Digital maturity survey 2017, breakdown of digital maturity scores



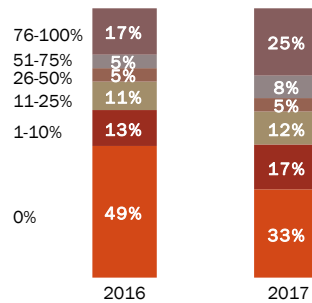
SMEs able to receive superfast broadband in Wales
Ofcom, % of premises



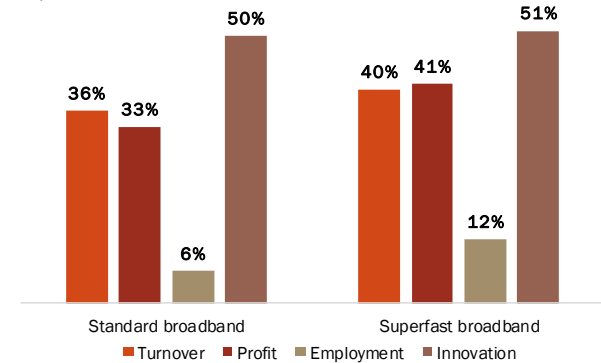
Annual IT costs
Digital maturity survey, £ per employee

Spending category	2016	2017
Hardware	£684	£624
Software	£662	£711
Network	£180	£92
Broadband subscription	£113	£132

Share of e-sales in total sales
Digital maturity survey, % of SMEs



Performance of SMEs by type of broadband
Digital maturity survey 2017, % of SMEs reporting positive outcomes from access to broadband services



1. Introduction

This report provides findings from Cardiff Business School's *Digital Maturity Survey for Wales 2017*. It draws on its annual survey of small and medium-sized enterprises (SMEs), and examines their adoption and use of the digital technologies enabled by broadband. The *Survey* contributes to the Superfast Broadband Business Exploitation (SFBE) programme undertaken annually between 2016 and 2020. The SFBE programme is part funded by the European Regional Development Fund (ERDF) through the Welsh Government, and provides assistance to SMEs to understand, adopt and make use of online digital technologies.

1.1 The research

This research addresses the need to improve understanding of how businesses in Wales are exploiting superfast broadband and associated technologies. While some data on this issue is available from UK national surveys of the Office for National Statistics (ONS), no comprehensive source exists for Wales. The purpose of the research is, therefore, to provide a robust dataset on high speed broadband use and its impact on the Welsh economy through time.

The *Survey* forms part of a wider programme of Superfast Broadband research, undertaken by Cardiff Business School, including economic impact modelling and horizon scanning. Results of activities, including the results of the previous survey, can be found at <http://www.cardiff.ac.uk/superfast-broadband-project>.

1.2 The context for the research

Broadband adoption and use have become a high priority in Wales. This is reflected in Welsh Government strategies such as 'Taking Wales Forward'¹ and the 'Prosperity for All: Economic Action Plan'². While access to broadband infrastructure is an important element in the development of business and economy-wide impacts, of equal importance is the take-up and exploitation of digital technologies by businesses. Ensuring that businesses are able to use this infrastructure and related technologies lies at the heart of the SFBE programme. This provides support to raise business awareness of digital technologies and their benefits. The support is integrated into the primary enterprise support programme in Wales – Business Wales – and includes a combination of workshops and one-to-one advice³.

¹ <http://gov.wales/docs/strategies/160920-taking-wales-forward-en.pdf>

² <http://gov.wales/docs/det/publications/171213-economic-action-plan-en.pdf>

³ <https://businesswales.gov.wales/superfastbusinesswales/>

The geographical and demographic characteristics of rural areas in Wales presents specific challenges to the deployment and use of broadband. A desire for better coverage, particularly in the remaining harder to reach areas, is the focus of programmes such as Superfast Cymru and its successor (both part funded by ERDF through the Welsh Government), and strategies such as the ‘Mobile Action Plan for Wales’⁴.

More generally, business broadband exploitation support is set in a context where sub-regions of Wales face persistent socio-economic disadvantages. This is typically defined in terms of relatively low levels of gross value-added per capita. A contributory factor is poor productivity among SMEs. The innovative take-up of superfast broadband could work to lever productivity gains, and act as a component of economic convergence processes.

1.3 Survey methodology

The 2017 *Survey* set out to substantially increase the number of SME survey responses. To achieve this aim, the survey team continued to work with stakeholders to distribute the survey, supplementing this with an additional sample of businesses derived from the Bureau van Dijk’s FAME database. The survey was delivered electronically, with a small number of telephone and face-to-face surveys undertaken to ensure representativeness by sector. All results were managed using the Qualtrics survey platform. A total of 453 responses were achieved. The survey responses were represented in terms of industry sector, location and firm size. A detailed breakdown of the survey responses can be found in Table 1-1 below.

Table 1-1 Breakdown of survey responses

Location: EU Region	Number of SMEs	Share of SMEs¹
West Wales and the Valleys	260	57%
East Wales	177	39%
Unknown	16	4%
Location: Sub-region²		
Mid and South West Wales	148	33%
North Wales	106	23%
South East Wales	183	40%
Unknown	16	4%
Location: Urban/Rural³		
Urban	218	48%
Rural	218	48%
Unknown	17	4%
Firm Size⁴		
Micro	244	54%
Small	103	23%
Medium	53	12%
Unknown	53	12%

⁴ <http://gov.wales/topics/science-and-technology/digital/infrastructure/mobile-action-plan/?lang=en>

Industry Sector ⁵		
Construction	37	8%
Manufacturing	64	14%
Wholesale and Retail	51	11%
Accommodation and food services	41	9%
Transport and storage	10	2%
Information and communication	49	11%
Business and other services	187	41%
Unknown	14	3%

Notes:

1. Percentages may not sum due to rounding.
2. Mid Wales and South West sub-region includes the local authorities of Powys, Ceredigion, Carmarthenshire, Neath Port Talbot, Pembrokeshire, and Swansea; North Wales sub-region includes the local authorities of Anglesey, Conwy, Denbighshire, Flintshire, Gwynedd, and Wrexham; South East Wales sub-region includes the local authorities of Blaenau Gwent, Bridgend, Caerphilly, Cardiff, Merthyr, Monmouthshire, Newport, Rhondda Cynon Taf, Torfaen, and Vale of Glamorgan.
3. Postcodes were utilised to classify respondents by the 2011 Census rural-urban classification (A1-F2), available at <https://onsdigital.github.io/postcode-lookup/> (last accessed 05/02/18).
4. Micro businesses have 0 to 9 employees, small - 10 to 49 employees, medium - 50 to 249 employees.
5. Industry sectors refer to SIC 2007 categories and are listed in the table as F, C, G, I, H, J, and K-S, respectively.

1.4 Digital maturity conceptual framework

The framework for the annual *Digital Maturity Survey* is set out in Figure 1-1. This framework was developed from a review of existing studies on digital maturity. It is intended to reflect the processes by which SMEs' business performance is shaped by access to broadband, the level of resources, and the use of broadband-enabled applications. The framework comprises three primary elements and also underpins the Digital Maturity Index, described in Section 3 of this report.

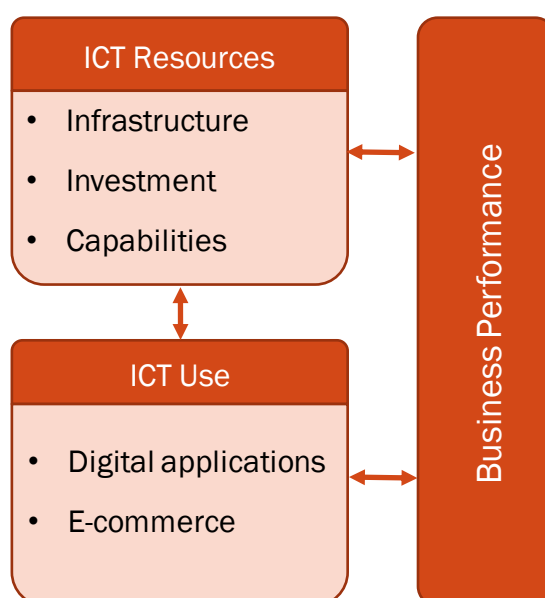
ICT Resources includes SME adoption of broadband, investment into physical assets, software and skills training; and staff capabilities. These resources have been identified as an important source of competitive advantage for SMEs and underpin a business' ability to make productive use of digital technologies. It should be noted that while international surveys produced by OECD and ONS/Eurostat use the term 'access' when referring to businesses having a broadband connection, the report uses broadband 'adoption' to avoid confusion with terminology used by the Welsh Government.

ICT Use refers to the ways in which SMEs engage with digital technologies in their business processes. The scope of digital technologies in use has been a significant growth area in recent years, with the digital maturity of SMEs explained by the growing adoption of superfast broadband, and enabled technologies such as cloud computing.

Business Performance captures the effects of having access to ICT resources and their use by the SMEs. Impact is measured in terms of changes in turnover, profitability, employment, and innovation activity in the business. The Economic Impact Report makes further use of this data to calculate impacts on the Welsh economy⁵.

The framework highlights interactions between the three primary elements of digital maturity – ICT Resources, ICT Use and Business Performance. By reflecting the dynamic nature of these elements it acknowledges the potential for feedback to occur between the elements of the framework. For example, Business Performance might be both an antecedent and consequence of businesses adopting ICT Resources and ICT Use.

Figure 1-1 Digital maturity framework



1.5 Structure of report

The report is structured as follows. Section 2 sets out key results from the *Digital Maturity Survey for Wales 2017*. This is followed by Section 3 describing the Digital Maturity Index. The report then sets out the comparative analysis in Section 4. The report concludes with the Digital Dashboard for Wales and implications for subsequent research in Section 5.

⁵ See <http://www.cardiff.ac.uk/superfast-broadband-project/economic-impact-research>

2. Key survey results

2.1 Introduction

The main descriptive findings from the 2017 *Survey* are outlined in this section. The analysis is broken down into five parts: 1. Adoption of broadband; 2. Use of broadband-enabled services; 3. ICT expenditure; 4. ICT skills; and 5. E-commerce.

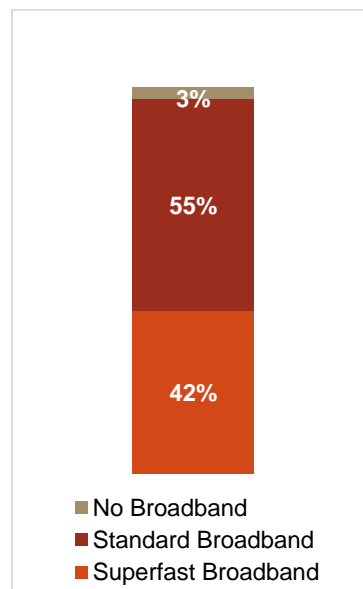
A stratification method was used to construct a sample representative of major industry sectors and of three sizes of SMEs, i.e. micro (0 to 9 employees), small (10 to 49 employees), and medium (50 to 249 employees). The post-stratification weights were then applied to the results to reflect the firm size and industrial structure of the Welsh economy.

The results, however, could have an upward bias in terms of digital maturity, as businesses demonstrating sufficient interest to complete the survey are more likely to be digitally engaged. Furthermore, the survey was mainly delivered online, which is more suited to SMEs with broadband connection. A number of phone and face-to-face interviews helped to partly address these issues.

2.2 Adoption of broadband

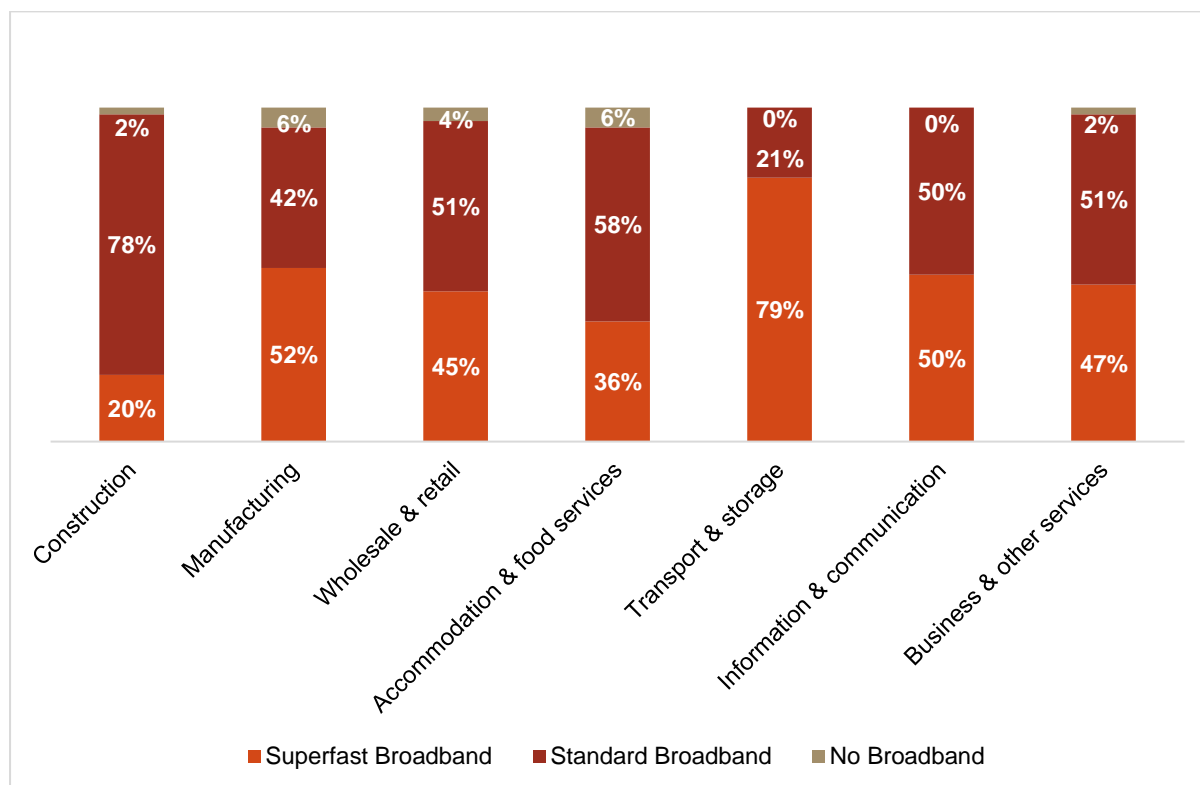
Adoption of broadband. In 2017 over two-fifths of SMEs (42%) reported having superfast broadband, defined as being able to download data at speeds of at least 30 megabits per second (Mbps). Figure 2-1 shows over half of SMEs (55%) had standard broadband only, with the remaining 3% having no broadband at all.

Figure 2-1 Adoption of broadband, by type (% of SMEs)



By industrial sector shown in Figure 2-2 the adoption of superfast broadband was relatively high in Transport and storage (79%), Manufacturing (52%), and Information and communication (50%) sectors. Construction sector had a relatively low take-up of superfast broadband (20%). Manufacturing, and Accommodation and food services sectors had the highest share of SMEs with no broadband at all (6% each).

Figure 2-2 Adoption of broadband, by type, by industry sector (% of SMEs)

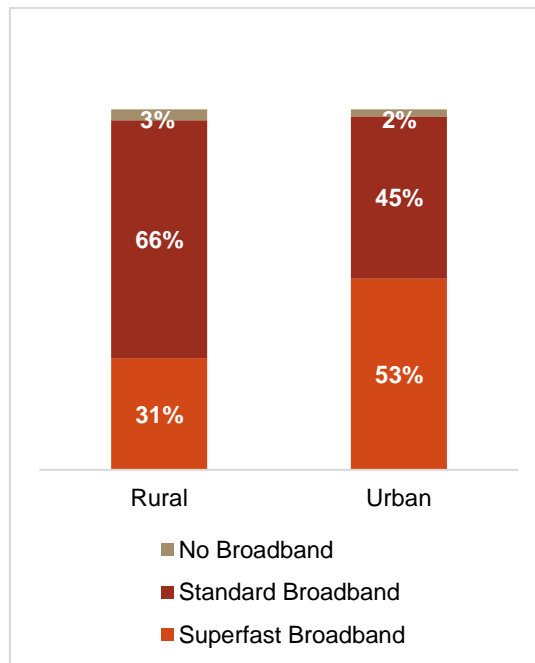


The adoption of superfast broadband was highest among medium-sized businesses (71%). In comparison, only half of small-sized businesses (50%), and two-fifths of micro businesses (42%) had superfast broadband.

By sub-region, the share of SMEs that have adopted superfast broadband ranged from a low of 32% in Mid and South West Wales, to a high of 60% in North Wales, although the latter sub-region also had the highest share of SMEs with no broadband at all (5%).

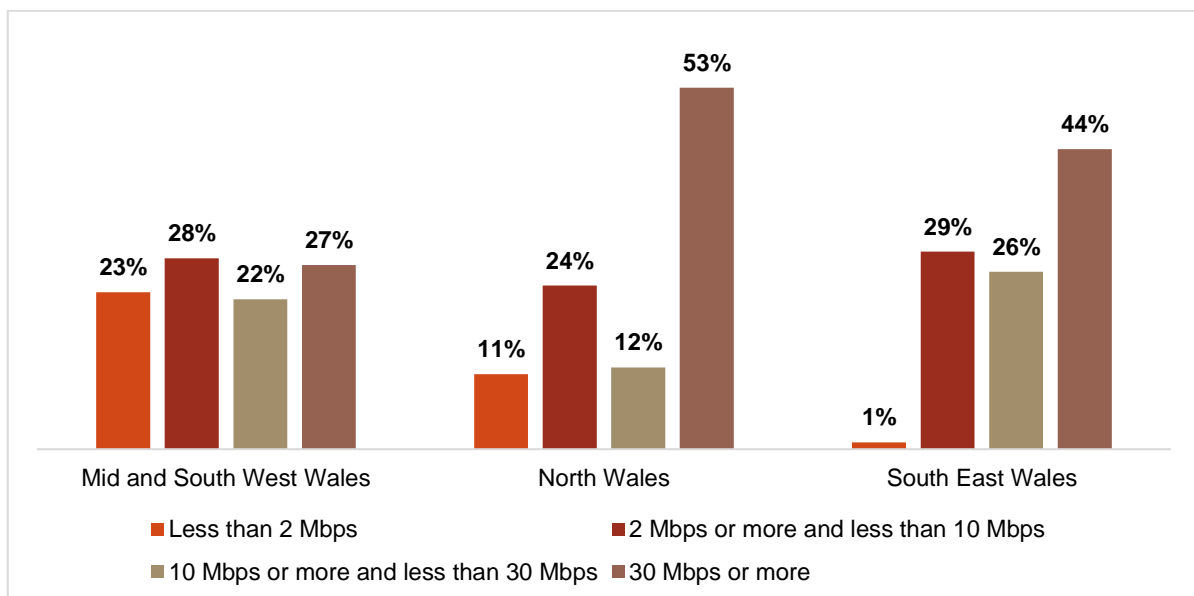
Figure 2-3 shows adoption of broadband by rural/urban location split. SMEs based in urban locations were more likely to have adopted superfast broadband, with more than half in this category (53%), compared to just three in ten in more rural locations (31%).

Figure 2-3 Adoption of broadband, by type, by location (% of SMEs)



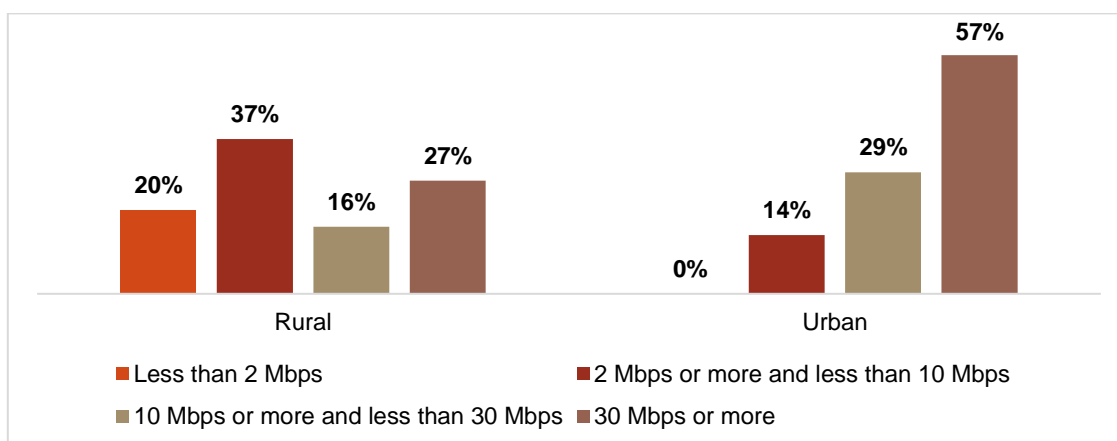
Average achieved download speeds. Broadband speeds reflect Figure 2-4 shows that 23% of SMEs in Mid and South West Wales reported achieving an average download speed of less than 2 Mbps. Contrastingly, SMEs in North Wales were the most likely to be achieving average download speeds of 30 Mbps or more (53%). South East Wales was the only region where broadband users reported 100 Mbps or more average download speeds (4%). These speeds are linked to the broadband subscription packages adopted by the SMEs.

Figure 2-4 Average achieved download speeds, by sub-region (% of SMEs)



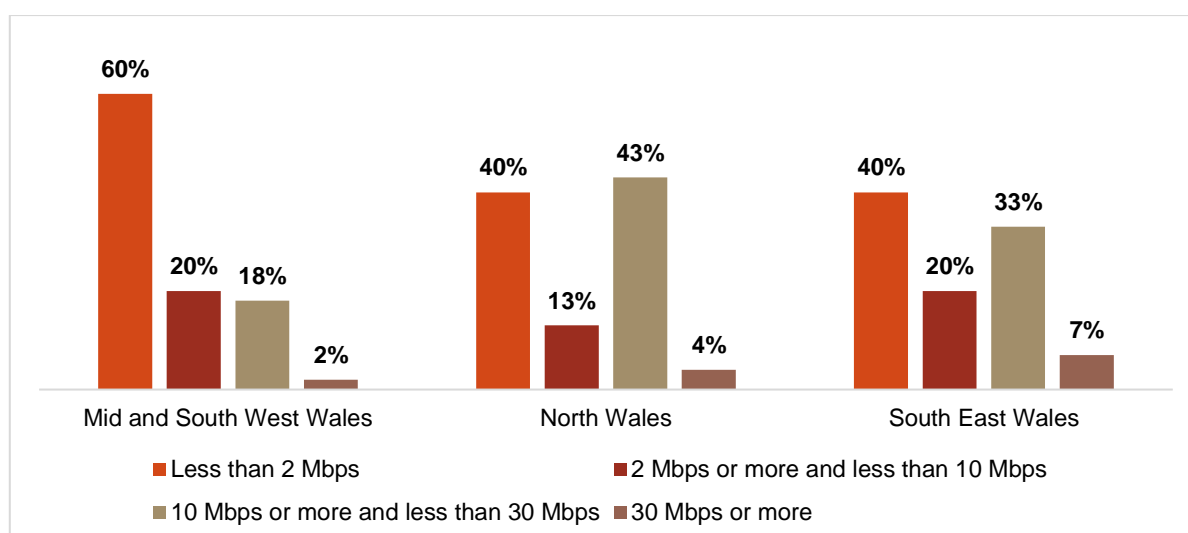
SMEs based in urban locations were more likely to report faster average achieved download speeds than their rural counterparts. Figure 2-5⁶ shows that nearly three-fifths of urban SMEs (57%) but with a quarter of rural SMEs (27%) able to achieve download speeds of 30 Mbps or more. One in five rural SMEs (20%) reported an average download speed of less than 2 Mbps⁷.

Figure 2-5 Average achieved download speeds, by location (% of SMEs)



Average achieved upload speeds. Figure 2-6⁸ shows a relatively high percentage of SMEs based in Mid and South West Wales reported achieving an average upload speed of less than 2 Mbps (60% as compared to 40% in both North Wales and South East Wales). A majority of SMEs in North Wales noted broadband upload speeds of between 10 Mbps and less than 30 Mbps (43%). South East Wales was the only sub-region where SMEs reported average upload speeds of 100 Mbps or more (2%).

Figure 2-6 Average achieved upload speeds, by sub-region (% of SMEs)



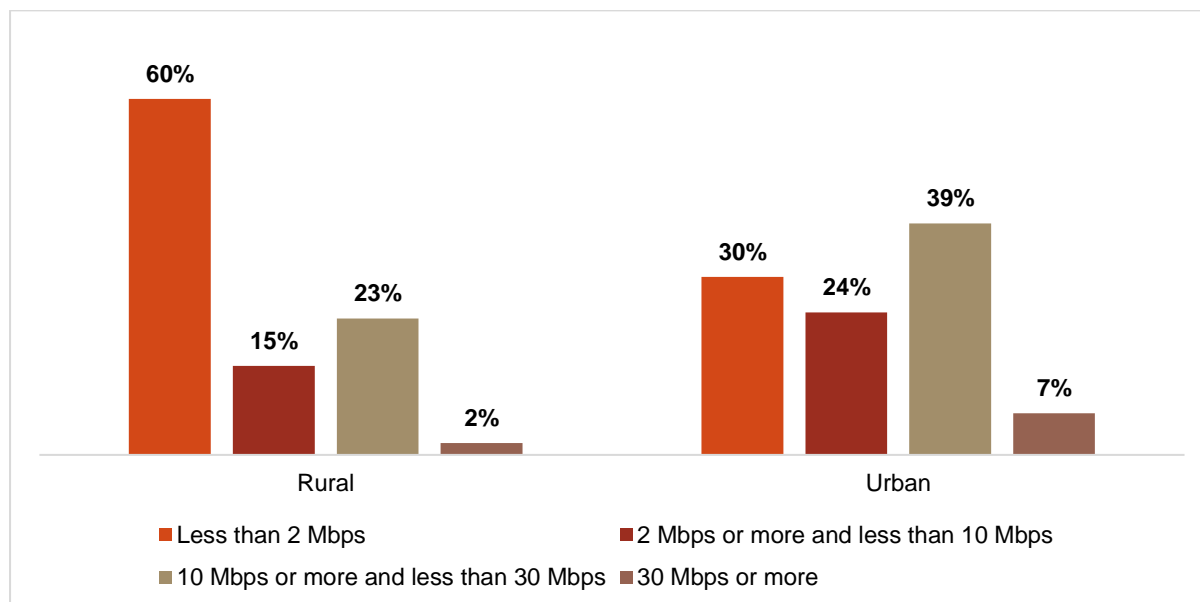
⁶ The median (i.e. 'middle' value of observations) download speed in rural locations is 6 Mbps, in urban locations – 31 Mbps.

⁷ There were no urban SMEs in this category for comparison.

⁸ The median (i.e. 'middle' value of observations) upload speed in Mid and South West Wales is 1 Mbps, in North Wales – 10 Mbps, in South East Wales – 5 Mbps.

SMEs based in rural areas were more likely to report slower average achieved upload speeds. Figure 2-7⁹ indicates that three-in-five rural SMEs had average upload speeds of less than 2 Mbps (60%). The comparative figure for SMEs located in urban areas was 30%.

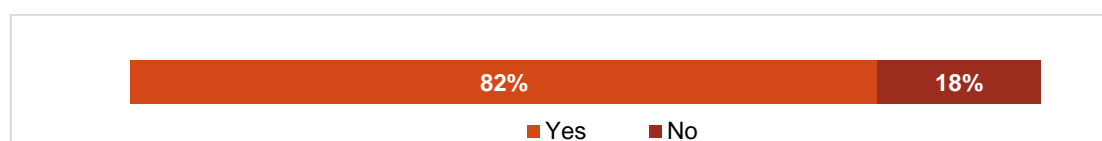
Figure 2-7 Average achieved download speeds, by location (% of SMEs)



2.3 Use of broadband-enabled services

Use of cloud computing services. SMEs were asked whether they used various types of cloud computing services (from email to video conferencing, electronic payments to computing power to run business software). Over four-fifths of SMEs (82%) reported using at least one cloud application.

Figure 2-8 Use of cloud computing services (% of SMEs)



The majority of SMEs indicated that they utilised basic applications such as email (67%), file sharing and storage (58%) and office software (54%). Figure 2-9 shows that fewer SMEs, however, used specialised applications for specific business functions. For example, some 11% reported using cloud-based project management software, 15% used customer relationship management applications, and 1% enterprise resource planning.

⁹ The median (i.e. 'middle' value of observations) upload speed in rural locations is below 1 Mbps, in urban locations – 10 Mbps.

Figure 2-9 Proportion of businesses using cloud computing services, by category (% of SMEs)

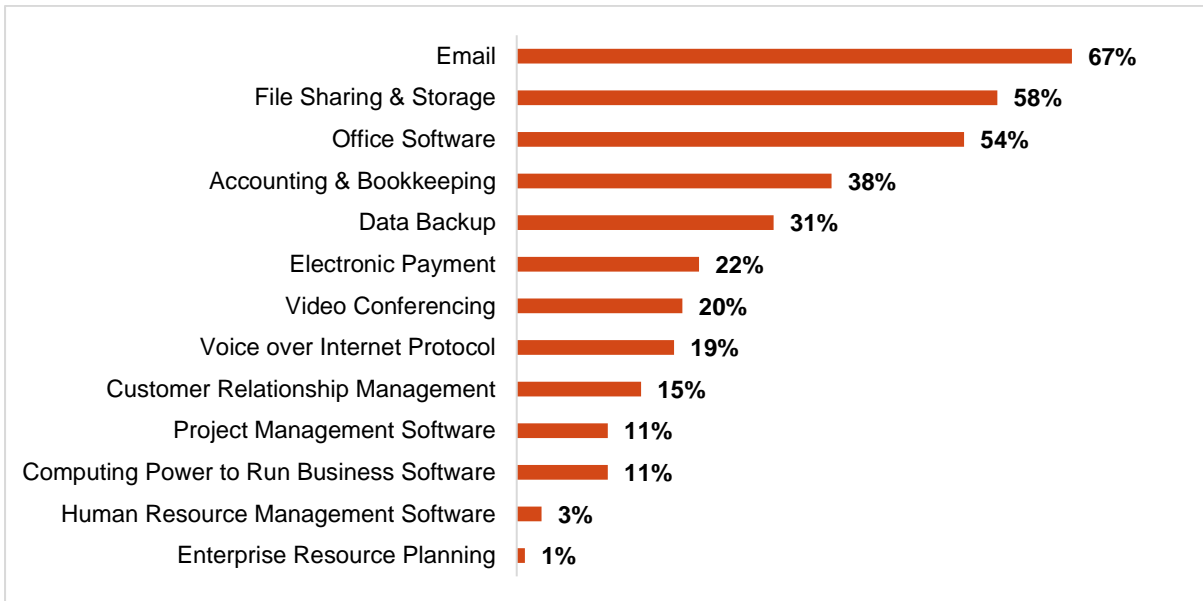
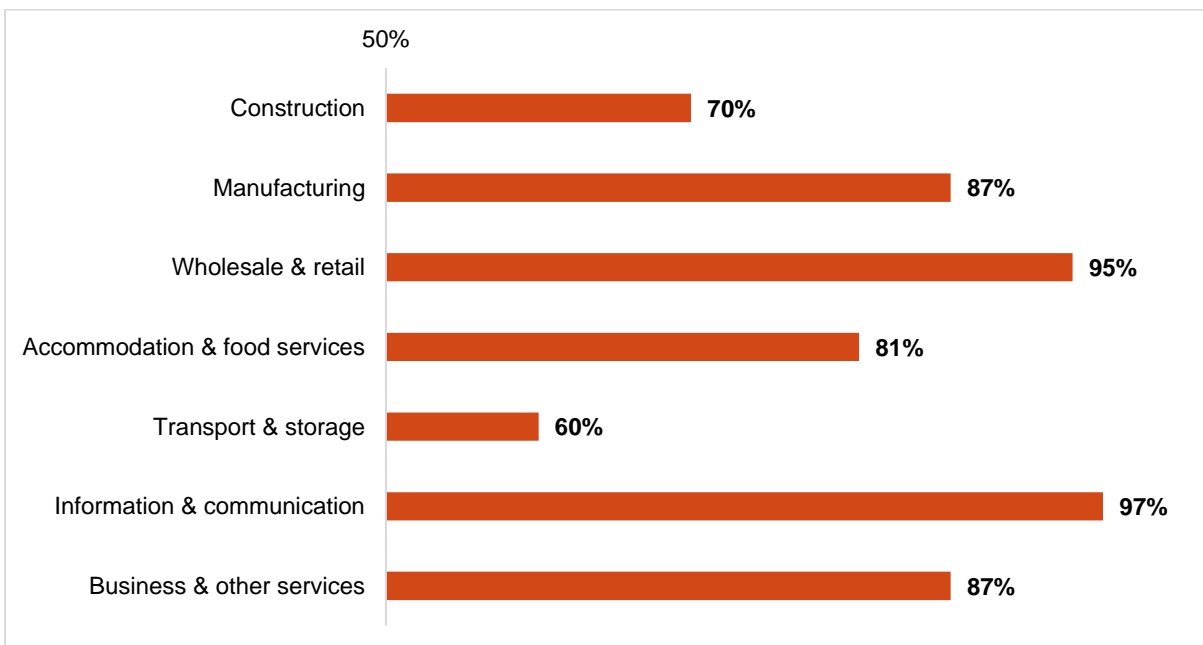


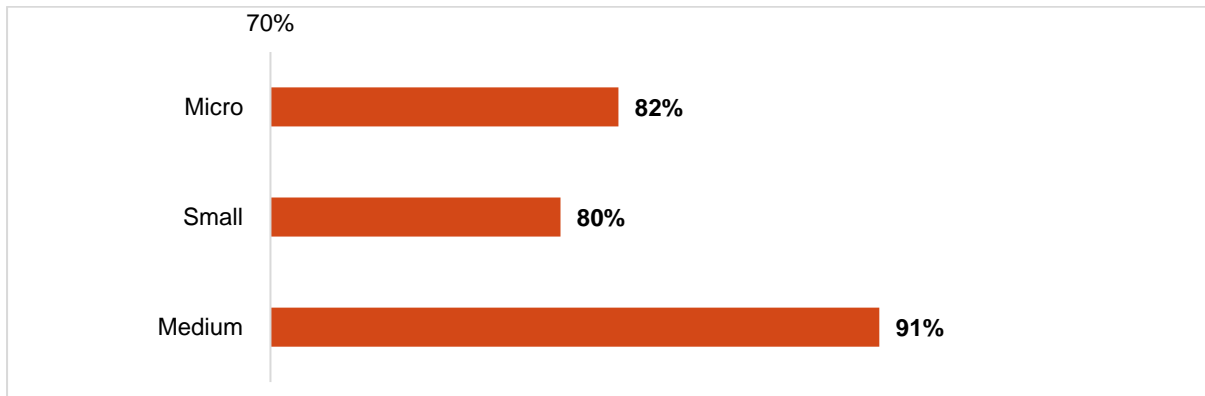
Figure 2-10 shows that SMEs in the Information and communication (97%) and Wholesale and retail industry sectors (95%) were the most likely to use cloud computing services. On the other hand, Businesses in Transport and storage (60%) and Construction (70%) were the least likely to use cloud services.

Figure 2-10 Proportion of businesses using cloud computing services, by industry sector (% of SMEs)



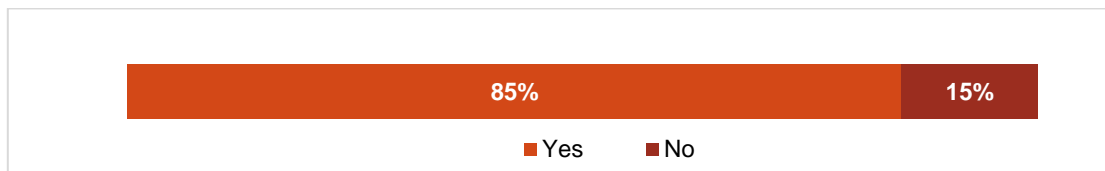
Medium-sized businesses were most likely to use cloud computing services (91%). The comparative figures for micro and small-sized businesses shown in Figure 2-11 were 82% and 80%, respectively.

Figure 2-11 Proportion of businesses using cloud computing services, by size of business (% of SMEs)



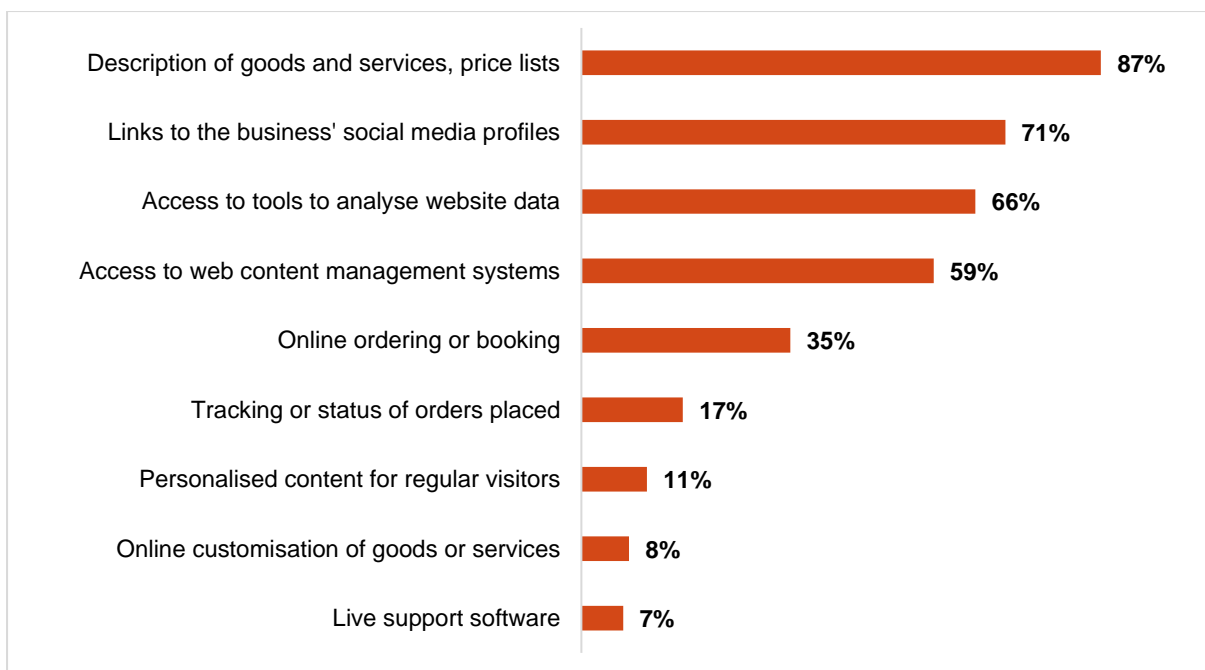
Use of website. 85% of the businesses taking part in the survey reported having a website.

Figure 2-12 Use of website (% of SMEs)



As shown in Figure 2-13, the majority of SMEs reported having core features on their websites such as descriptions of goods and services (87%), and links to the business' social media profiles (71%). Some 7% of businesses noted having live support software on their website, while just 8% offered online customisation of goods and services.

Figure 2-13 Proportion of businesses with website, by website function (% of SMEs)



By industry, SMEs in the Wholesale and retail and Accommodation and food services sectors were most likely to have a website presence (both 100%), while relatively few businesses in the Construction sector (61%) reported having a website.

All of the medium-sized businesses in the sample, 84% of the micro businesses and 96% of the small businesses had a website. 87% of rural and 83% of urban businesses noted they had a website. By sub-region, the comparative figures were 95% of SMEs in North Wales, 85% in Mid and West Wales, and 79% in South East Wales.

Use of social media. Three-quarters of SMEs reported using social media (76%).

Figure 2-14 Use of social media (% of SMEs)

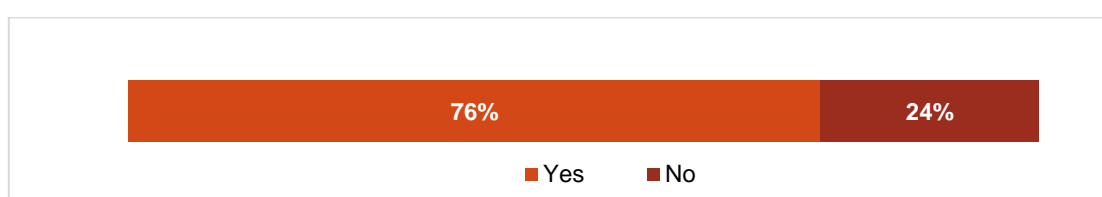


Figure 2-15 illustrates that SMEs were most likely to use social networks (76%), while just over half used blogs or microblogs (52%), and three-in-ten utilised multimedia content sharing websites (32%).

Figure 2-15 Proportion of businesses using social media, by platform (% of SMEs)

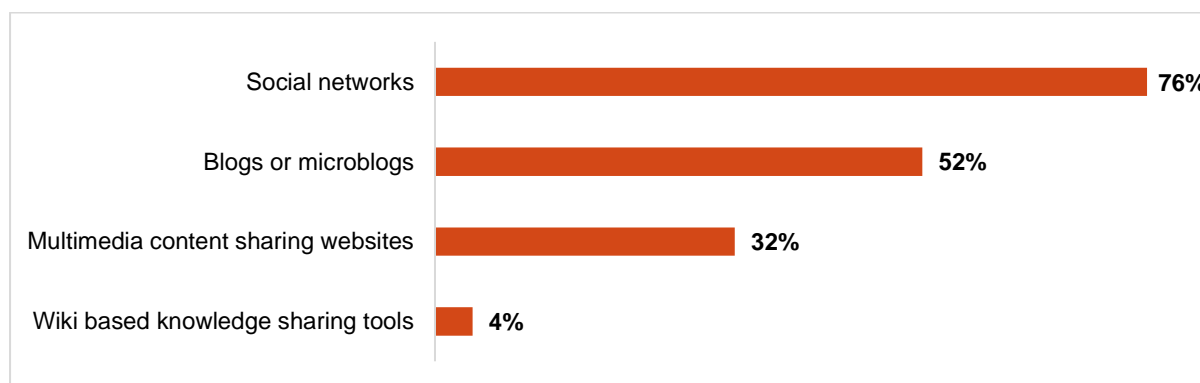
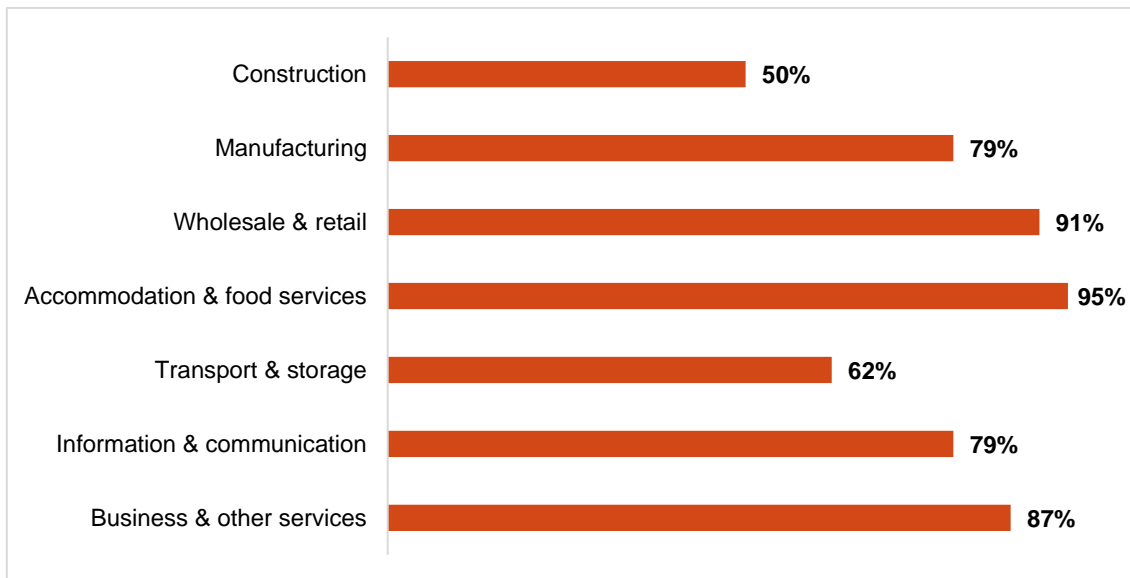


Figure 2-16 Proportion of businesses using social media, by industry sector (% of SMEs) shows that SMEs in the Construction industry sector were the least active users of social media, with just 50% share, as compared to 95% of SMEs in Accommodation and food services. Businesses in the Information and communication sector were found to use blogging (71%) and multimedia content (52%) to the highest extent out of all industries.

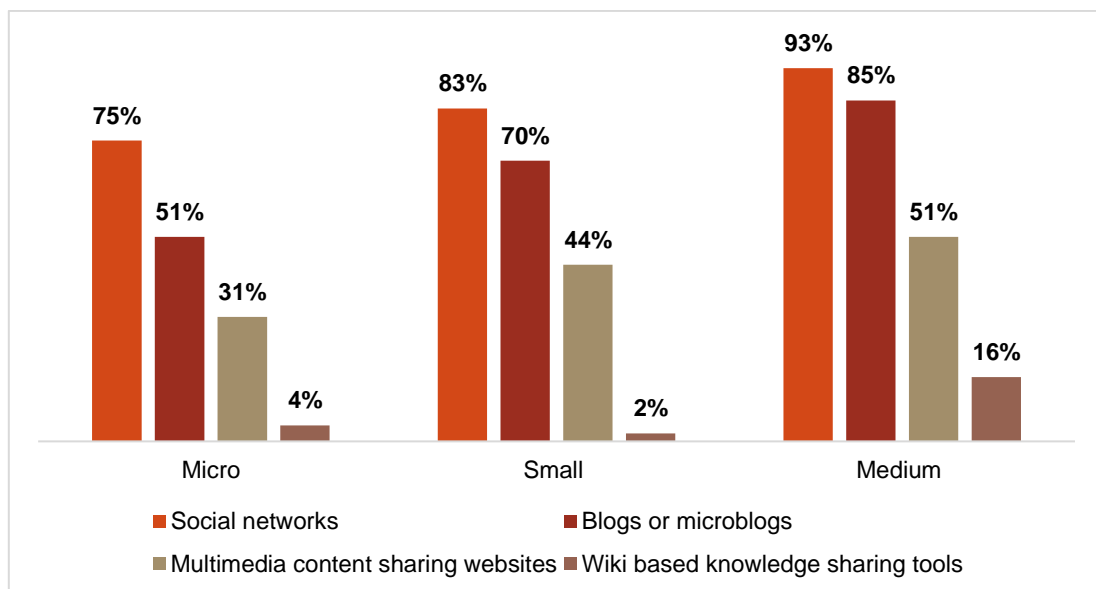
Figure 2-16 Proportion of businesses using social media, by industry sector (% of SMEs)



Medium-sized businesses reported higher rates of social media use across all the platforms compared to small and micro businesses.

Figure 2-17 shows 85% of medium-sized businesses utilised blogs or microblogs, with lower comparative figures for small (70%) and micro (51%) businesses.

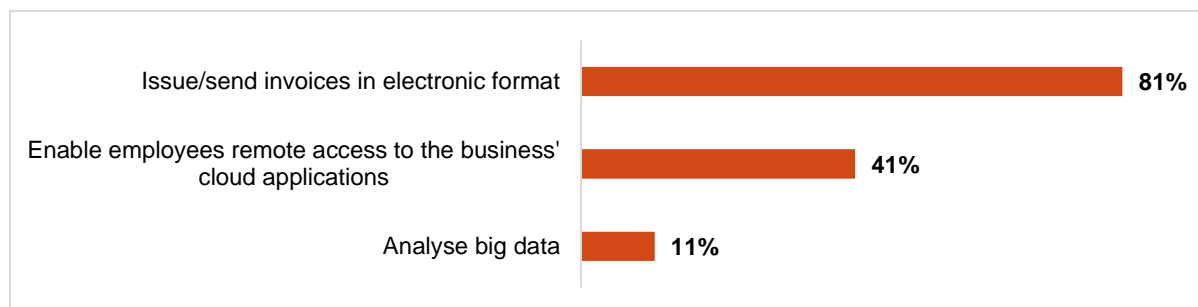
Figure 2-17 Proportion of businesses using social media, by size of business and platform (% of SMEs)



There was no difference between urban and rural based SMEs in their reported usage of social media (both 76%), while businesses in North Wales were more likely to use these applications (82%) than their counterparts in Mid and West Wales (81%) and South East Wales (69%).

Other use of broadband. Figure 2-18 shows that the majority of SMEs issued or sent invoices in an electronic format (81%), for example PDF, Electronic Data Interchange (EDI)¹⁰, or a proprietary system. Two in five SMEs (41%) reported that their employees were able to remotely access the business' cloud applications.

Figure 2-18 Use of broadband-enabled functions (% of SMEs)



Benefits of using broadband-enabled services. Figure 2-19 reports the percentage of SMEs agreeing with statements pertaining to potential benefits of broadband -enabled services. Just under four in five businesses (79%) reported that adoption of broadband enabled services allowed their business to better respond to customer or supplier requirements. 72% of SMEs reported improved productivity and the ability to keep pace with competition, which were the next most reported benefits perceived by businesses.

Figure 2-19 Benefits of broadband-enabled services (% of SMEs)



¹⁰ EDI is the exchange of business data using internationally agreed standards between data processing systems.

2.4 ICT expenditure

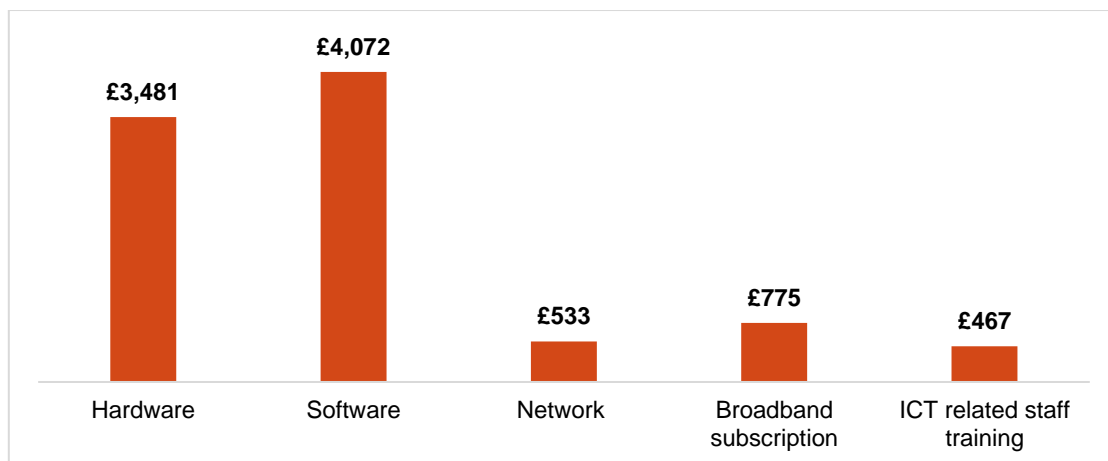
ICT infrastructure investment. One in seven (14%) SMEs reported that they had a dedicated ICT budget. By number of employees, medium-sized businesses were most likely to note they had a dedicated ICT budget (49%), while by industry, SMEs in Information and communication (26%) and Manufacturing (23%) sectors were most likely to have an ICT budget.

Figure 2-20 Proportion of businesses with dedicated ICT budget (% of SMEs)



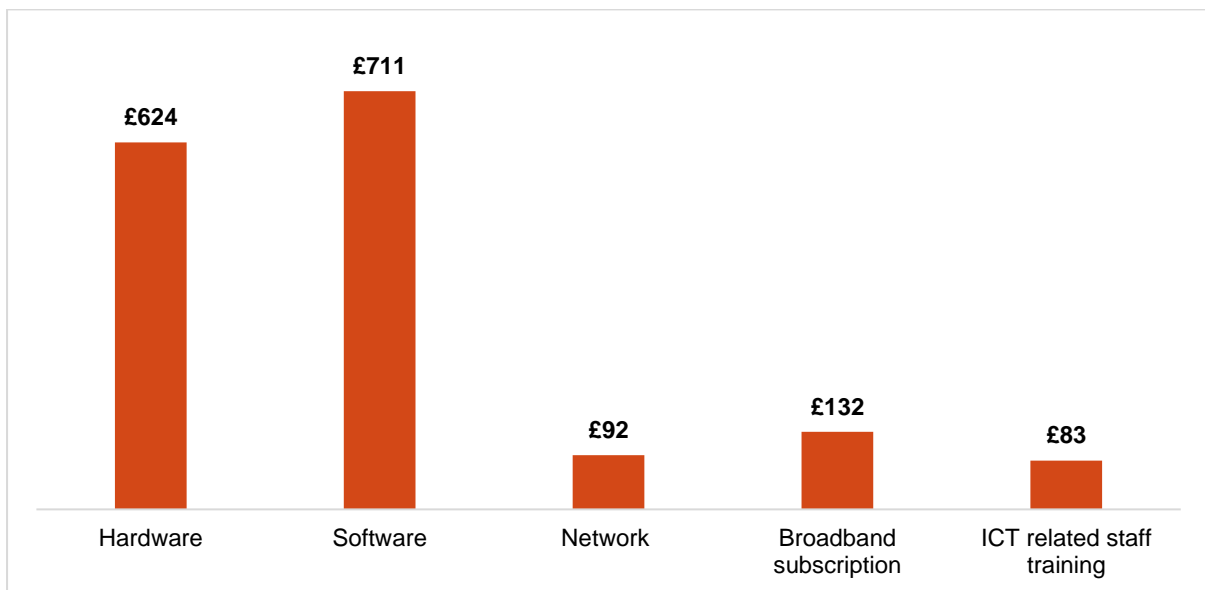
SMEs were asked to detail their annual spend, averaged over the last three years, on ICT infrastructure related items, including hardware, software, network, broadband subscription, and training. Figure 2-21 shows that SMEs spent an average of nearly £3,500 per year on hardware and around £4,000 on software.

Figure 2-21 Average spend on ICT infrastructure and training per SME (£ per year)



Annual ICT infrastructure and training investment figures per full time worker were also derived. Figure 2-22 shows that an average of £624 per full time equivalent employee was spent annually on hardware related items, and £711 on software.

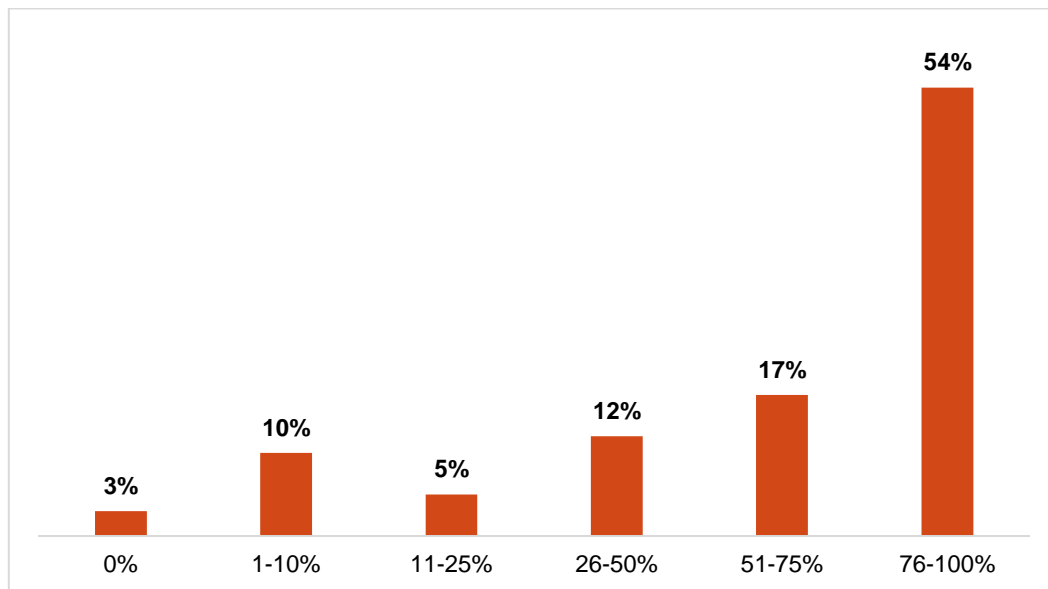
Figure 2-22 Average spend on ICT infrastructure and training (£ per employee)



2.5 ICT skills

Internal ICT capabilities. Figure 2-23 shows that 71% of SMEs have at least half of their employees with intermediate or above ICT skills¹¹.

Figure 2-23 Proportion of employees with intermediate or above ICT skills (% of SMEs)

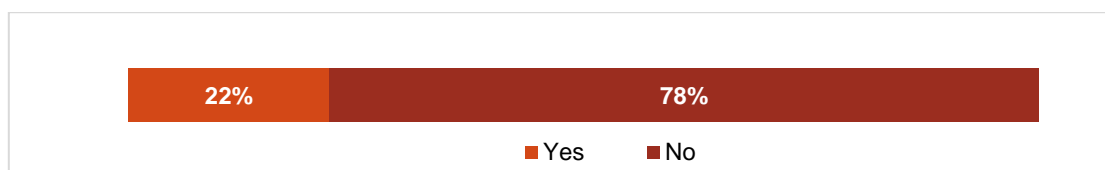


Businesses in Information and communication sectors have the highest concentration of employees with above average ICT skills (97%). This compares to lower concentrations in Transport and storage (48%) and Construction (58%) sectors.

Figure 2-24 shows that just over one-fifth of SMEs reported employing ICT specialists (22%). By size of business, the larger the SME the more likely it is to employ ICT specialists (medium - 63%, small - 39%, and micro - 21%).

When sub-regions are compared, businesses in South East Wales (35%) were more likely to employ ICT specialists than North Wales (20%) or Mid and South West Wales (12%). Businesses in the Information and communication sector had the highest concentration of ICT specialists (62%), while the Wholesale and retail sector had the lowest concentration (11%).

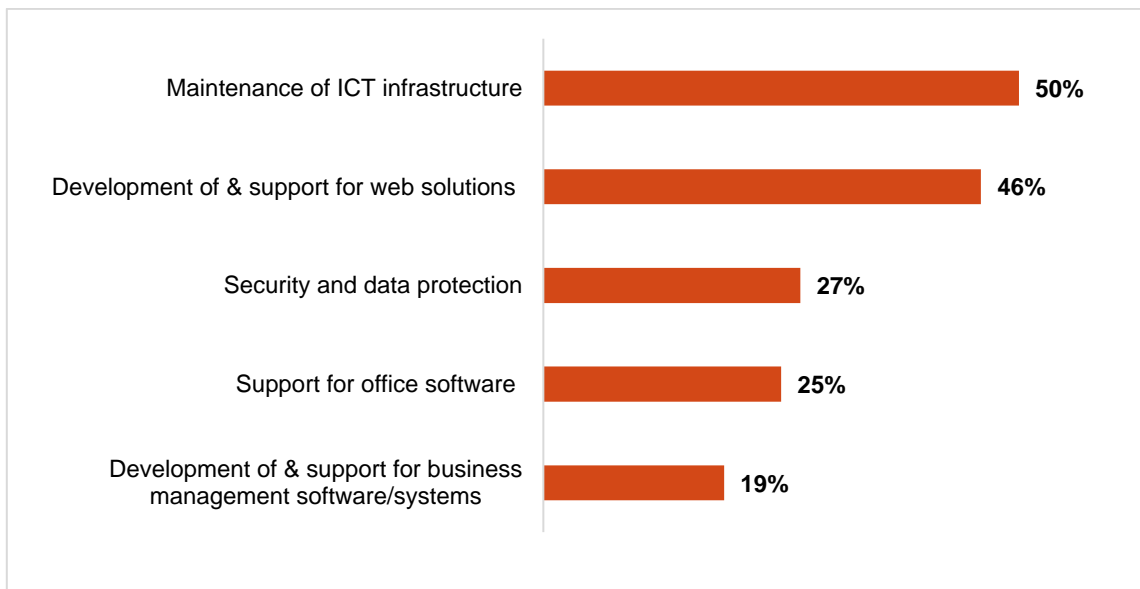
Figure 2-24 Proportion of businesses that employ ICT specialists (% of SMEs)



¹¹ Intermediate computer skills include the working knowledge of the operations of the internet and email, computers, word processing, graphics and multimedia, and spreadsheets and databases.

ICT support capabilities. Businesses were most likely to report using external ICT support to maintain ICT infrastructure (50%), and for the development of, and support for web solutions (46%). Figure 2-25 shows that nearly three in ten SMEs (27%) sought external help for security and data protection.

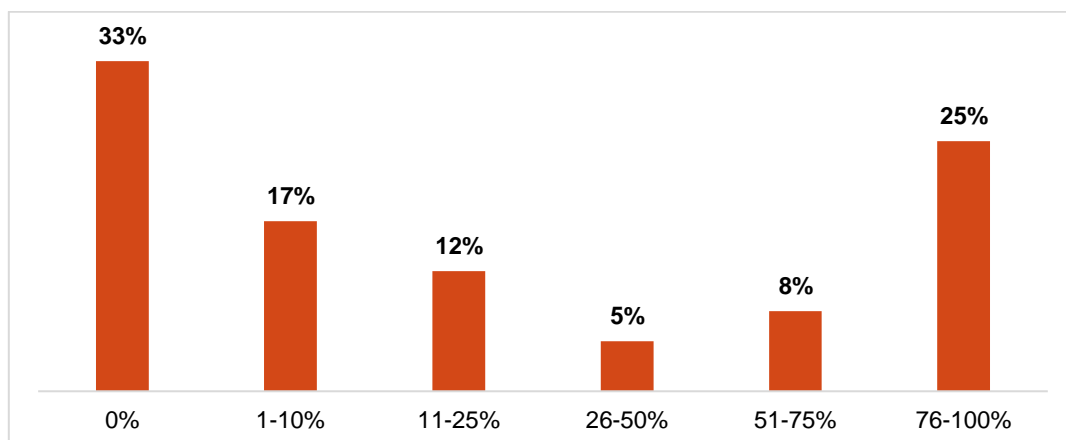
Figure 2-25 Proportion of businesses that use external ICT support, by task (% of SMEs)



2.6 E-commerce

Sales serviced online. Figure 2-26 shows that a third of SMEs in the sample (33%) did not sell online during their last financial year, while a similar proportion reported that over half of their total sales were serviced through online ordering or payment systems.

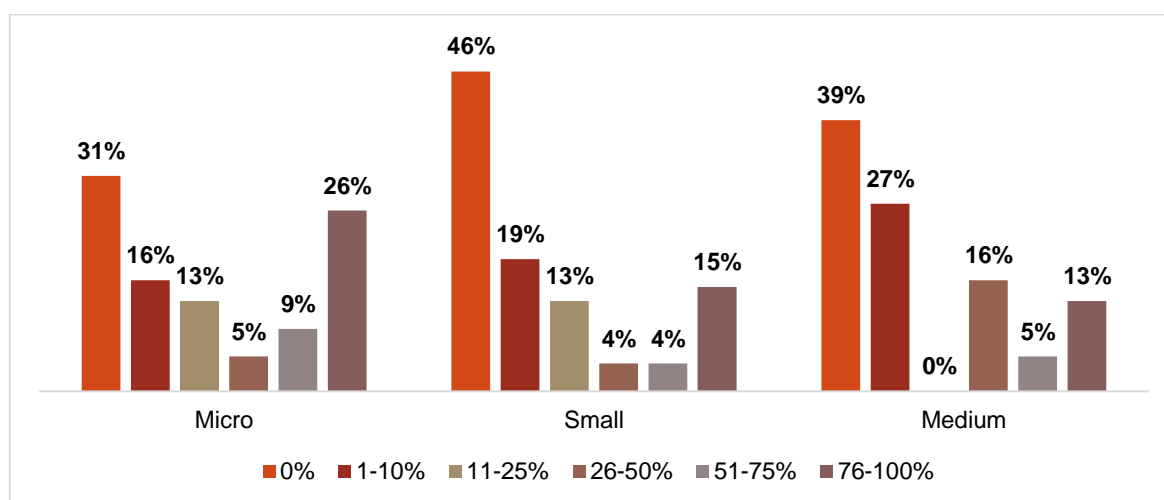
Figure 2-26 Proportion of total sales serviced online (% of SMEs)



By industry sector, 67% of SMEs in Construction, 45% of Transport and storage and 42% of Business and other services did not sell anything online. This may be partly explained by the bespoke nature of services offered, rather than a reluctance to trade online. Businesses in the Accommodation and food services and Information and communication sectors were most likely to report servicing a greater percentage of their total sales online.

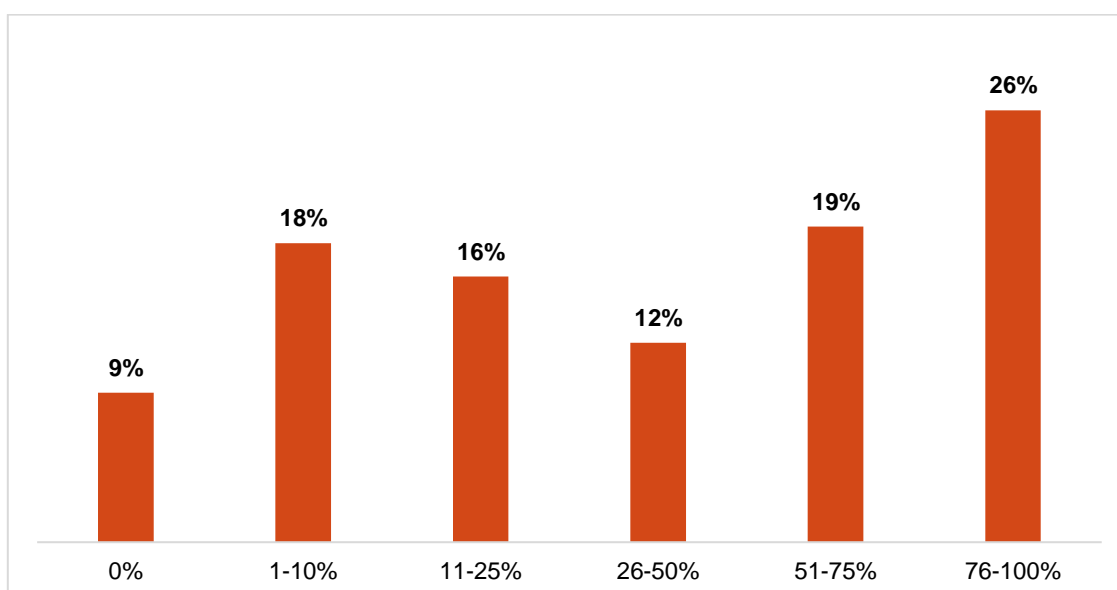
Figure 2-27 highlights that micro businesses were more likely to derive a higher proportion of their sales from online sources. Just over a quarter of micro businesses (26%) serviced between 76% and 100% of their total sales online. The equivalent figure for small businesses was 15%, and for medium-sized businesses 13%.

Figure 2-27 Proportion of total sales serviced online, by size of business (% of SMEs)



Purchases transacted online. Figure 2-28 illustrates that around one in ten SMEs did not make any purchases online (9%). This contrasts with the quarter of businesses (26%) for whom online purchases accounted for 76% or more of their total purchases.

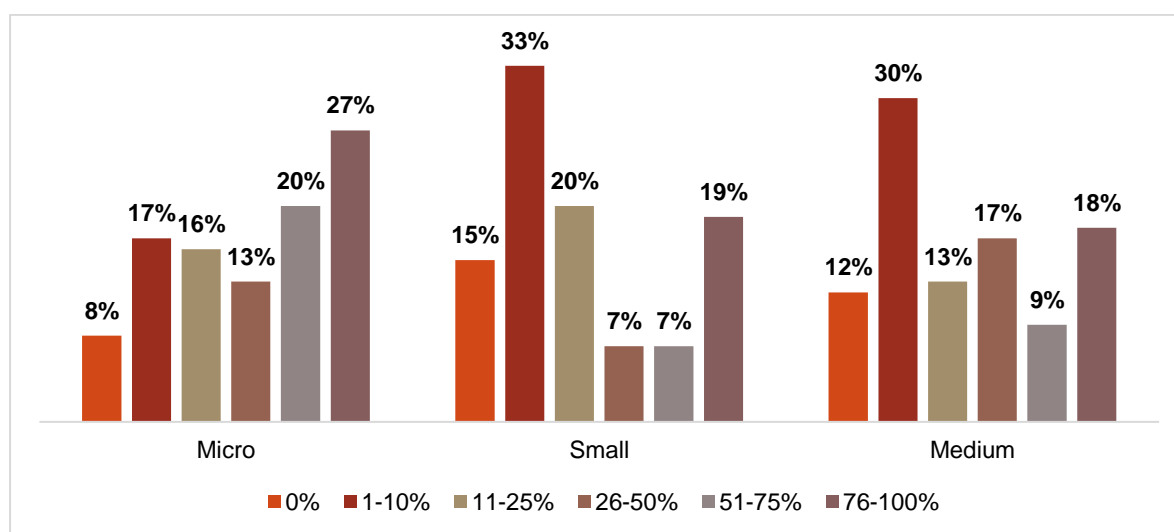
Figure 2-28 Proportion of total purchases transacted online (% of SMEs)



SMEs in the Information and communication sector were the most likely to purchase online (with 77% transacting at least half of their total purchases in this manner), followed by Accommodation and food services (51% transacting half or more of their total purchases online) and Business and other services (50%).

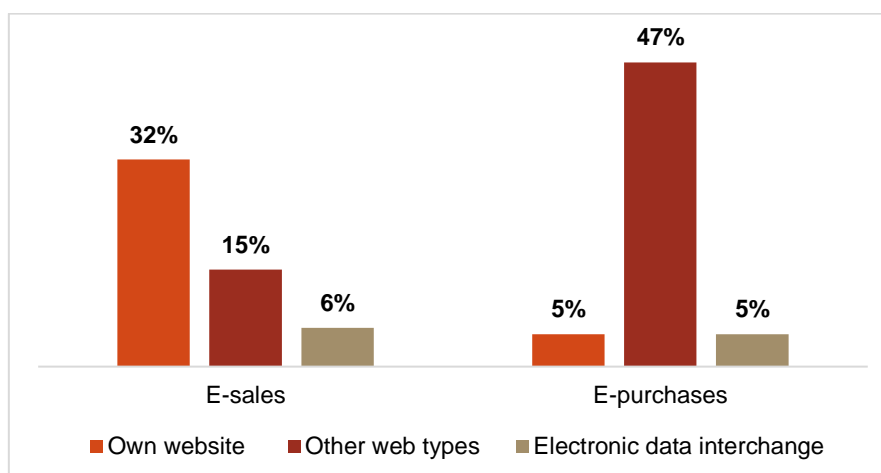
Nearly a half of micro businesses (47%) transacted more than half of their total purchases online, and Figure 2-29 illustrates the comparative figures for small- and medium-sized businesses were 26% and 27%, respectively. Around one in eight medium-sized businesses did not purchase online (12%).

Figure 2-29 Proportion of total purchases transacted online, by size of business (% of SMEs)



Channels of e-commerce activities. A third of businesses reported that their own website was a channel for e-sales activities. Figure 2-30 highlights that a lower proportion of SMEs (15%) used other web types, such as online stores, apps or other websites. Businesses were most likely to carry out e-purchases through other web types (47%). EDI was reported as a channel for e-commerce activities by one in twenty businesses (5% for e-sales and 6% of e-purchases).

Figure 2-30 E-commerce activities, by channel (% of SMEs)



3. Digital Maturity Index

3.1 Introduction

The Digital Maturity Index is underpinned by a conceptual framework depicted in Figure 1-1. The scale consists of 40 items that were coded from survey questions, with a maximum score of 100¹². The index captures five dimensions of digital maturity – infrastructure focuses on adoption of broadband, investment and capabilities reflect ICT-related resources of the business, while digital applications and e-commerce refer to business use of broadband-enabled technologies.

1. **ICT infrastructure** refers to broadband adoption and the speed of connection.
2. **ICT investment** is defined as the business budget for ICT-related expenses. The measure includes SMEs' annual spending on hardware, software, network, broadband subscription and ICT-related staff training.
3. **ICT capabilities** are defined as SMEs' access to human ICT-related resources. The measure includes ICT human skills, both internal and external to the business. ICT skills of internal staff are measured as the proportion of workforce with intermediate and above ICT skills. Access to additional ICT skills is measured according to whether SMEs employ ICT specialists and/or use external ICT support.
4. **Digital applications** refer to SMEs' use of cloud packages for a variety of business functions, website and its functionality, as well as social media and other broadband-enabled applications.
5. **E-commerce** reflects the extent to which SMEs engage in online transactions with customers and suppliers. The measure captures the proportion of total sales serviced online, the proportion of purchases transacted online, and the breadth of online channels for making e-sales and e-purchases.

¹² All binary items were coded as 0/1, while items that refer to ranges were coded from 1 upwards in ascending order. The scores are unweighted, but binary items were multiplied by a constant of 2 to calibrate the scale to a maximum of 100.

3.2 Overview of digital maturity scores

The derived digital maturity scores of individual SMEs in the sample were first visually examined to identify any trends in the data and to group businesses into relevant clusters. The histogram in Figure 3-1 shows the frequency of occurrence of digital maturity scores by interval. Nearly 70% of SMEs scored between 30 and 60, while fewer businesses fell below or above this range. The maximum achieved score was 87, which suggests that none of the SMEs in the sample were fully digitally mature. Based on these insights, four clusters of firms in terms of broad digital maturity characteristics were identified (Table 3-1).

Of the initial sample of 453 SMEs, 21 scored zero. These SMEs were excluded from the digital maturity analysis, as the score of zero suggests that these businesses had not adopted superfast or standard broadband, and hence could not be compared to other businesses in the sample based on their digital maturity. Therefore, the final sample consisted of 432 businesses. The resulting four clusters could be described as follows: Cluster 2 and Cluster 3 covered 70% of SMEs in the sample, while Cluster 1 included the least digitally mature 20% and Cluster 4 included the most digitally mature 10% of SMEs. The clusters were labelled by the level of their digital maturity as Digitally Embedded, Active Exploiters, Passive Exploiters, and Digitally Disengaged, respectively.

Figure 3-1 Histogram of digital maturity scores

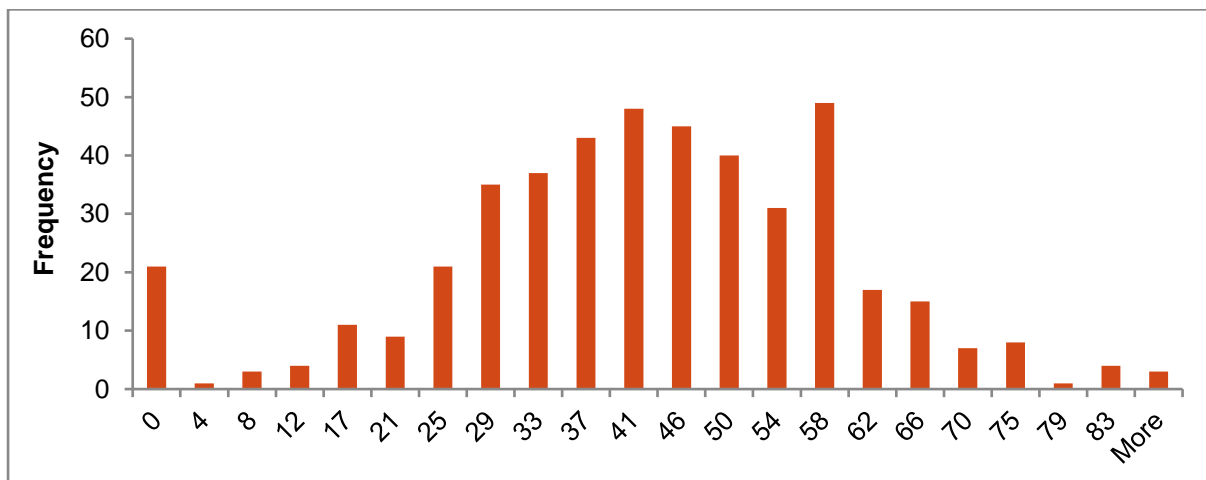


Table 3-1 Profiling of SMEs by their digital maturity score

Level of Digital Maturity	Digital Maturity Cluster	Score Range	Cluster Size
4	Digitally Embedded	60-87	50
3	Active Exploiters	45-59	132
2	Passive Exploiters	30-44	166
1	Digitally Disengaged	2-29	50

Table 3-2 depicts the differences among clusters in terms of their average digital maturity score and the average scores of individual components that make up the digital maturity index. As can be seen, the inter-cluster score differences for resource base, including infrastructure, investment and capabilities were minimal, while the extent of use of digital applications and e-commerce explained the differences among the less and the more digitally mature businesses.

Table 3-3 presents a summary of the main attributes of four digital maturity clusters.

Table 3-2 Average scores per cluster per digital maturity dimension

Digital Maturity Cluster	ICT Infrastructure Score	ICT Investment Score	ICT Capabilities Score	Digital Applications Score	E-Commerce Score	Digital Maturity Score
Digitally Embedded	9	4	7	38	10	68
Active Exploiters	8	3	6	28	8	52
Passive Exploiters	7	2	5	19	5	38
Digitally Disengaged	7	1	3	9	2	22
Average	7	2	5	22	6	42

Table 3-3 Main characteristics of four digital maturity clusters

Digital Maturity Cluster	Main Characteristics
Digitally Embedded	Such businesses are adopters of superfast broadband with a very high proportion of employees with above average ICT skills. They use a high number of digital applications and secure the majority of their sales from online transactions.
Active Exploiters	Such businesses are likely to have adopted superfast broadband, have a high proportion of staff with above average ICT skills, and use a wider range of digital platforms and technologies. Nearly half of businesses in this cluster report online channel as the main source of sales.
Passive Exploiters	Such businesses tend to have adopted standard broadband and are likely to have staff with above average ICT skills. They make use of basic cloud-based applications, but the use of online platforms to generate e-sales is low.
Digitally Disengaged	Such businesses tend to have adopted standard broadband, and have a high proportion of employees with below average ICT skills. The majority do not use digital technologies and report no sales from online transactions.

3.3 Business performance by digital maturity

This sub-section examines whether and to what extent business performance differs by SMEs' level of digital maturity. Business performance was measured in terms of turnover, profitability, employment, and innovation activity (i.e. introduction of new products, processes or services), and other self-reported strategic benefits¹³.

Higher levels of digital maturity were associated with increases in business performance. Furthermore, as can be seen in Figure 3-3, among those SMEs that reported growth in their business performance, the increases in performance were likely to be larger among more digitally mature clusters. On average, more digitally mature SMEs reported increases in business performance of 50% or more, while more SMEs in less digitally mature clusters experienced slow to medium growth of up 30%.

¹³ SMEs were asked to indicate whether their turnover, profitability, employment and innovation activity increased, decreased or did not change as a result of having access to broadband. For each business performance metric for which SMEs indicated an increase, they were further asked to specify an increase in percentage terms.

Figure 3-2 shows the differences in business performance by cluster. Digitally Embedded significantly outperformed other clusters, while the majority of Passive Exploiters and Active Exploiters (50% and more) reported increases in turnover, profits and innovation activity as a result of having access to broadband. Also, in contrast to a widespread conjecture that extensive use of digital technologies is likely to substitute for labour, 46% of the Digitally Embedded reported an increase in employment, which is a leap of 23 percentage points from the cluster of Active Exploiters.

Furthermore, as can be seen in Figure 3-3, among those SMEs that reported growth in their business performance, the increases in performance were likely to be larger among more digitally mature clusters. On average, more digitally mature SMEs reported increases in business performance of 50% or more, while more SMEs in less digitally mature clusters experienced slow to medium growth of up 30%.

Figure 3-2 Effect of adoption of broadband on turnover, profitability, employment, innovation

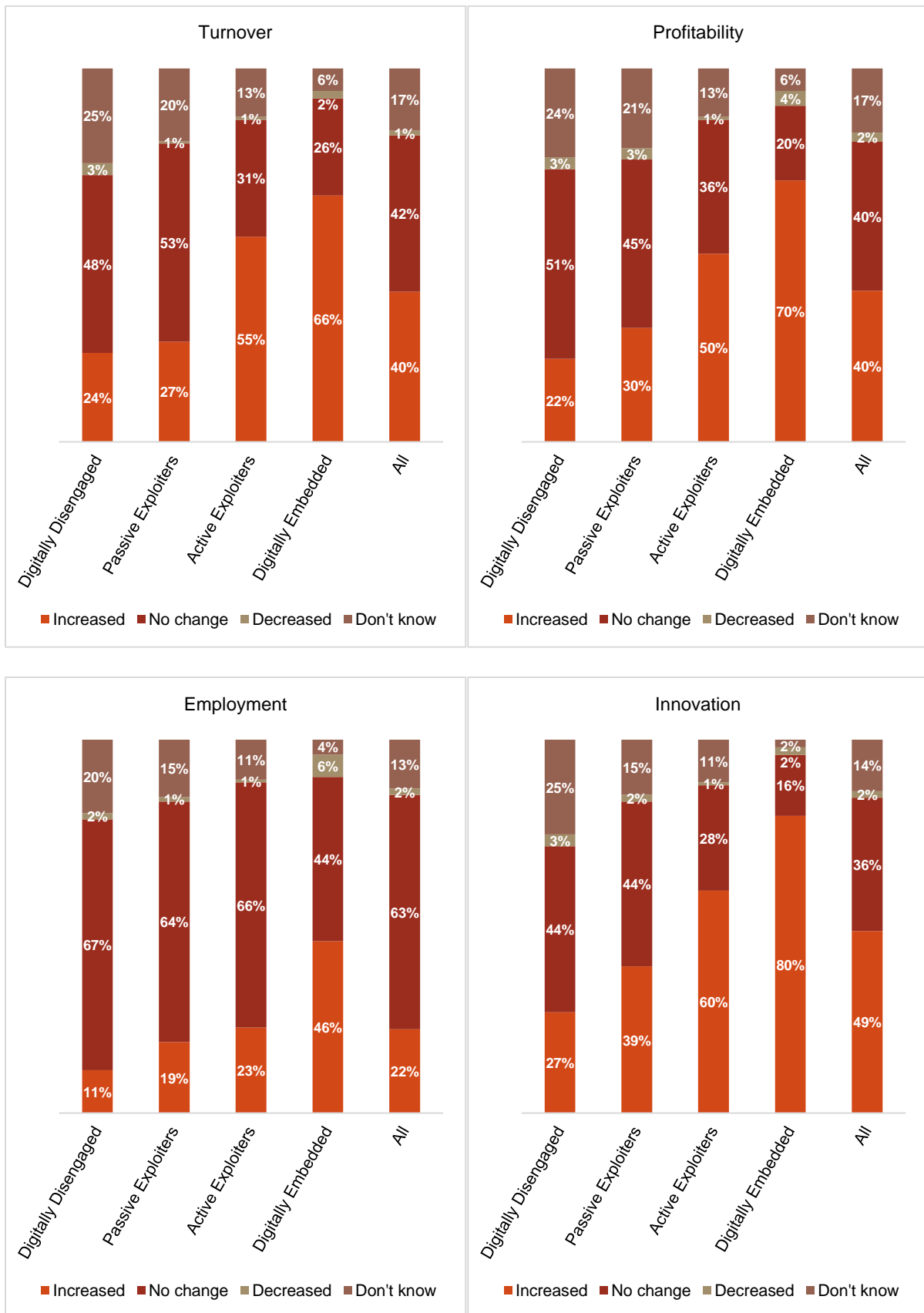


Figure 3-3 Effect of adoption of broadband on increase in turnover, profitability, employment, innovation as a result of access to broadband



Digitally mature SMEs reported wider strategic benefits from adoption of broadband.

As can be seen from Table 3-4, the vast majority of SMEs in all clusters agreed that increased digital maturity helps to respond to the needs of partners in the network. While 94% of Digitally Embedded SMEs recognised that broadband-enabled technologies are key to staying competitive in the market, only 51% of Digitally Disengaged SMEs saw broadband-enabled services as a competitive tool. This also explains why most SMEs in more digitally mature clusters reported improvements in knowledge management, productivity, operational excellence, geographical expansion and other benefits. Overall, over 80% of Active Exploiters and Digitally Embedded businesses reported that the use of digital applications and services helped them achieve their strategic objectives.

Table 3-4 Effect of broadband-enabled services on perceived business benefits (% that agree)

	Digitally Disengaged	Passive Exploiters	Active Exploiters	Digitally Embedded	Average
Better respond to customer or supplier requirements	65%	73%	88%	85%	78%
Keep pace with competition	51%	75%	83%	94%	77%
Improve knowledge management / information sharing	54%	74%	84%	87%	76%
Improve productivity / efficiency / flexibility	52%	64%	82%	89%	71%
Reduce operational / labour costs	25%	33%	53%	79%	44%
Gain access to new geographical markets	29%	46%	66%	68%	53%
Increase ICT and data security	34%	35%	58%	64%	46%
Improve risk management / continuity planning	20%	23%	48%	62%	36%
Respond to environmental concerns ¹⁴	35%	38%	58%	74%	48%
Improve social inclusion ¹⁵	25%	20%	39%	30%	28%
Achieve overall strategic objectives	43%	55%	81%	89%	67%

¹⁴ Reduced travelling and lower energy consumption

¹⁵ Helping women get back into workforce

4. Comparative analysis

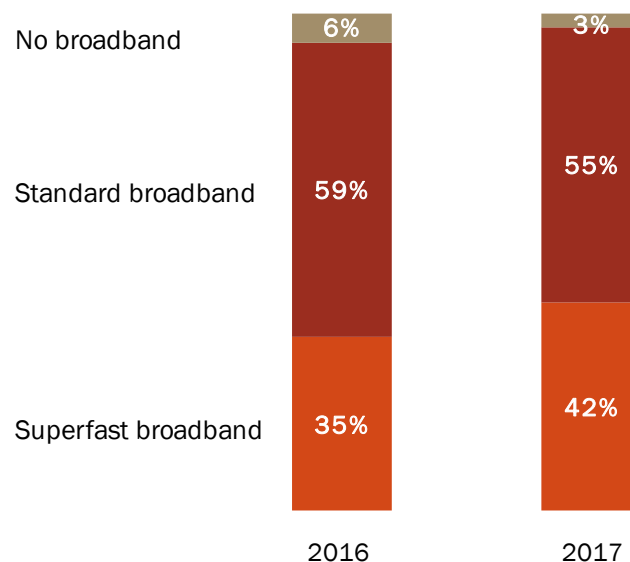
4.1 Introduction

The *Digital Maturity Survey for Wales 2017* report represents the second in our series of annual *Surveys*, and allows for the introduction of some comparative analysis. Section 4.2 presents the aggregate-level analysis, comparing the year-on-year results of the 2016 and 2017 surveys for the whole sample of SMEs. Section 4.3 shows a more granulated firm-level analysis of a sub-sample of SMEs that took part in both 2016 and 2017 surveys¹⁶.

4.2 Aggregate-level comparative results

There has been a year-on-year positive trend in superfast adoption. Figure 4-1 shows that the proportion of SMEs having access to superfast broadband increased by 7 percentage points from 35% in 2016 to 42% in 2017, while the proportion of standard and no broadband users decreased by 4% and 3%, respectively.

Figure 4-1 Adoption of broadband, by type, 2016 and 2017



¹⁶ The first year of the survey (2016) generated a small sample of responses to compare against, but as the annual survey programme progresses, future years will yield more results to generate new insights and recognise trends.

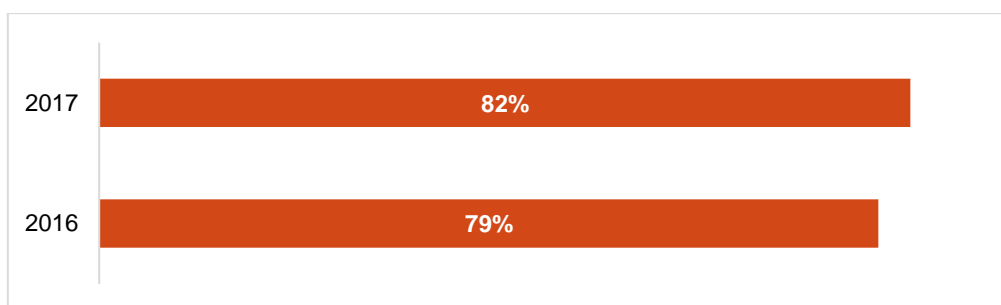
The annual spend on broadband subscription increased by 17%. This may suggest that SMEs switched to more expensive high-speed contracts to enable access to the cloud.

As can be seen from Table 4-1, business expenditure on hardware and network has decreased, while investment in software has grown. This might suggest that increased spending on broadband subscriptions has enabled SMEs to make greater use of cloud computing software and computing capability, and reduce physical ICT assets such as in-house servers. This trend is also evident in Figure 4-2 which shows that business use of cloud computing has increased by 3 percentage points from 2016 to 2017.

Table 4-1 Annual average spend on ICT infrastructure, £ per employee, 2016 and 2017

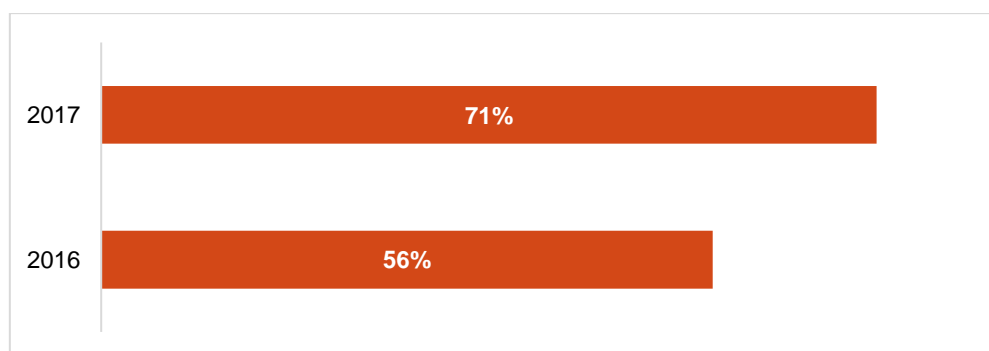
ICT Infrastructure category	2016	2017
Hardware	684	624
Software	662	711
Network	180	92
Broadband subscription	113	132

Figure 4-2 Use of cloud computing services, 2016 versus 2017



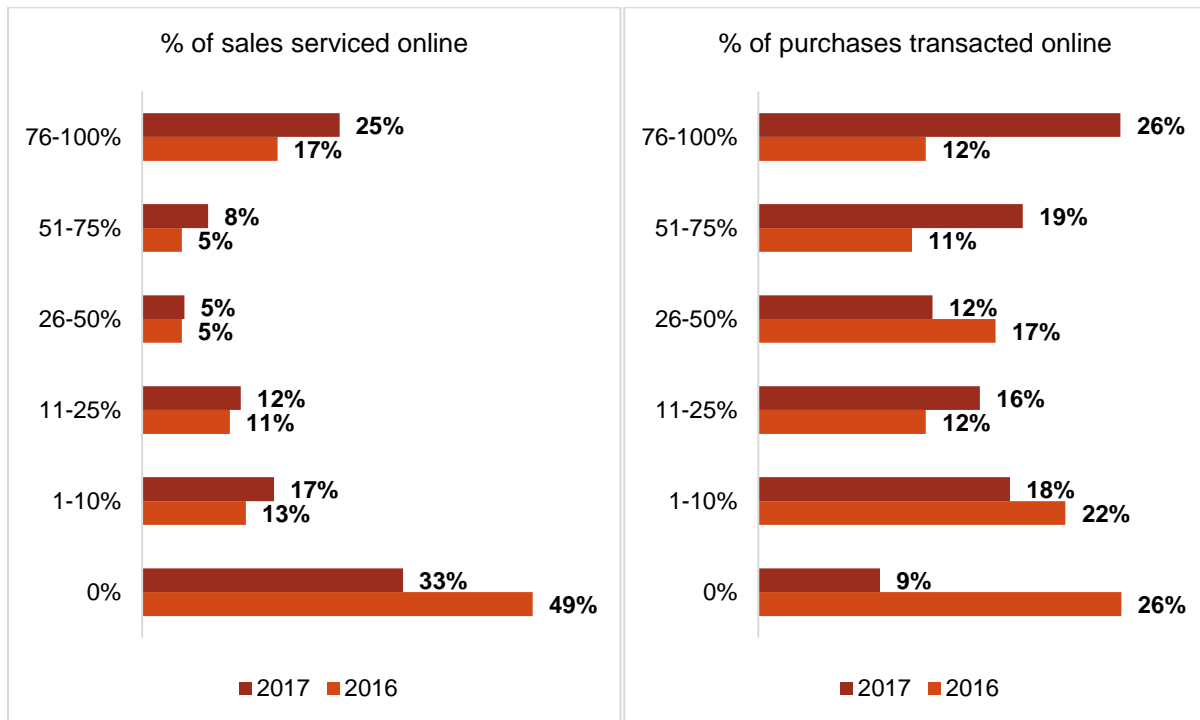
SMEs are improving their internal ICT skills capabilities. Figure 4-3 suggests that the proportion of SMEs that have at least 50% of employees with intermediate or above ICT skills has increased by 15 percentage points from 56% in 2016 to 71% in 2017.

Figure 4-3 Proportion of SMEs where over half of workforce has intermediate or above ICT skills, 2016 versus 2017



The number of SMEs reporting a higher proportion of e-sales and e-purchases has increased from 2016. The year-on-year results in Figure 4-4 show that the proportion of SMEs with zero e-sales and e-purchases has decreased by 16 and 17 percentage points, respectively. On the other hand, the proportion of SMEs with the highest share (76-100%) of e-sales and e-purchases has increased by 8 and 14 percentage points. This finding indicates that the role of e-commerce is becoming an important part of business operations and further supports the premise that SMEs are becoming more digitalized.

Figure 4-4 Share of e-sales and e-purchases in total sales and purchases, 2016 versus 2017



A summary of the percentage point increase in aggregate level results between the 2016 and 2017 surveys can be found in Table 4-2 below.

Table 4-2 Summary of aggregate-level comparative results, 2016 to 2017

	Percentage point increase 2016 to 2017
E-commerce-sales > 50%	+11%
E-commerce purchases > 50%	+22%
Workforce Intermediate or above ICT skills	+15%
Use of cloud computing	+3%
Adoption of superfast broadband	+7%

4.3 Firm-level comparative results

Longitudinal sub-sample analysis. The results from the two *Digital Maturity Surveys* so far undertaken (2016 and 2017), have been compared for the group of SMEs that had taken part in both years. A total of 60 businesses are included in this sub-sample, and some aggregated results are included in this longitudinal analysis.

Due to the relatively small size of the sub-sample, the following results should be treated with a degree of caution. However, this analysis can provide a broad indication of the direction and extent of SME progress towards greater digital involvement.

Findings for this sub-sample are presented for categories where questions were asked in the same or very similar manner over the two years of the survey, and include: broadband adoption; average download and upload speeds; e-commerce; website; and existence of ICT budget.

Adoption of superfast broadband. In the *Digital Maturity Survey 2016* just over a third of the longitudinal sub-sample (34%) had adopted superfast broadband. As shown in Table 4-3, by the time of the 2017 survey nearly a half of the group had adopted superfast broadband (an increase of 15 percentage points to 49%).

The extent of the increase in superfast adoption is likely to have been underestimated in this sub-sample, as the definition of what constitutes “superfast broadband” changed from 2016 (minimum download of 24 Mbps) to 2017 (minimum download of 30 Mbps).

Table 4-3 Broadband adoption for sub-sample, 2016 and 2017 (% of SMEs)

Broadband adoption status	2016	2017
No broadband	3%	3%
Standard broadband	63%	48%
Superfast broadband	34%	49%

Average download speeds. Nearly a third of SMEs in the longitudinal sample reported average download speeds of 30 Mbps or more in 2016 (32%). In the 2017 this figure had increased by 9 percentage points to 41%, as shown in Table 4-4.

At the other end of the scale there had been no improvement, with the percentage of businesses averaging download speeds of less than 2 Mbps increasing by 2 percentage points to 11% between 2016 and 2017.

Table 4-4 Average download speeds for sub-sample, 2016 and 2017 (% of SMEs)

Average download speeds	2016	2017
Less than 2 Mbps	9%	11%
2 Mbps or more and less than 10 Mbps	39%	20%
10 Mbps or more and less than 30 Mbps	20%	28%
30 Mbps or more and less than 100 Mbps	32%	37%
100 Mbps or more	0%	4%

Average upload speeds. Table 4-5 shows that there was a general improvement from 2016 to 2017 in the average upload speeds reported by the SMEs in the longitudinal sub-sample. In 2016 over half of the sub-sample reported upload speeds of less than 2 Mbps (53%). In the 2017 survey, however, the proportion in this category had dropped to two-fifths (40%).

There was a 5 percentage point increase between 2016 and 2017 in the number of businesses in the sub-sample reporting upload speeds of 30 Mbps or more (from 4% to 9% in this year's *Digital Maturity Survey*).

Table 4-5 Average upload speeds for sub-sample, 2016 and 2017 (% of SMEs)

Average upload speeds	2016	2017
Less than 2 Mbps	53%	40%
2 Mbps or more and less than 10 Mbps	23%	15%
10 Mbps or more and less than 30 Mbps	21%	36%
30 Mbps or more and less than 100 Mbps	4%	9%
100 Mbps or more	0%	0%

E-commerce. Nearly two-in-five of the longitudinal sub-sample SMEs in 2016 reported that none of their sales were serviced online (39%). Table 4-6 shows that by 2017 this proportion had dropped to three-in-ten (29%). Between 2016 and 2017 there was an increase of 7 percentage points in the proportion of sub-sample businesses servicing three-quarters or more of their sales online (18% to 25%).

Table 4-6 Proportion of total sales serviced online for sub-sample, 2016 and 2017 (% of SMEs)

Proportion of sales online	2016	2017
0%	39%	29%
1-10%	16%	14%
11-25%	15%	10%
26-50%	4%	16%
51-75%	8%	6%
76-100%	18%	25%

Table 4-7 highlights that 18% of businesses in the longitudinal sub-sample did not purchase anything online in 2016. In 2017, however, this figure had decreased by 14 percentage points to 4%. The percentage of the sub-sample transacting more than half of their total purchases online increased by 16 percentage points to 54% when comparing 2016 to 2017.

Table 4-7 Proportion of total purchases transacted online for sub-sample, 2016 and 2017 (% of SMEs)

Proportion of purchases online	2016	2017
0%	18%	4%
1-10%	20%	12%
11-25%	16%	18%
26-50%	8%	12%

51-75%	24%	18%
76-100%	14%	36%

Website. There was an increase of 6 percentage points in the proportion of sub-sample businesses having a website when 2016 is compared with 2017. Table 4-8 shows that in 2017, 93% of the sub-sample reported having a website, as compared to 87% in the previous year's survey.

Table 4-8 Proportion of sub-sample having a website, 2016 and 2017 (% of SMEs)

	2016	2017
Have a website	87%	93%
Do not have a website	13%	7%

Table 4-9 shows that the proportion of the longitudinal sample reporting having a dedicated ICT budget increased from 2016 to 2017 by 12 percentage points to 27%.

Table 4-9 Proportion of sub-sample having a dedicated ICT budget, 2016 and 2017 (% of SMEs)

	2016	2017
Have a dedicated ICT budget	15%	27%
Do not have a dedicated ICT budget	85%	73%

Summary. The results shown above covering the analysis of the longitudinal sub-sample highlight an increasing adoption, and usage of, broadband technologies over the one year period. Although the sample size is somewhat restrictive, and statistically relevant conclusions may be difficult to substantiate, these findings do provide some evidence on broadband maturity in Wales at present. The main results are summarised in Table 4-10.

Table 4-10 Summary of firm-level comparative results, 2016 to 2017 (n = 60)

	Percentage point increase 2016 to 2017
Superfast broadband adoption	+15%
Download speed average > 10 Mbps	+17%
Upload speed average > 10 Mbps	+20%
Business has a website	+6%
Business has an ICT budget	+12%
E-commerce: Sales online >50%	+5%
E-commerce: Purchases online >50%	+16%

5. Conclusions

5.1 Introduction

The aim of the Digital Dashboard for Wales is to draw out a snapshot of the results presented throughout the report. This provides an overview of digital maturity for the sample of respondents, which can then be used to monitor developments over time. These results are considered alongside summary information from other (secondary) sources, which provide supplementary contextual indicators.

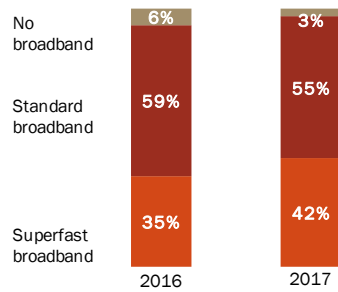
5.2 The Digital Dashboard for Wales

The Digital Dashboard for Wales provides an overview of digital maturity in three main areas: ICT Infrastructure, ICT Resources and ICT Use. Under each key area comparisons are drawn against results from 2016 to 2017. Due to the introduction of a new methodology, it is only possible to provide a one year snapshot of the Digital Maturity Index component of the Digital Dashboard.

Figure 5-1 Digital dashboard for Wales 2017

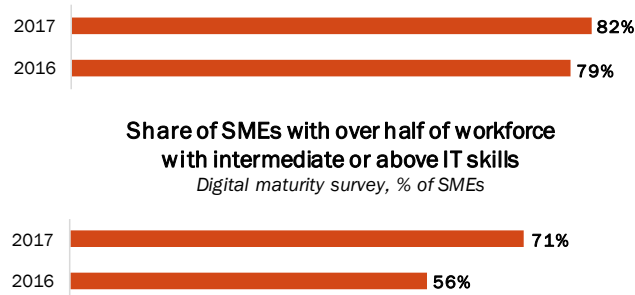
ICT INFRASTRUCTURE

Adoption of broadband
Digital maturity survey, % of SMEs



ICT RESOURCES

Use of cloud computing services
Digital maturity survey, % of SMEs

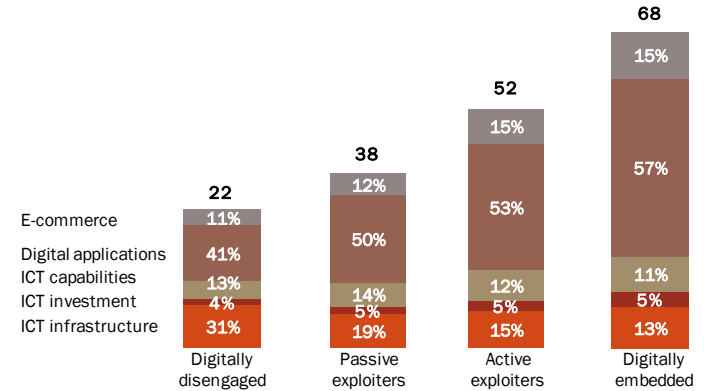


Share of SMEs with over half of workforce with intermediate or above IT skills
Digital maturity survey, % of SMEs



ICT USE

Digital maturity index
Digital maturity survey 2017, breakdown of digital maturity scores



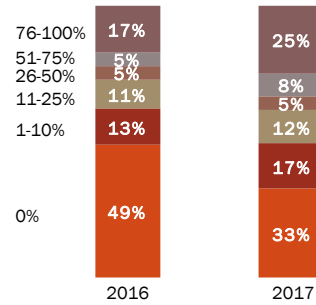
SMEs able to receive superfast broadband in Wales
Ofcom, % of premises



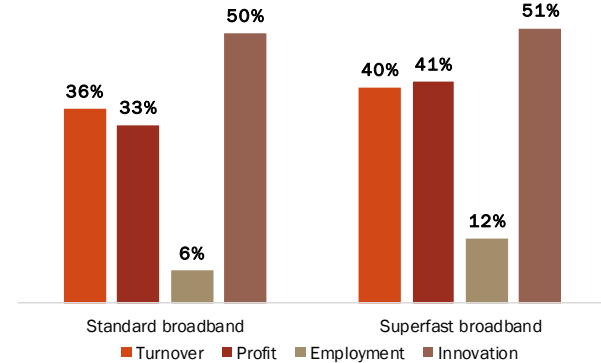
Annual IT costs
Digital maturity survey, £ per employee

Spending category	2016	2017
Hardware	£684	£624
Software	£662	£711
Network	£180	£92
Broadband subscription	£113	£132

Share of e-sales in total sales
Digital maturity survey, % of SMEs



Performance of SMEs by type of broadband
Digital maturity survey 2017, % of SMEs reporting positive outcomes from access to broadband services



5.3 Implications

The results presented in Figure 5-1 represent the second in the series of Digital Dashboards and with the programme of research being undertaken over the period to the end of 2020. The 2016 *Digital Maturity Survey* had fewer respondents than the 2017 *Survey*. We believe this was in part due to the size of the survey instrument. A number of refinements to the survey tools occurred prior to the launch of the 2017 *Survey*. In particular the *Survey* focuses on a smaller number of questions, and with an emphasis on use of the superfast broadband resource, and performance implications. This undoubtedly had an impact on improving the response rates from SMEs in the regional economy. With over 450 responses to add to those from last year the research programme is beginning to build a valuable picture of trends in the use of superfast broadband in Wales, while developing better quality insights from a larger number of sectors, places and businesses of different sizes. Iterative improvements in survey design, marketing and processing will continue through the programme.

In short, the Digital Dashboard 2017 resulting from analysis of the *Digital Maturity Survey* for Wales reveals improvements in the number of respondents having adopted superfast broadband. However, adoption of the resource is not enough for Welsh SMEs. It is how businesses are using the resource to improve business processes and productivity that is critical.

The 2017 Dashboard reveals improvements in SMEs' use of cloud computing resources, improvements in the amount of sales undertaken electronically. The 2017 research highlights consistent improvements in adoption and use of resources made available through superfast broadband. Moreover the 2017 Dashboard reinforces findings from 2016 in terms of how more digitally engaged businesses gain improvements in terms of sales, innovation and profits. Further analysis of this will be undertaken as part of the forthcoming Economic Impact Report. This will seek to show what these types of improvements might mean for SMEs across the whole Welsh economy.

The material differences identified between SMEs classified as Digitally Embedded as opposed to Digitally Disengaged serves as a real warning for businesses. It signals a need for the Digitally Disengaged to connect with the Welsh Government support that is available to assist businesses to better use the opportunities levered by superfast broadband access.

Of particular interest this year was the opportunity to examine 60 businesses from the 2016 *Survey* which also responded to the 2017 *Survey*. It was very encouraging here to see among this sub-sample a marked increase in the proportion of the businesses adopting superfast broadband, having improvements in upload and download speeds, but also improving their use of the resource, and with this evidenced in terms of increases in e-commerce, ICT budgets, and sales online. The larger number of responses in the 2017 *Digital Maturity Survey* will allow to build on the longitudinal element in future years with a larger number of businesses.

To conclude, the need for sustained improvements in SMEs' performance throughout the Welsh economy has never been more important. Wales has been recognised as one of the regions of the UK which could be particularly affected by Brexit processes. While much of the debate has been focused on large firm effects in Wales, SMEs serving domestic demands, and serving these larger businesses in the region are facing real challenges. Moreover, recent analyses of the gross value added per capital gap between Wales and the UK as a whole continues to point to productivity differences. This report shows how improved use of the superfast broadband resource can lead to sustained improvements in business performance in diverse sectors and areas of Wales. However, even for businesses that were classified as Digitally Embedded there are still challenges to innovate and exploit the broadband resource more and more.

Overview of 2017 sample

The following tables show the samples of business population in Wales in comparison to the sample achieved in 2017 survey. The data was used to carry out stratification and weighting methods.

Table A-1. Business Population: Wales 2017 by industry and size (% of all SMEs)

	Micro	Small	Medium	All SMEs
Manufacturing	8.2%	0.6%	0.2%	9.0%
Construction	24.9%	0.5%	0.1%	25.5%
Wholesale & retail	16.0%	1.0%	0.1%	17.2%
Transport & storage	6.4%	0.2%	0.0%	6.7%
Accommodation & food services	6.8%	1.0%	0.1%	7.9%
Information & communication	4.7%	0.1%	0.0%	4.8%
Business & other services	27.6%	1.0%	0.2%	28.7%
All industries	94.8%	4.5%	0.7%	100.0%

Source: Annual Business Population Estimates, ONS.

<https://www.gov.uk/government/statistics/announcements/business-population-estimates-2017>

Table A-2. Sample: Digital Maturity Survey 2017, by industry and size (% of all SMEs)

	Micro	Small	Medium	All SMEs
Manufacturing	7.0%	4.3%	3.5%	14.8%
Construction	2.5%	4.3%	2.0%	8.8%
Wholesale & retail	7.0%	3.5%	1.3%	11.8%
Transport & storage	1.3%	0.5%	0.8%	2.5%
Accommodation & food services	8.0%	1.0%	0.5%	9.5%
Information & communication	8.0%	2.5%	1.3%	11.8%
Business & other services	27.3%	9.8%	4.0%	41.0%
All industries	61.0%	25.8%	13.3%	100.0%

Source: Digital Maturity Survey 2017, WERU.

The next tables provide details on the sample achieved by the 2017 survey. They include a breakdown of the sample by sector, location, firm size.

Table A-3. Sector

	Number of SMEs	Share of SMEs
C: Manufacturing	64	14%
F: Construction	37	8%
G: Wholesale & retail trade; repair of motor vehicles	51	11%
H: Transport & storage	10	2%
I: Accommodation & food service activities	41	9%
J: Information & communication	49	11%
K: Financial & insurance activities	6	1%
L: Real estate activities	6	1%
M: Professional, scientific & technical activities	62	14%
N: Administrative & support service activities	9	2%
O: Public administration & defence	2	0%
P: Education	21	5%
Q: Human health & social work activities	16	4%
R: Arts, entertainment & recreation	10	2%
S: Other service activities	55	12%
Unknown	14	3%
Grand Total	453	100%

Table A-3. Location, by local authority area

	Number of SMEs	Share of SMEs
Anglesey	6	1%
Blaenau Gwent	5	1%
Bridgend	17	4%
Caerphilly	15	4%
Cardiff	64	14%
Carmarthenshire	28	6%
Ceredigion	18	4%
Conwy	18	4%
Denbighshire	15	3%
Flintshire	9	2%
Gwynedd	42	9%
Merthyr	5	1%
Monmouthshire	20	4%
Neath Port Talbot	16	4%
Newport	10	2%
Pembrokeshire	20	4%
Powys	45	10%
RCT	24	5%
Swansea	21	5%
Torfaen	10	2%
Vale of Glamorgan	13	3%
Wrexham	16	4%
Unknown	16	4%
Grand Total	453	100%

Table A-4. Employee size

	Number of SMEs	Share of SMEs
Micro (0 to 9 employees)	244	54%
Small (10 to 49 employees)	103	23%
Medium (50 to 249 employees)	53	12%
Unknown	53	12%
Grand Total	453	100%



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<http://www.cardiff.ac.uk/superfast-broadband-project/digital-maturity-survey>

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