

**Connecting
Small Businesses in the US**

Commissioned by Google

2018

This publication contains general information only and Deloitte is not, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor. Deloitte shall not be responsible for any loss sustained by any person who relies on this publication.



Contents

Highlights	01
Overview of digital engagement among US small businesses	04
Drivers of digital adoption amongst US small businesses	06
The organizational benefits from digital tools	11
Personal use of technology drives digital engagement of small businesses	13
US small businesses face challenges in adopting digital tools	15
Adoption of digital tools is lower in some key small business segments	18
An action plan towards more digitally engaged US small businesses	24
References	27
Appendix: Statistical tests	28
Meet the team	31



Highlights

Digital technology is driving many changes in consumer behavior and the business environment. The use of digital tools enables businesses to increase their accessibility and connectivity with their customers, and in today's digitally-driven economy, many consumers now expect to be able to engage with businesses through online channels.

The business dividends from using digital tools such as online marketing methods and e-commerce are well-known. Small businesses with less than 250 employees can access new markets and target new customers at a relatively affordable cost using digital tools. Deloitte's analysis in *Connected Small Businesses US* found that, relative to businesses that have low levels of digital engagement, digitally advanced small businesses realized significant benefits. They:

- Earned 2 times as much revenue per employee
- Experienced revenue growth over the previous year that was nearly 4 times as high
- Were almost 3 times as likely to be creating jobs over the previous year
- Had an average employment growth rate that was more than 6 times as high
- Were also 3 times as likely to have exported over the previous year.

However, despite these potential gains, **80% of US small businesses aren't taking full advantage of digital tools** such as data analytics and more sophisticated online tools. This next report in the series draws fresh insights from a survey of more than 2,000 US small businesses about why the majority of small businesses are not fully realizing their digital potential.

What are the key drivers of digital engagement among small businesses?

Small businesses **place the highest value on customer benefits** such as greater market reach and brand promotion. 38% of small businesses cited increased sales and revenue as a benefit associated with using digital tools. Women-owned small businesses, which were found to be more digitally engaged than their male-owned counterparts, were more likely to identify increased sales as the top benefit resulting from the utilization of digital tools.

Organizational benefits such as improved communications, flexibility and lower business costs are less likely to be identified by small businesses as drivers of technology adoption. This suggests businesses are missing the full picture of digital's impact. Digitally advanced small businesses were twice as likely to have employees that collaborate regularly, as compared to businesses at a basic level of digital engagement. Collaborative employees are better able to generate value, innovate and improve productivity. Many small businesses also believe that digital engagement is associated with happier employees: 69% of digitally advanced businesses stated that digital tools improve employee satisfaction.

One indicator of whether a business is digitally engaged is the tech savviness of its leaders. That's because **personal use of technology** helps small business owners develop digital skills and improves their understanding of how to use digital channels effectively for customer engagement. 77% of US small business owners are regular users of technology for personal reasons, such as online shopping or consuming digital media.

What's holding small businesses back in the digital age?

With so many small businesses not fully embracing the digital age, one might expect to find a broad range of barriers that are tough to overcome such as inadequate broadband, a lack of technical skills, or huge financial barriers to investing in technology. However, the issues are actually much simpler: **many small businesses need to be made aware of the benefits of the internet** and other digital tools.

Amongst the least digitally engaged small businesses, **40% believe that digital tools are 'not relevant for my business'**, and 38% that 'they are not effective for my business'. This indicates that less digitally engaged businesses may be unaware of the benefits associated with digital tools. This suggests that efforts to improve digital use across the US should focus on exploring and increasing awareness of the benefits that can be realized through digital technologies. In addition, 34% identified 'privacy and security concerns' as amongst their top three digital barriers.

Drivers of small
business digital engagement

Barriers holding
small businesses back



38%

Increase sales and revenue



31%

Promote brand awareness



30%

Access new customers in US



40%

Not relevant for my business



38%

Digital not effective for my business



34%

Privacy and security concerns



Particular groups of US small businesses risk falling behind on the digital engagement ladder. Small businesses with **older owners, located in rural areas and with just a few employees** have lower rates of digital adoption – for example, 27% of rural businesses use only a basic level of digital tools, compared to 18% of non-rural businesses. And yet for these groups, the growth benefits of digital engagement can be as large as those realized by their more engaged younger, non-rural and larger counterparts. The average increase in revenue growth for digitally advanced small businesses, compared to those with only basic digital technology, is broadly similar irrespective of business location or size (at around 33 percentage points).

How can we assist the 80% to become more digitally engaged?

A combined effort between small businesses, policymakers and other stakeholders in the small business ecosystem is required to improve the digital engagement of US small businesses, particularly in cohorts that are currently less digitally engaged. Potential actions towards more digitally engaged US small businesses include:

- **Increasing awareness of digital opportunities** to assist small business owners in identifying when, where and how they could use digital tools for maximum impact. A mentoring program might assist in facilitating connections between small businesses and expert advisers, to provide tailored guidance that suits a particular business's digital requirements.
- **Improving digital skills training programs**, in order to help ensure that small businesses can gain the skills and knowledge required to use digital tools effectively. With small business owners often being time constrained, training programs need to be relevant, short and flexible to allow these individuals and businesses to develop their digital skills.
- **Recognizing that different digital journeys** will be faced by small businesses, and that these will evolve over time. Since different technologies will be relevant for different businesses, it's important for small businesses to go at their own pace and adopt the digital tools that meet their business needs – one size doesn't fit all.
- **Preparing to address the challenges** associated with going digital, such as potential security and privacy risks. This includes considering what tools and resources are available to small businesses that can meet their digital requirements while also providing a safe and reliable environment in which to conduct business operations.

Improving the digital engagement of 80% of US small businesses is not a task that can be completed overnight; however, taking these steps will enable less digitally engaged small businesses to seize new digital opportunities over time. This will be critical in achieving future small business growth as the consumer and business landscape become increasingly digital.

Overview of digital engagement among US small businesses

Small and medium sized businesses (SMBs) make a significant contribution to the US economy and are a core part of the overall business ecosystem. There are almost 29 million businesses with fewer than 500 employees in the US, representing 99.7% of all US businesses and, in 2013, they employed 56.8 million people or 48% of the private workforce (SBA 2016).

Growing SMBs can generate growth and broader benefits for employees, consumers and businesses of all sizes and across all industries throughout the US economy. In the 2017 *Connected Small Businesses US* report¹, we shone the spotlight on small businesses (those with fewer than 250 employees) and found that there are large growth dividends associated with adopting digital tools such as a web presence, social media, data analytics, e-commerce capabilities, online advertising and internal technologies. These digital tools can be used by US small businesses to access new markets, innovate through new product offerings, and better compete with larger companies.

The research presented in this report highlighted that there are substantial growth and employment dividends associated with higher levels of digital engagement for small businesses of all ages, and across all industries and geographies. US small businesses were found to experience an increase in revenue growth of 11 percentage points per additional level of digital engagement reached.

Furthermore, compared to the 20% of businesses with the most basic level of digital engagement, the top 20% most digitally advanced small businesses:

- Earned 2 times as much revenue per employee
- Experienced revenue growth over the previous year that was nearly 4 times as high
- Were almost 3 times as likely to be creating jobs over the previous year
- Had an average employment growth rate that was more than 6 times as high
- Were also 3 times as likely to have exported over the previous year.

It was also found that small businesses with relatively high levels of digital engagement were more likely to innovate through new product offerings, have a more diversified customer base, and experience increased inquiries across the sales funnel.

As part of this research series, a survey of more than 2,000 small business owners and managers was conducted in order to assess how US small businesses use digital tools and quantify the impact of this digital engagement on business performance. Deloitte created a digital engagement ladder that classified each surveyed business into one of four digital engagement categories, based on their use of digital tools across six areas – web presence, social media, data analytics, e-commerce, online advertising and internal digital use.

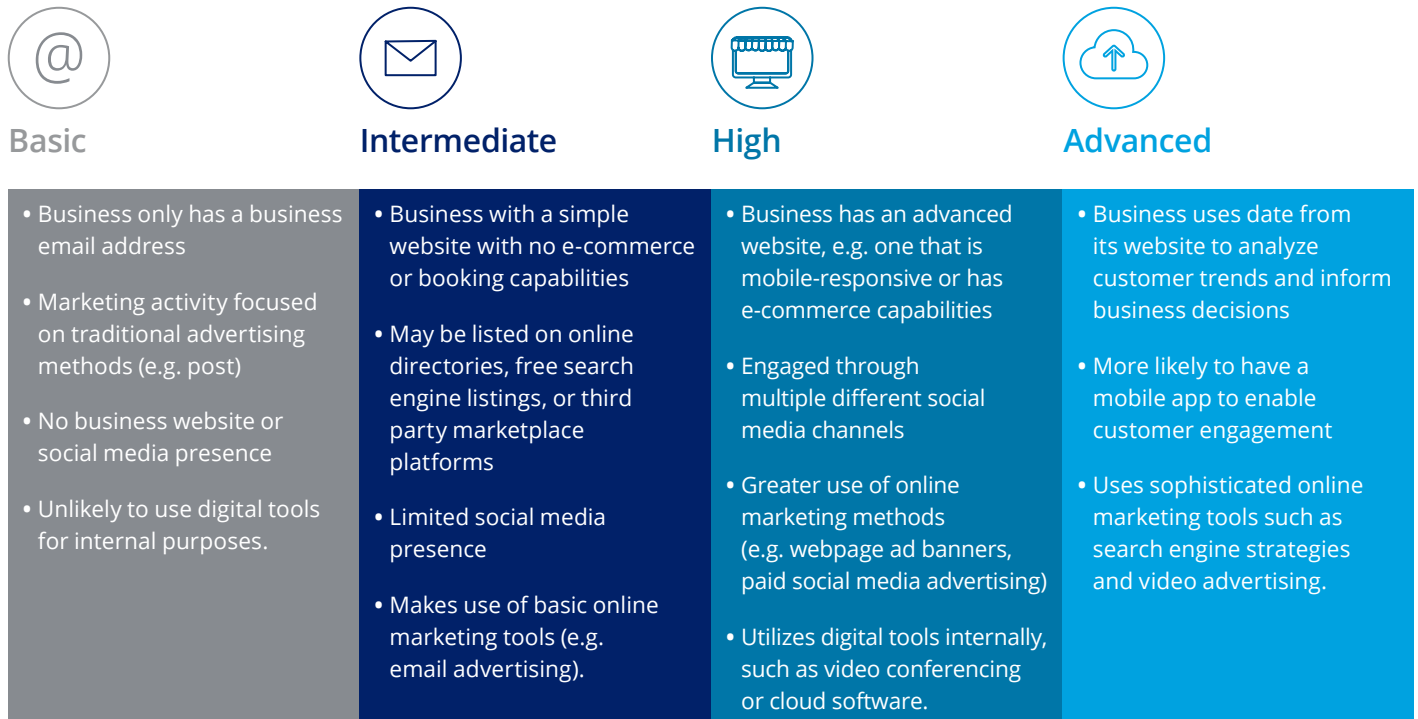
Recognizing that not all digital tools are relevant for different small businesses, we used multiple correspondence analysis to generate a digital engagement score for each individual business, which characterized the overall sophistication of the business's use of digital tools across the six areas. Small businesses were then classified across the four categories of the engagement ladder – represented by basic, intermediate, high and advanced levels of digital engagement – using a bell-shaped distribution.

More specifically, the distribution used was 20%-30%-30%-20% of small businesses being respectively classified as being at a basic, intermediate, high and advanced level of digital engagement, having ranked all businesses in the sample by their digital engagement score. Further details on the statistical approach used can be found in the *Connected Small Businesses US* report.

Figure 1 summarizes a set of high-level representative characteristics for US small businesses at each level of digital engagement, illustrating how small businesses at different engagement levels might use the broad range of digital tools canvassed in our analysis. Note that while these provide representative examples, each small business will use a different set of digital tools depending on their customers, operations and other business-specific requirements.

1. The Connected Small Businesses US report is available online at: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-connected-small-businesses.pdf>.

Figure 1: Representative characteristics of US small businesses at each level of digital engagement



Source: Deloitte Consulting LLP (2017)

The *Connected Small Businesses US* report established that there are significant growth dividends associated with increased digital engagement by small businesses. This next report in the series delves deeper into the how and why of digital engagement among small businesses. It also explores the barriers that may exist to prevent US small businesses from improving their use of digital tools, and discusses what businesses can do to succeed in an increasingly digitized economy.

Drivers of digital adoption amongst US small businesses

The growing prominence of digital technologies in the consumer and business landscape means that US small businesses need to adapt to changing circumstances. Technologies such as data analytics and mobile advertising are becoming more integrated into how small businesses develop or deliver their products and services.

Ongoing developments in how technologies such as mobile and video can be used to engage consumers and improve the customer experience will offer further opportunities for US small business owners to grow and innovate. In particular, these new opportunities can provide fresh drivers to motivate the increased adoption of digital tools amongst the 80% of US small businesses that are currently not fully realizing their digital potential.

What are the factors that are currently driving small businesses to become more digitally engaged? We find that US small business owners and managers recognize that there are a diverse range of benefits associated with using digital tools. Increased sales and revenue was the benefit that was most frequently selected by survey respondents, with 38% identifying this as one of the top three benefits from utilizing digital tools in their business (Chart 1). Our previous research in *Connected Small Businesses US (2017)* has already found that there are a range of channels through which digital tools can facilitate increased sales and revenue, such as by increasing new product offerings, export opportunities and customer inquiries.

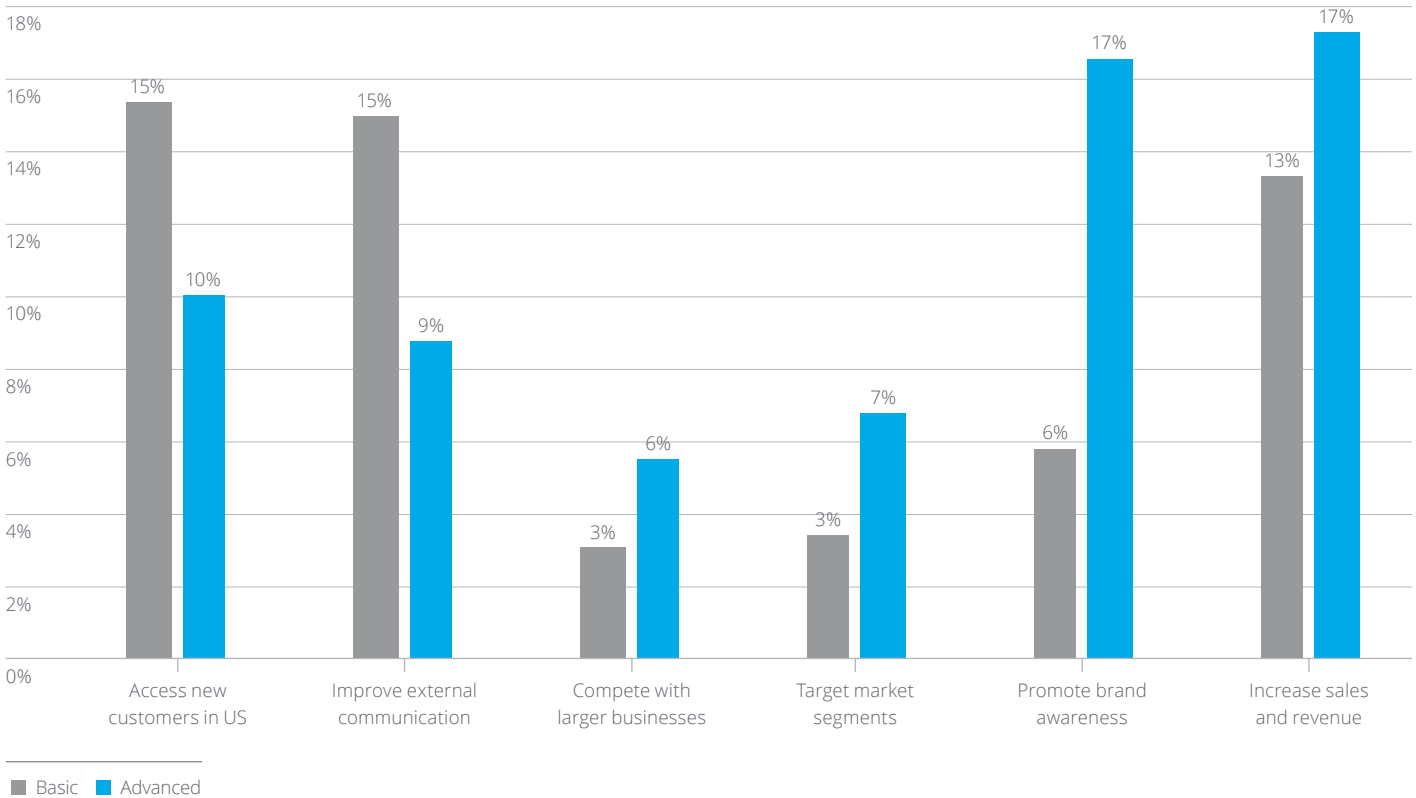
The results suggest that it is the benefits relating to customer engagement, marketing and recruiting that are most highly valued by US small businesses. For example, around 30% of small businesses identified brand promotion, accessing new US customers, and the ability to connect with customers 24/7 as amongst the top three benefits from using digital tools. By contrast, the organizational benefits of communication within the business, greater flexibility and lower costs were selected in the top three by 20% or less. This speaks to companies that are offering digital solutions for small businesses: these small businesses care about customer experience and engagement, and so the most relevant digital tools for this group are likely to be targeted towards these purposes.

Furthermore, the ability for digital tools to increase connectivity with overseas markets was more likely to be recognized by small businesses that are exporting. The benefit of accessing new customers overseas was identified as one of the top three benefits of using digital tools by 20% of exporting US small businesses, though only 7% of all small businesses surveyed selected this benefit in their top three.

Chart 1

Perceived small business benefits from using digital tools



Chart 2: Different perceptions of digital benefits between basic and advanced small businesses

* Percentages indicate the share of respondents in each digital engagement category who ranked each benefit as number 1

Sources: Deloitte Consulting LLP, Research Now (2017)

Note: The differences between Basic and Advanced small businesses are statistically significant at the 5% level for the 'access new customers in US', 'improve external communication' and 'promote brand awareness' benefits above.

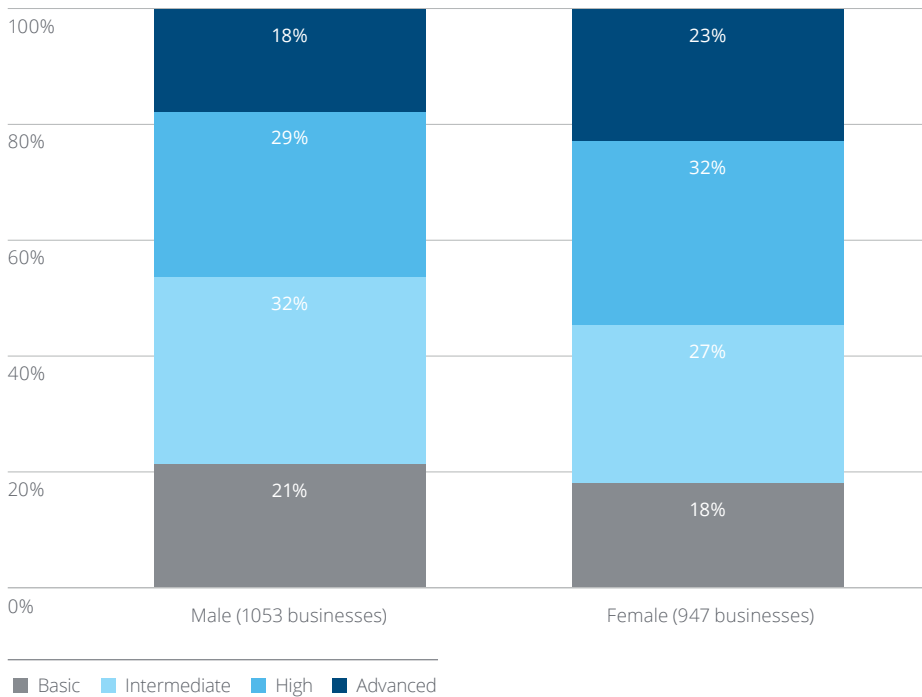
Small businesses at different stages of the digital engagement ladder also identify different benefits from using digital tools. Those with a basic level of digital engagement were more likely to select general factors – such as accessing new customers in the US or improving customer communications – as the most important benefit. Meanwhile, small businesses with an advanced level of digital engagement have a greater propensity to be more sophisticated in their considerations on the benefits associated with using digital tools. These small businesses were relatively more likely to select factors supporting a specific element of their business strategy as the most important benefit from digital tools, such as targeting market segments or promoting brand awareness (Chart 2).

Higher levels of digital engagement and using digital tools in a targeted manner can help to drive greater success in an increasingly competitive, dynamic and globalized business environment. For example, previous research has found that small businesses that are more active in their use of technology are able to make more evidence-based choices, being 2.5 times more likely to use real-time data to inform their business decisions than their offline counterparts (Bock, Lansiti and Lakhani 2017). This means that more digitally savvy small businesses are able to stay ahead of the curve by responding more quickly to changes in customer and market trends, and being proactive in following sales leads.

In addition, our research also finds that women-owned small businesses are particularly likely to place a high value on the growth potential that is offered by technology. In particular, 18% of female respondents in our survey nominated ‘increased sales and revenue’ as the top benefit associated with using digital tools, compared to 14% of male respondents.² Women-owned businesses make an important and growing contribution to the US economy, with the number of women-owned firms increasing by 45% between 2007 and 2016, and their business revenues rising by 35% over this period (American Express OPEN 2016).

Within the digital engagement ladder framework, US small businesses with female owners and managers are found to have slightly higher average levels of digital engagement than their male counterparts.³ Around 55% of small businesses where the responding owner or manager was female were found to be at an advanced or high level of digital engagement, as compared to 47% of male business owners and managers (Chart 3). The case study on the following page also describes how one female-owned small business in the US is using digital channels to drive business growth and connect with target markets around the world.

Chart 3: Digital engagement by gender of respondent



Sources: Deloitte Consulting LLP, Research Now (2017)

2. This difference was statistically significant at the 5% level.
 3. Pairwise tests for statistical significance – using the approach outlined in Holm (1979) – indicate that this difference in the average digital engagement scores for respondents from different genders is statistically significant at the 5% level. More details can be found in the Appendix.



Case study

The Natural Baby Company

Bozeman, Montana

With digital tools providing an important channel for businesses to grow their operations and reach new customers, female small business owners with greater levels of digital engagement can reap significant benefits in the marketplace. The Natural Baby Company is a small business based in Bozeman, Montana, which sells organic and eco-friendly baby products to parents around the world. Founder and CEO Kim Ormsby has used the web to connect with like-minded parents and communities, recognizing that “new parents aren’t dragging their kids out to shop. If they’re home rocking the baby to sleep, they’d rather shop online.”

The business uses digital marketing (including videos on products and reviews) to advertise to customers both in the US and overseas, and data analytics to optimize their marketing strategy. As a result, online sales have seen an average annual growth rate of 32% over the past 3 years, representing the majority of the company’s overall revenue. Kim says that “the web is pretty much where all of our growth is happening”, and that they strive to be “a part of everyone’s parenting journey”.

The organizational benefits from digital tools

There are many ways that digital tools can be used to drive business growth, including through access to new markets, increased customer interest throughout the sales funnel, and more diverse product offerings. It is clear from our survey results that many small businesses recognize this potential as they have identified increased sales, revenue and customer reach as amongst the key benefits that can be realized through the use of digital tools. In addition to these growth dividends, the use of digital tools can also have organizational benefits to the business's operations. For example, digital tools can facilitate better communication and collaboration between teams and locations. Cloud software and storage enable staff to easily share files and collaborate on documents online, while instant messaging systems and video-conferencing capabilities allow staff to

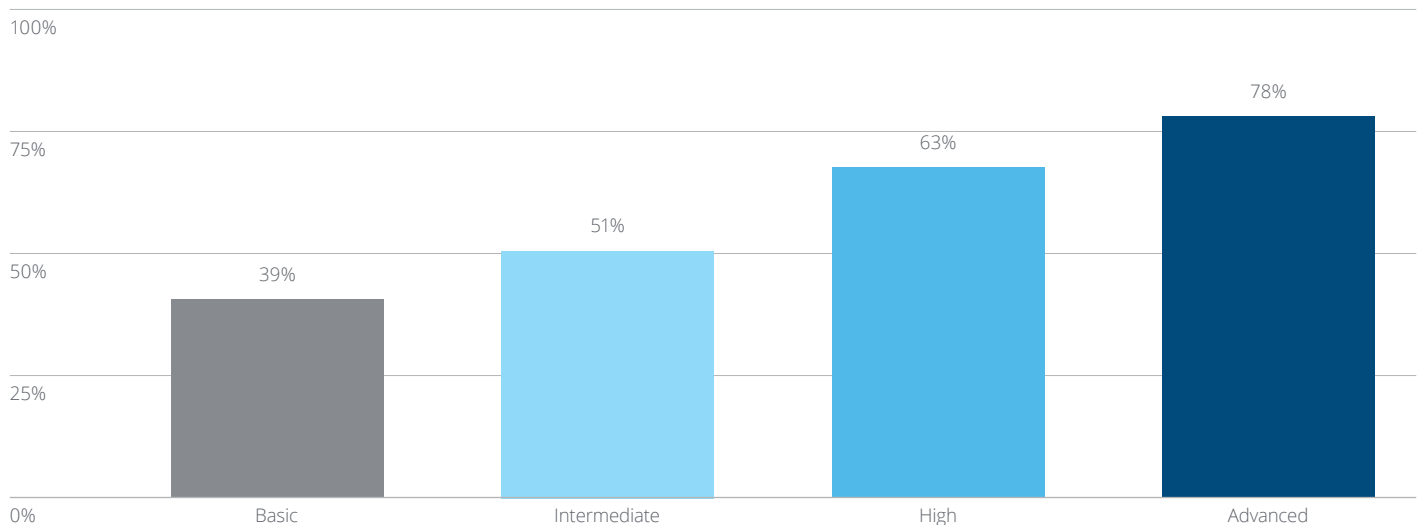
connect with each other across different offices, sites or when working from home. A previous survey of 753 business professionals found that 83% of employees depend on technology for effective collaboration (Alfresco 2015). These digital tools provide a flexible option for small businesses to maintain efficient operations, potentially at a lower cost to offline alternatives (for example, the cost of video-conferencing is lower than the travel costs associated with face-to-face meetings).

However, in our survey only 20% of all respondents identified improved internal communications as amongst the top three benefits associated with using digital tools, with even fewer small businesses highlighting improved flexibility (18%) and lower costs (13%) as potential benefits.

This suggests that US small businesses may need to be better informed about the organizational dividends that can be realized through the use of digital tools within their businesses and workplaces.

There are big organizational dividends associated with small businesses' use of digital tools. Our modeling finds that the average US small business with an advanced level of digital engagement had a 78% likelihood of having employees that regularly collaborated over the previous 12 months – that is, collaborating on at least a weekly basis.⁴

Chart 4: Likelihood of regular employee collaboration over the past 12 months



Sources: Deloitte Consulting LLP, Research Now (2017)

4. Survey respondents were asked to nominate how often employees collaborate within their business, defined as employees working together to perform tasks (rather than individual workers performing tasks independently). The question referred to collaboration in general, rather than directly asking about the use of technology for collaborative purposes.

This was twice as likely as employees at US small businesses with only a basic level of digital engagement (Chart 4).⁵

And the benefits of collaboration for US small businesses can be significant. Previous research has shown that collaborative employees are better able to generate value, innovate and improve productivity in the workplace.

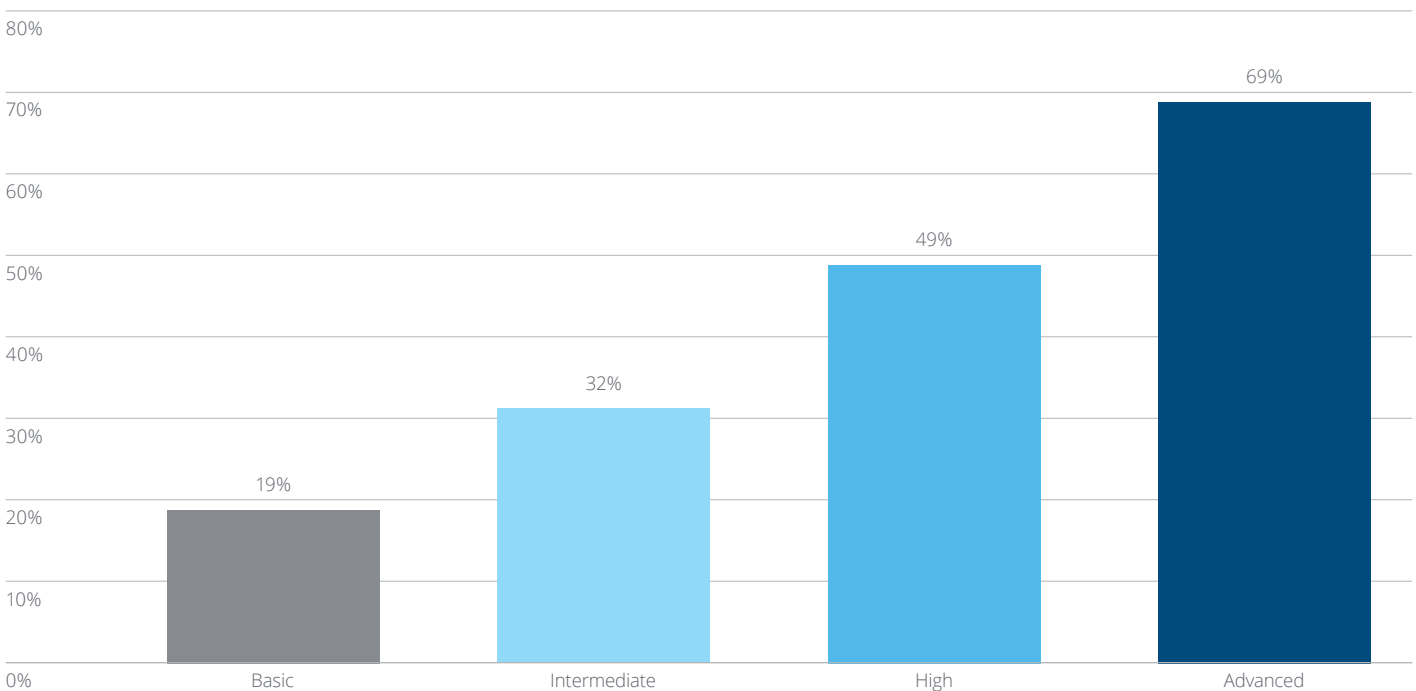
In particular, the Deloitte report *The Collaborative Economy* (2014) found that employees work 15% faster when they collaborate, and almost 3 in 4 employees state that collaboration helps them improve the quality of their work – of which 14% believe that it would be impossible to produce work of the same quality on their own.

The improved connectivity facilitated by the use of digital tools can also increase employee satisfaction in the workplace. In *The Connected Workplace* (2013), Deloitte found that the flexibility enabled by digital technologies in the workplace – such as the ability to work from home, bring-your-own device, and use workplace-specific social media – can play a major role in overall employee satisfaction and retention.

The report found that employees with access to flexible technology policies at work were 20% more likely to be satisfied at work, and were also less likely to have plans to leave their current employer over the next 12 months.

These findings are consistent with our survey results. 43% of US small business owners and managers stated that the use of digital tools within their business improves employee satisfaction in the workplace. In addition, more digitally engaged small businesses were more likely to report that using technology in the workplace has a positive impact on satisfaction levels. Almost 69% of digitally advanced businesses stated that digital tools improve employee satisfaction in their workplace, as compared to only 19% of businesses at the basic level of digital engagement (Chart 5).

Chart 5: Percentage of businesses who believe that use of digital tools improves employee satisfaction



Sources: Deloitte Consulting LLP, Research Now (2017)

Overall, this suggests that the organizational benefits of digital tools could potentially be a bigger driver of digital engagement among US small businesses. The organizational dividends of improved employee collaboration, productivity and satisfaction can result in reduced costs and increased efficiency for small businesses, and becoming more digitally engaged is an effective way to realize these dividends.

5. The relationship between digital engagement and likelihood of regular employee collaboration was found to be statistically significant at the 5% level using a probit regression framework. For further technical details on the econometric modeling underpinning this result, please refer to the Appendix of the Connected Small Businesses US report.

Personal use of technology drives digital engagement of small businesses

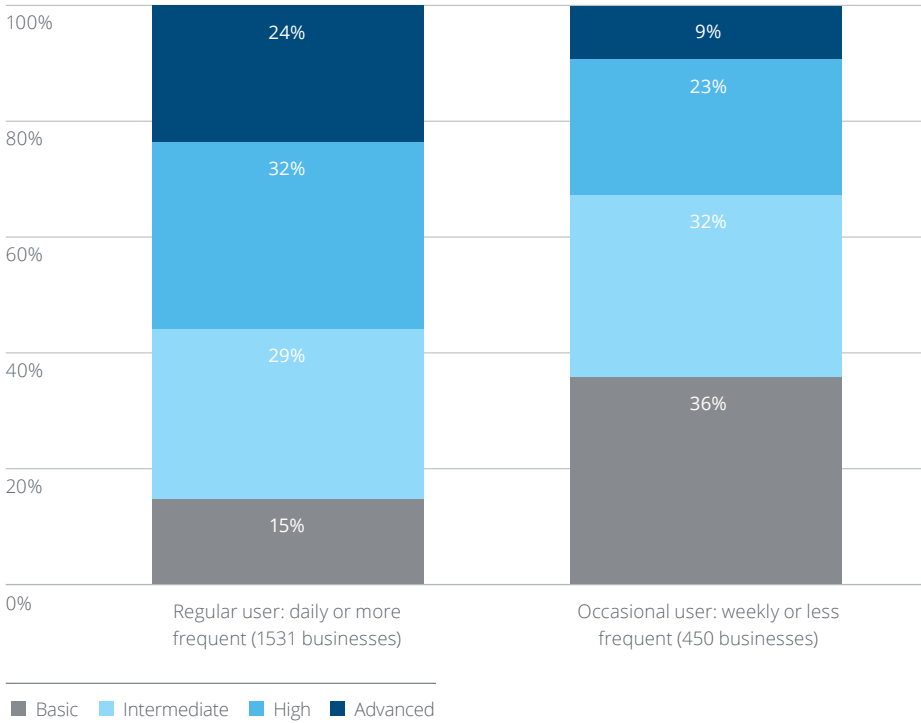
Digital technologies have rapidly become an essential part of our daily lives, and a large percentage of the population now makes regular use of the internet for personal reasons – for example, using social media to communicate with friends, online shopping or booking appointments via the internet, and consuming media online such as reading news through digital channels. A 2016 Nielsen poll revealed that the average American spends over 10 hours per day using digital technologies – including tablets, smartphones, personal computers and multimedia devices – representing a one hour increase over the previous year (Nielsen 2016). More than half of this year-on-year increase was driven by increased smartphone usage.

The increased access and usage of these technologies has facilitated the rise of the digital consumer: an individual who uses multiple devices to research products and make purchases at any location and time that is convenient. This digital customer engages with businesses through online channels, such as businesses with a social media presence or those who use video or banner ads that are viewed by potential consumers as they scroll through digital content. US small businesses that can incorporate digital marketing into their broader strategies will likely have greater reach with this growing cohort of online customers, particularly as digital technologies become increasingly integrated with other aspects of our daily lives.

Personal use of technology is also an important channel for US small business owners to develop the digital skills required to adopt and utilize digital tools within their businesses. The technologies that we use in our personal lives can often be **similar** to the technologies that are relevant and useful for small business owners, managers and employees. The rapidly changing nature of digital technology means that understanding the trends that are shaping the technological landscape can be a key driver of success (MYOB 2016). Frequent use of new technologies by small business owners for personal purposes can also assist them in **understanding** the digital channels and tools that can be effectively used to improve their business's operations.

In our survey of US small businesses, we asked key business decision makers – that is, small business owners and managers – about the frequency with which they use digital tools for personal reasons outside of work (such as online shopping and booking appointments, or social media to connect with friends). Around 77% of respondents were regular users of technology, using digital tools for personal purposes at least once per day.

Chart 6: Digital engagement by personal technology use of respondent



Sources: Deloitte Consulting LLP, Research Now (2017)

We find that the average digital engagement of small businesses where the respondent frequently uses digital technology for personal reasons is higher than the average digital engagement of small businesses with limited personal use of digital tools.⁶ 24% of regular users were classified as advanced on the digital engagement ladder, compared to 9% of occasional users (who only use digital technology for personal purposes weekly or monthly) (Chart 6). In contrast, only 15% of regular users were in the basic category of digital engagement, compared to 36% of occasional users.

Overall, personal use of technology provides an important channel for small business owners to develop greater familiarity with digital tools and improve their understanding of relevant business applications. In many cases, digital technologies are already being widely used across the US population for a range of everyday tasks – from social interactions, to news consumption, to shopping purchases – thereby enabling small business owners to more effectively adopt and utilize digital tools to drive future business growth.

6. Pairwise tests for statistical significance – using the approach outlined in Holm (1979) – indicate that this difference in the average digital engagement scores for different levels of personal technology use is statistically significant at the 5% level. More details can be found in the Appendix.

US small businesses face challenges in adopting digital tools

As we have established in the *Connected Small Businesses US* report, effectively leveraging digital tools to engage with customers, improve internal processes and expand into new markets can provide US small businesses with significant benefits. However, despite these potential benefits, currently 80% of small businesses in the US are not taking full advantage of digital tools and new opportunities, and many of these businesses have relatively low levels of digital engagement. This suggests that there could be barriers that are preventing these businesses from adopting the technologies that could otherwise lead to substantial growth and performance dividends.

Our research finds that US small businesses that are lower on the digital engagement ladder have the opportunity to learn more about the benefits that can be gained from greater use of digital tools within their business.

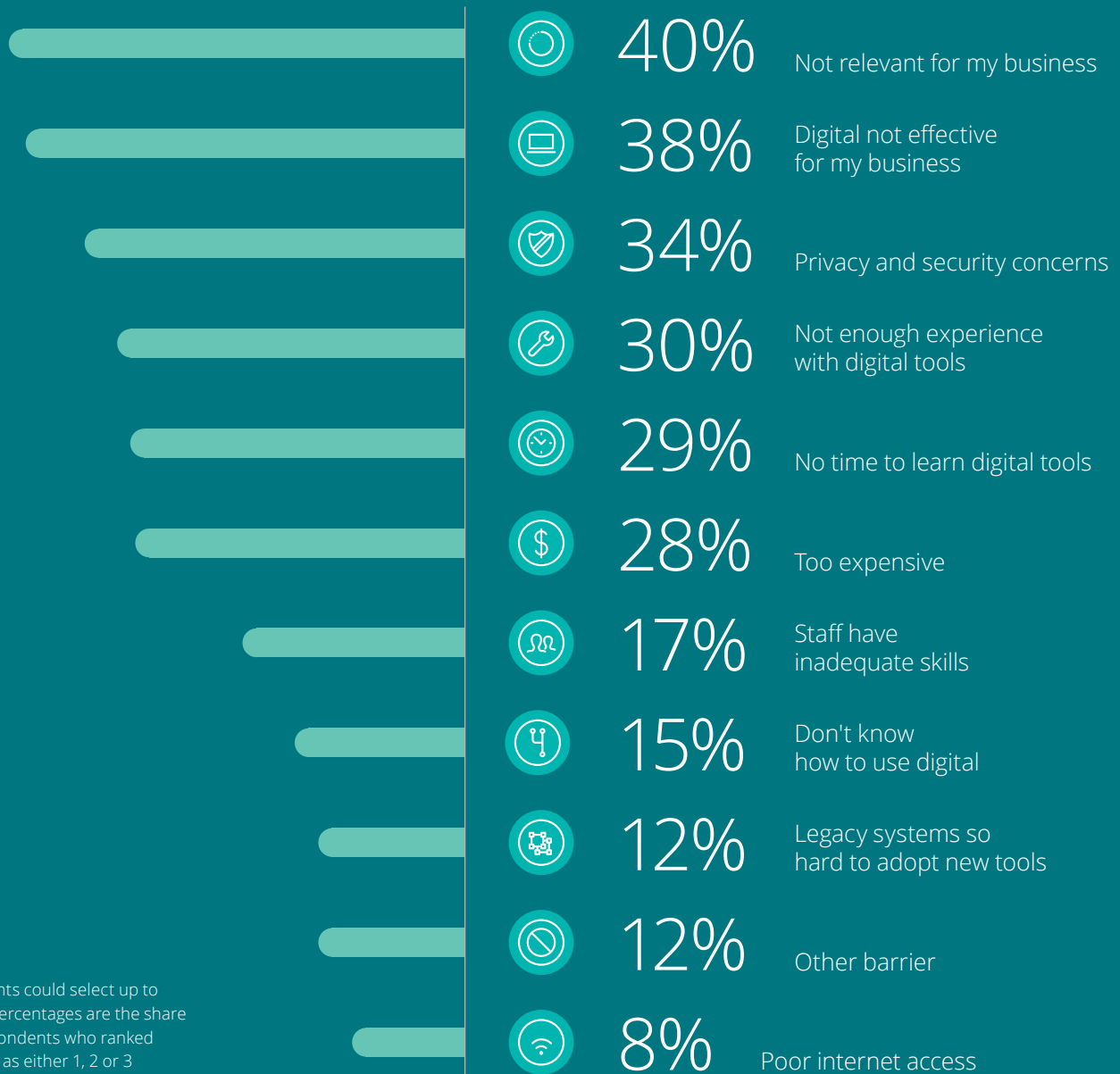
When small businesses were asked to identify the biggest barriers associated with using digital tools, 40% of respondents that are currently at a basic or intermediate level of digital engagement stated that digital tools are not relevant for their business, and 38% identified a lack of effectiveness as one of the top three barriers associated with utilizing digital tools (Chart 7). 34% perceive privacy and security concerns as one of their top three barriers to digital engagement.

There were also several factors that were clearly *not* identified by most basic or intermediate businesses as barriers to improving digital engagement, such as poor internet access and the use of legacy systems (respectively selected by only 8% and 12% of these businesses as one of the top three barriers).

A lack of awareness with respect to the commercial applications and growth potential that could be offered by digital tools can be a significant barrier to increasing digital engagement among small businesses in the US.

Chart 7

Perceived barriers to using digital tools for basic and intermediate small businesses



* Respondents could select up to 3 barriers; percentages are the share of total respondents who ranked each barrier as either 1, 2 or 3

Sources: Deloitte Consulting LLP, Research Now (2017)

50%

25%

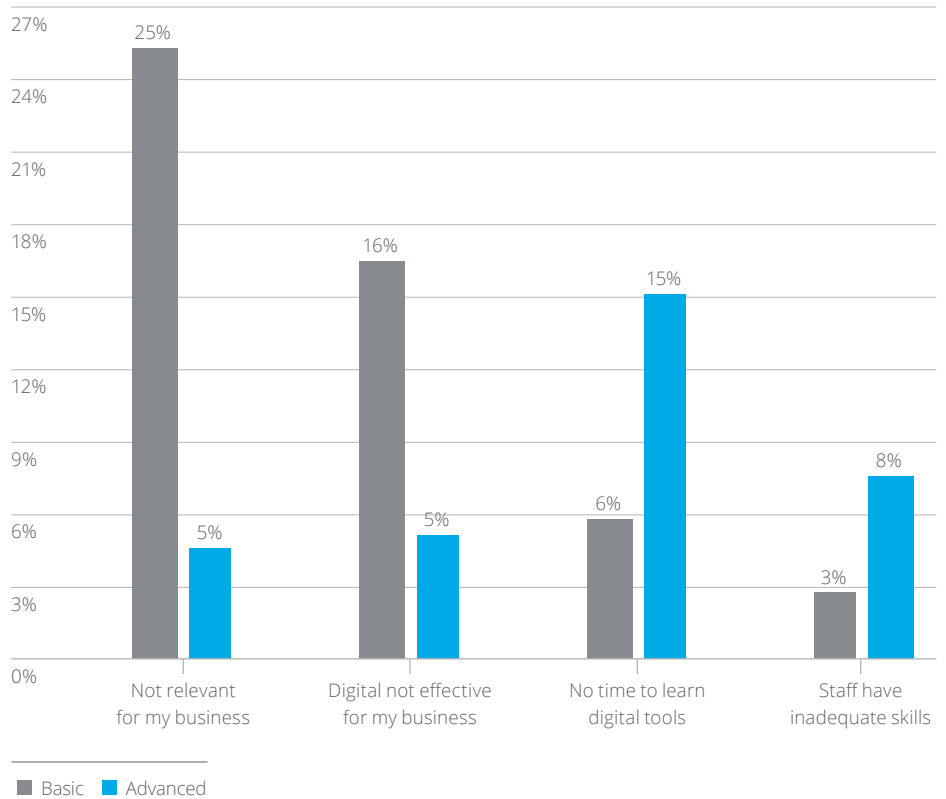
0%

Previous research conducted by the Strategic Networks Group has found that business owners often lack an understanding of how a modest investment of time and money in implementing digital resources can lead to larger financial benefits (Curri 2015). Once businesses became aware of the potential commercial benefits associated with investing in digital, there was a substantial increase in use of digital tools in order to enable the businesses to realize these benefits.

There appears to be a significant gap in understanding and recognizing the value of digital tools for US small business owners and managers at different ends of the digital engagement ladder. A more detailed examination of our survey results shows that small businesses with a basic level of digital engagement are five times as likely as advanced businesses to select 'digital tools are not relevant for my business' as the top barrier holding them back from increased use of digital tools, and three times as likely to nominate 'digital tools are not effective for my business' as the number one barrier (Chart 8). These findings suggest that there is work to be done in convincing US small businesses that currently make limited use of digital tools on the potential benefits of increased digital engagement.

In contrast, the issues that were identified as barriers to increasing digital engagement by a relatively larger share of digitally advanced US small businesses (as compared to basic businesses) typically related to a lack of skills required to effectively utilize digital tools. Small businesses that were already found to be at an advanced level of digital engagement were more likely to select 'having no time to learn digital tools' or 'our business's staff have inadequate digital skills' as the top barrier preventing the business from further increasing their digital engagement (Chart 8).

Chart 8: Different perceptions of barriers to using digital tools between basic and advanced small businesses



* Percentages indicate the share of respondents in each digital engagement category who ranked each barrier as number 1

Sources: Deloitte Consulting LLP, Research Now (2017)

Note: The differences between Basic and Advanced small businesses are statistically significant at the 5% level for the all barriers above.

A lack of knowledge or skills relating to digital tools, particularly for new technologies, can be a particularly relevant barrier for US small businesses, as these businesses often compete with much larger firms to attract skilled employees. These larger companies may have greater resources to devote to recruiting, training and retaining talented workers, as compared to small businesses, who can be more constrained with respect to finances or time (Baird 2016). In addition, larger companies may be able to offer a greater range of employee benefits and a more recognized company brand name, which can make it difficult for small businesses to compete more broadly in attracting talent.

The difficulties that US small businesses experience in obtaining suitable digital skills is compounded by the increasing demand for these skills across the US labor market. Recent research has found that nearly 80% of 'middle skill jobs' – defined as roles that require more than a high school education but less than a university degree, and accounting for nearly 40% of US employment – now require an average level of digital skills, and that demand for these workers is growing 2.5 times faster than in other jobs (Burning Glass Consulting 2015). It is essential that US small businesses are able to source the required digital skills, as well as work towards developing these skills in their existing workforce, in order to drive digitally-led growth in the future.

Adoption of digital tools is lower in some key small business segments

A number of segments of the small business community currently have lower than average levels of digital engagement, and may be missing out on the growth opportunities associated with fully developing their digital potential.

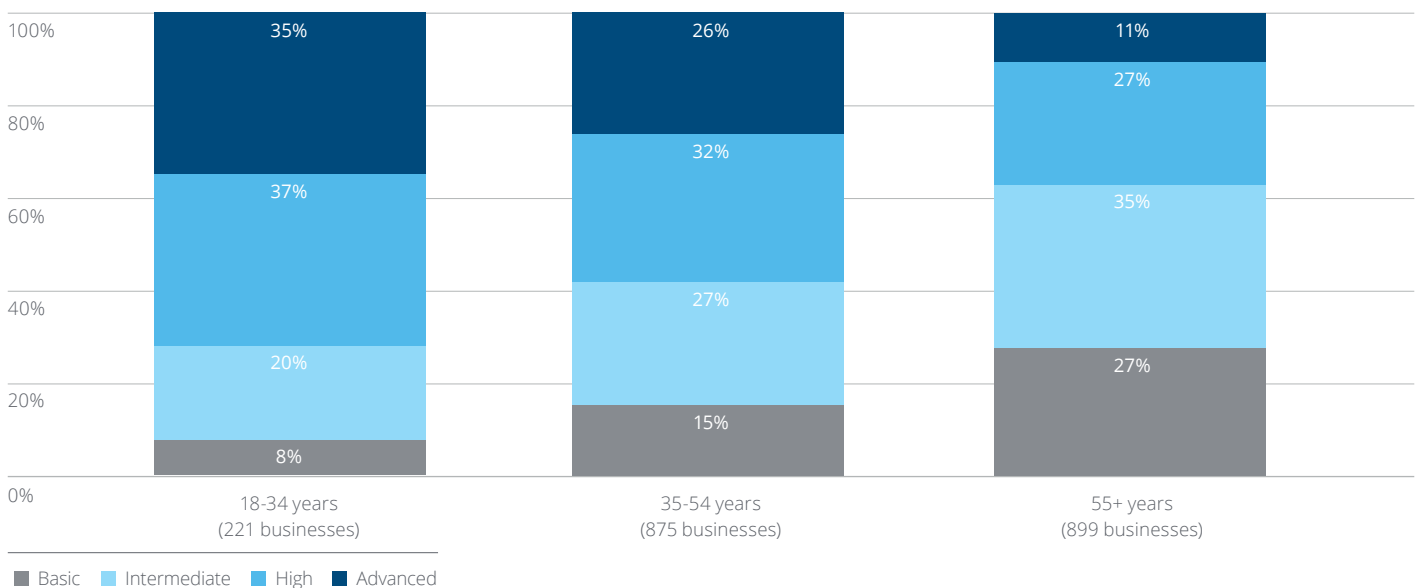
In examining different age groups across the US, the Pew Research Center has found that one-third of US adults aged 65 and older never use the internet, and 49% do not have home broadband services (Pew Center 2017). While technology adoption for older Americans has been increasing since the early 2000s across

various types of digital devices – including smartphones, tablets and the internet in general – there continues to be a substantial gap between this group and the overall American population.

A key driver of this difference is that older adults can experience additional barriers to using digital technologies, with the Pew Center (2017) finding that 73% of adults aged 65 and older, and 62% of those aged between 50 and 64 years, need assistance from someone else when they get a new electronic device, either to set up the device or to show them how to use it.

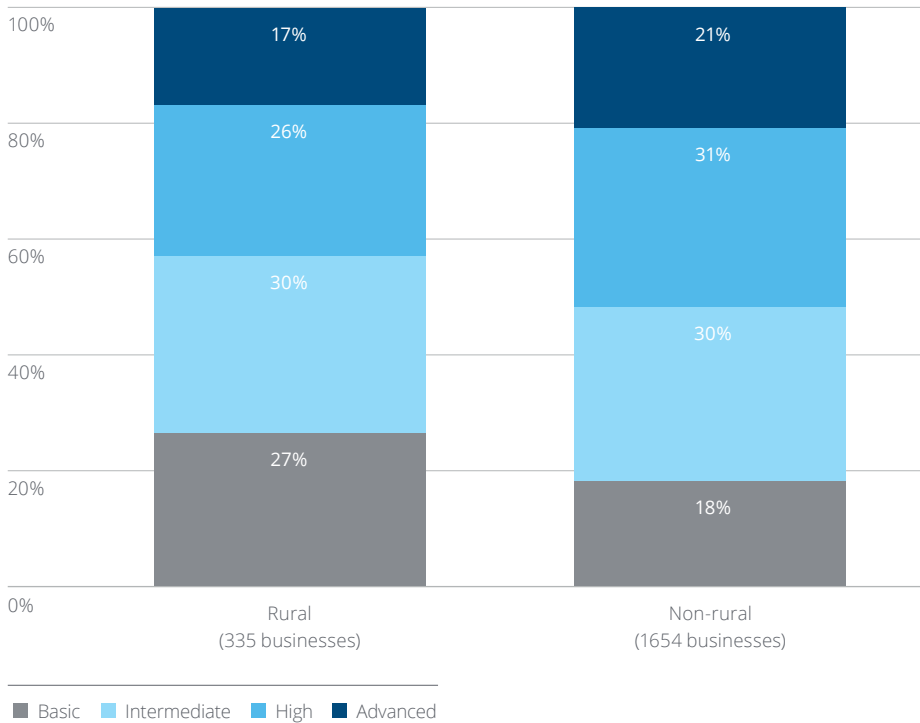
The average digital engagement of a small business with an older owner or manager is lower than that of small businesses with younger owners or managers.⁷ Out of all respondents aged 55 or older, 27% of small businesses were found to be at the basic level of digital engagement, compared with only 8% for US small businesses where the respondent was aged between 18 and 34 years (Chart 9). In contrast, more than one-third (35%) of small businesses in the youngest age group were digitally advanced, compared with only 11% of small businesses where the respondent was 55 years or older.

Chart 9: Digital engagement by age of respondent



Sources: Deloitte Consulting LLP, Research Now (2017)

7. Pairwise tests for statistical significance – using the approach outlined in Holm (1979) – indicate that this difference in the average digital engagement scores for respondents from different age groups is statistically significant at the 5% level. More details can be found in the Appendix.

Chart 10: Digital engagement by business location

Sources: Deloitte Consulting LLP, Research Now (2017)

US small businesses located in rural areas are also, on average, less digitally engaged than their counterparts in non-rural areas.⁸ 27% of US small businesses in rural areas were found to be operating at a basic level of digital engagement, compared to 18% of businesses located in non-rural areas (Chart 10). Meanwhile, only 17% of rural small businesses were found to be digitally advanced (compared to 21% of non-rural businesses), and 26% were at a high level of digital engagement (compared to 31%).

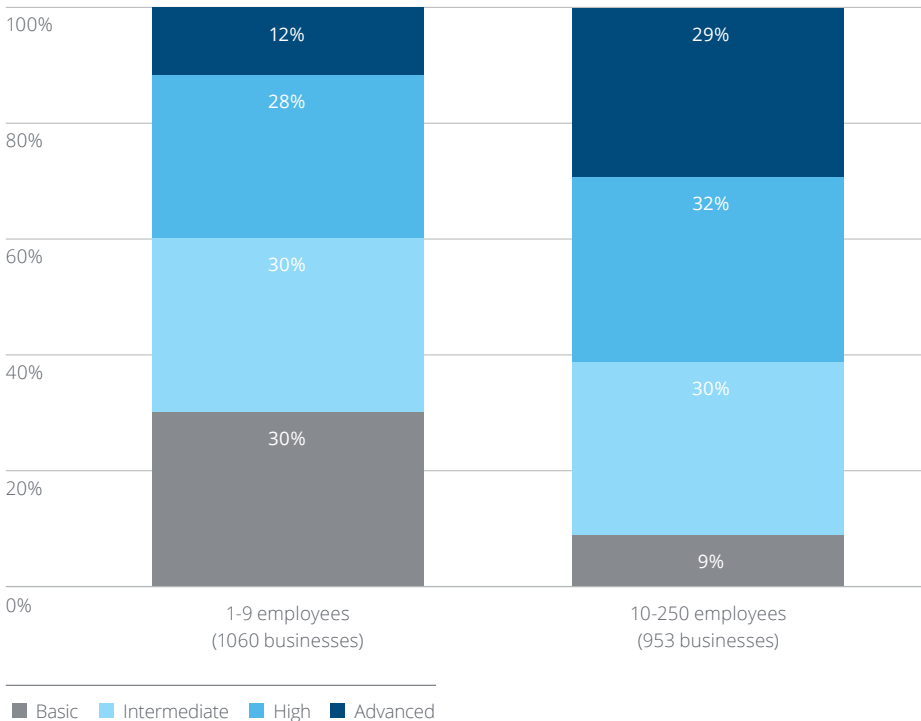
Furthermore, analysis of digital engagement by small business size indicates that the smallest of small businesses have lower average levels of digital engagement than their larger counterparts.⁹ As shown in Chart 11, 30% of businesses with 1-9 employees were found to be operating at a basic level of digital engagement, compared to only 9% of those with 10 or more employees.

Only 12% of small businesses with 1-9 employees were digitally advanced, compared to 29% of larger small businesses with 10 or more employees.

The lower levels of digital engagement observed across small businesses with older owners, those based in rural areas and those that are relatively small are caused by lower adoption of digital tools amongst these businesses. A closer examination of the barriers to digital engagement identified specifically by these groups finds that they face impediments that are similar to other small businesses. In particular, the factor that was most frequently cited as the number one barrier by basic and intermediate businesses in each of these categories was that 'digital tools are not relevant for my business' – identified as the top barrier by around 1 in 5 small businesses in each cohort.

8. Pairwise tests for statistical significance – using the approach outlined in Holm (1979) – indicate that this difference in the average digital engagement scores for different geographic locations is statistically significant at the 5% level. More details can be found in the Appendix.

9. Pairwise tests for statistical significance – using the approach outlined in Holm (1979) – indicate that this difference in the average digital engagement scores for respondents from different business sizes (by number of employees) is statistically significant at the 5% level. More details can be found in the Appendix.

Chart 11: Digital engagement by business size

Sources: Deloitte Consulting LLP, Research Now (2017)

This suggests that a lack of understanding on potential applications of digital tools, and low awareness of new digital opportunities, is the key barrier that needs to be overcome in order to improve the take up of digital tools across these less digitally engaged groups. These impediments are systemic in their impact on small business digital engagement, though at the margin there may be other contributing barriers for specific groups – for example, rural small businesses were twice as likely to report having an inadequate internet connection as their counterparts in non-rural areas.¹⁰

Importantly, the dividends associated with improving digital engagement for US small businesses in these cohorts are as large as the dividends reaped by highly digitally engaged businesses in other categories.

Different digital tools and benefits will be relevant for different small businesses, depending on the circumstances of the individual business. For example, we find that rural businesses are more likely to identify 'connecting with customers 24/7' as the most important benefit associated with their use of digital tools,¹¹ potentially reflecting how digital tools can provide a relatively effective and affordable means of communicating with customers across large distances for businesses located in remote rural areas. Meanwhile, the smallest of small businesses – with 1-9 employees – were more likely to identify 'accessing new customers in the US' as the most important benefit from digital tools,¹² highlighting the importance that these businesses place on using technology to reach new markets across the country.

10. 8% of rural small businesses stated that they had an inadequate internet connection, compared to 4% of non-rural businesses. This difference was statistically significant at the 5% level.

11. 14% of rural small business owners identified 'connecting with customers 24/7' as the number one benefit they perceive from using digital tools, compared to 10% of non-rural businesses. This difference was statistically significant at the 5% level.

12. 15% of small businesses with 1-9 employees identified 'accessing new customers in the US' as the number one benefit they perceive from using digital tools, compared to 11% of small businesses with 10-250 employees. This difference was statistically significant at the 5% level.

At the same time, we find that the revenue growth increase associated with improving small business digital engagement is similar regardless of the size and location of the small businesses. For the smallest of small businesses (with less than 10 employees), those that were operating at an advanced level of digital engagement achieved revenue growth that was, on average, 33 percentage points higher than basic small businesses of a similar size. This was the same as the revenue growth increase attained by digitally advanced businesses with 10 or more employees, relative to basic businesses of a similar size.

We also find that the revenue growth increase for rural small businesses operating at an advanced level of digital engagement was 35 percentage points, comparable to the 33 percentage point dividend for non-rural advanced businesses (relative to basic businesses in each group) (Chart 12).

Our analysis on the growth dividends that can be realized through greater digital engagement shows that US small businesses in these less digitally engaged groups have as much to gain from adopting digital tools as their counterparts. However, while the benefits of digital engagement are comparably large, the lower take-up rate of digital technologies by rural small businesses and the smallest of small businesses means that these groups are currently behind on the digital engagement ladder, despite the potential growth dividends that could be realized from better utilizing digital tools. As such, these businesses have the potential to reap significant benefits through becoming more digitally engaged.

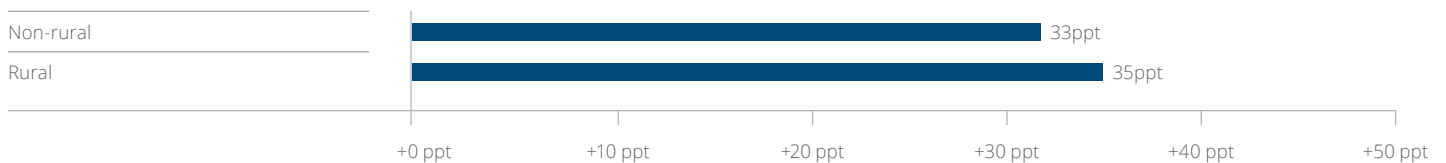
It's important to note that 17% of rural small businesses are operating at an advanced level of digital engagement. These digitally advanced rural businesses are already recognizing the value that digital tools can bring to their customer engagement and business processes, and how technology can be particularly beneficial in the context of their operations as a small business in a rural area. For example, Alpaca Direct is a rural business in Idaho which uses digital tools to connect overseas customers to its local community, as highlighted in the case study on the following page.

Chart 12: Revenue growth increase for average advanced business, compared to average basic business

Revenue growth increase for small businesses of different sizes



Revenue growth increase for small businesses in different locations



Sources: Deloitte Consulting LLP, Research Now (2017)

Furthermore, 12% of the smallest of small businesses with 1-9 employees are operating at an advanced level of digital engagement. Digitally advanced businesses in this category can especially benefit from using technology to level the playing field in competing with larger companies. Villa Lagoon Tile is a small business with only 10 employees in Alabama, which uses digital tools to expand its market reach and better compete with bigger American stores, as outlined in the case study overleaf.



Case study

Alpaca Direct *Hayden, Idaho*

Alpaca Direct is a rural small business which has effectively used digital tools to grow. Alpaca Direct sells eco-friendly yarn and apparel made from alpaca wool, and is based in the town of Hayden in Idaho. The business was started out of a desire to sell wool products from the local alpaca ranch of co-owners Jim and Kelley Hobart. A multifaceted digital strategy – including online advertising, data analytics and collaboration tools – has enabled the Hobarts to grow Alpaca Direct into a “local yarn shop” for “people all over the world”, right from their ranch in Hayden. 92% of the company’s sales currently come from the web.

The business recognizes that connecting with customers means that people need to feel part of the Alpaca Direct community, whether they live nearby or overseas. In particular, Kelley says that “we want all of them to leave with a rich, special connection with us and our products”. They use digital tools to engage with customers from their rural base, such as by posting videos online to share knitting techniques, or using social media to enable their 100,000 customers from 30 countries around the world to participate in the weekly knitting group held in Hayden.



Case study

Villa Lagoon Tile *Gulf Shores, Alabama*

Villa Lagoon Tile is a small business based in Gulf Shores, Alabama which has used digital tools to grow their business in custom cement tiles. While there are larger companies in the US that sell tiles, Villa Lagoon Tile specializes in durable cement tiles with colorful designs and patterns. The business employs only 10 employees and John Adams, Director of Technology, says: "We could never compete with big-box stores on standard tiles. But we can compete for cement tiles thanks to [online] search and advertising."

The use of digital tools including digital marketing, online advertising and data analytics has enabled Villa Lagoon Tile to grow their customer base to Asia, Europe and the Middle East, with international shipments now comprising 15% of the company's total sales. Digital advertising now represents 90% of the business's overall marketing spend, and business founder Lundy Wilder notes that "with the web, we've been able to expose our products to people who have never seen them before".

An action plan towards more digitally engaged US small businesses

While there are real barriers facing the 80% of US small businesses that have not maximized their digital engagement and potential, these barriers are not insurmountable. The research presented in the Connected Small Businesses US report illustrates that there can be significant growth dividends resulting from the use of digital tools by small businesses of all sizes and in all industries across the US economy. This suggests that there could be substantial benefits associated with addressing some of these barriers to digital engagement. In this section, we outline potential actions that could assist in working towards more digitally engaged US small businesses.

Increase awareness on digital opportunities for small businesses

The key barriers identified by US small businesses that currently have low levels of digital engagement were a lack of understanding on the relevance and effectiveness of digital tools for their business. Our research finds that these issues are nominated as the top barriers across the small business population, including groups with relatively lower digital engagement, such as **rural and the smallest small businesses**. As such, an action plan that aims to encourage greater use of digital technologies by small businesses at the lower end of the digital engagement ladder should involve expanding the information available to these businesses in order to increase awareness and point small business owners towards opportunities to adopt digital tools and take advantage of new opportunities (Leonard 2010).

A **digital mentoring program** could facilitate connections between US small businesses that are seeking to identify potential applications of digital tools in their businesses, but who are uncertain of how they can go about doing so, and experts that could assist these business owners with improving their digital engagement. This could be through one-on-one mentoring that partners experienced small businesses with advisers that can provide tailored assistance on general topics such as what digital tools might best suit their business's needs and developing an overall digital strategy, as well as on specific questions such as how to utilize social media to engage with customers or optimize a webpage in relation to search engine results.

There may be the opportunity to **leverage existing programs** to further information sharing opportunities across the US small business community. For example, the Small Business Association and SCORE Association's Counselors to America's Small Business program trains SCORE members to serve as advisers and mentors to aspiring entrepreneurs and small business owners (SBA 2017a). The program is offered across urban, suburban and rural communities and seeks to address general training needs and small business planning. One component of such a program could be tailored to have a focus on digital tools, and be used to assist US small businesses in identifying potential applications for online platforms and other digital technologies to grow their operations and increase their competitiveness in the digital age.

Improve digital skills training programs to further skills development

Once small business owners have developed an understanding of how digital tools can be effective for achieving their business goals – whether these goals include growing into new markets, connecting better with customers, or improving internal efficiencies – the next step is ensuring that they are able to gain the skills and knowledge required in order to utilize the relevant technologies. The rapid pace of technological change and the ongoing evolution of digital trends means that **maintaining an up-to-date skillset** is necessary to fully realize the benefits associated with adopting digital tools. Access to suitable training and development opportunities is therefore important for US small businesses across the digital engagement ladder.

It is important to recognize that small business owners and employees can have limited available time due to the regular activities required to operate and grow these businesses. Previous research has found that almost half of small business owners spend no more than 2 hours per week on tasks unrelated to day-to-day tasks, which leaves little time to focus on other development areas such as additional training and developing growth plans (Jacobs 2015). As such, training programs targeted towards improving the digital skills of US small business owners and employees need to be delivered in **short, flexible and focused formats** in order to allow time-constrained individuals and businesses to participate.

Furthermore, developing digital skills programs for a business context – particularly a small business context – can require different considerations on relevant content, as compared to general training and development programs provided by education institutions. Acknowledging these potential differences, the US Small Business Administration (SBA) has a Learning Center that includes short courses and videos providing information on topics specifically relevant to small businesses, including in business planning, management and marketing. This includes content relating to digital engagement, such as how small businesses can use social media marketing to increase sales and an introduction to cyber security for small business (SBA 2017b). There are also a range of industry-led tools and programs that currently exist as small business resources, such as Google's Digital Garage tutorials targeted towards digital skills for small businesses and Salesforce's digital marketing resources including e-books and webinars.

Understand that small businesses will have different journeys that evolve over time

Just as our research recognizes that not all digital tools are relevant for different small businesses, it is also important that small business owners themselves understand that their journey may involve **different types of technologies**. For example, small businesses operating a business-to-consumer (B2C) model would have different digital requirements compared to those that are business-to-business (B2B), such as a greater need to have a website with e-commerce functionalities in order to catch consumers' attention, generate immediate product demand, and enable the direct purchase of these products in a quick and easy manner (Cohn 2015). Other characteristics of a small business that could affect the relevance of different digital tools include the business's industry, size, target market and product type (goods or services).

In this context, it's important that US **small businesses start somewhere** and go at their own pace, rather than trying to seek out a perfect template for implementing a 'one size fits all' digital solution. In particular, "businesses often get stuck in the details, looking for the perfect, whole of business transformation plan when it simply doesn't exist... there is no such thing as the 'right path' for digital transformation; all journeys are business-specific" (Potvin 2016). As such, the process of choosing, using and integrating a specific selection of relevant digital tools can be the first steps towards an ongoing digital journey, which can be adapted over time to better suit the needs of the business. And a small business's digital journey will also need to evolve over time to adjust to shifts in the business, consumer and technological landscape.

Prepare to address the challenges associated with going digital

While there are significant benefits that can be realized through the increasing use of digital tools, it is also essential that **small businesses recognize the potential challenges** associated with going digital. Examples of these challenges include privacy and security concerns. Research conducted by the Ponemon Institute (2016) over the 12 months to May 2016 found that around half of all small and medium-sized businesses experienced data breaches involving customer and employee information, but that only 14% of these companies rate their ability to mitigate cyber risks and vulnerabilities as 'highly effective'. The security threats identified by small businesses as being of the greatest concern are malware attacks and employee error (CSID 2014).

Companies that provide businesses with digital solutions are working on addressing the concerns of their small businesses customers, with many security innovations arising from customer demand. For example, over recent years cloud providers have improved their security measures by implementing increasingly sophisticated encryption methods, providing customers with greater control of their encryption keys or access rules and settings, and using two-factor authentication to reduce the possibility of password leaks due to human error (Wall 2016). In this context, cloud-based tools can potentially be more secure than in-house technology systems, and "most of the major data breaches that have taken place over the last five years... have been from internal, not cloud-based, databases" (Shulman 2016, cited in Wall 2016). US small businesses should therefore consider the potential challenges which could arise throughout their digital journey, and ensure that they are prepared to address these in a manner that makes best use of the available technology resources and tools.

Key takeaways

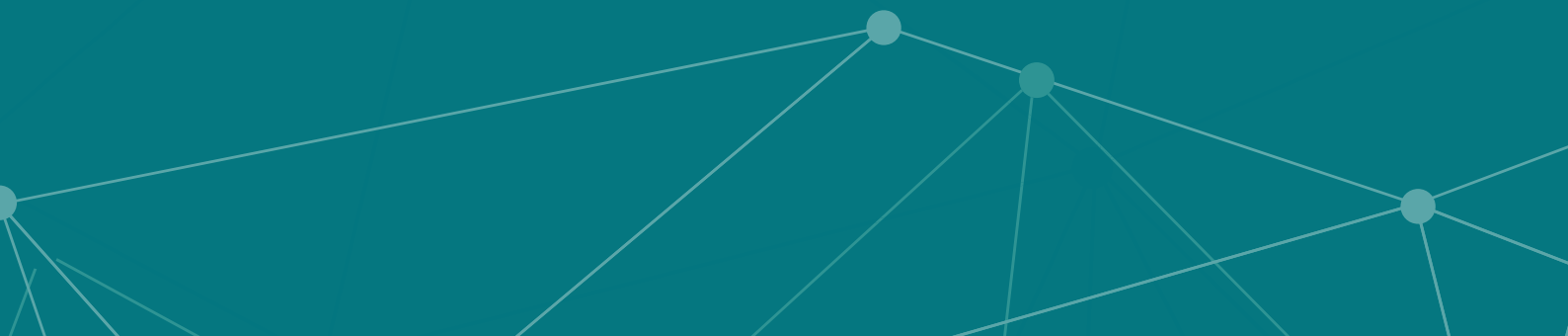
A combined effort is required in order to improve the digital engagement of US small businesses

Digital tools can provide significant benefits for small businesses, including increased growth, job creation, exports and organizational gains, such as improved employee collaboration and satisfaction. However, our research in this series has found that **80% of US small businesses aren't taking full advantage of digital tools**, and have significant growth potential that could be realized through greater digital engagement.

Small businesses can be affected by a range of digital barriers, and **a combined effort between policymakers and small businesses** is required in order to improve digital engagement, particularly in cohorts that are currently less digitally engaged (such as rural and the smallest small businesses):

- **Policymakers** can support the small business community by facilitating appropriate training, information sharing and mentoring initiatives that enable small businesses to improve their awareness on digital opportunities, and develop the skills required to implement these.
- **Small businesses** should consider what steps they can take to better utilize digital tools, and then act on these. Given that a lack of understanding on the relevance of digital tools was the key digital barrier identified by less digitally engaged small businesses, becoming more informed about digital opportunities and understanding the best place to start is likely to be a vital first step.

Improving the digital engagement of 80% of US small businesses is not a task that can be completed overnight. But the joint efforts of policymakers and small businesses can enable less digitally engaged small businesses to seize new digital opportunities over time. This will be critical in achieving future small business growth as the consumer and business landscape becomes increasingly digital.



References

- Alfresco (2015), Collaboration trends and technology: a survey of knowledge workers. Available at: <https://www.alfresco.com/sites/www.alfresco.com/files/dimensional-research-collab-survey-findings-report-082415.pdf>.
- American Express OPEN (2016), The 2016 state of women-owned businesses report. Available at: http://www.womenable.com/content/userfiles/2016_State_of_Women-Owned_Businesses_Executive_Report.pdf.
- Bock, Robert, Lansiti, Marco, and Lakhani, Karim (2017), 'What the companies on the right side of the digital business divide have in common', Harvard Business Review. Available at: <https://hbr.org/2017/01/what-the-companies-on-the-right-side-of-the-digital-business-divide-have-in-common>.
- Burning Glass Consulting (2015), Crunched by the numbers: The digital skills gap in the workforce, Available at: http://burning-glass.com/wp-content/uploads/2015/06/Digital_Skills_Gap.pdf
- Carlson, Edward and Goss, Justin (2016), The state of the urban/rural digital divide. Available at: <https://www.commerce.gov/news/blog/2016/08/state-urbanrural-digital-divide>.
- Cohn, Chuck (2015), Differences In Selling B2B Vs. B2C. Available at: <https://www.forbes.com/sites/chuckcohn/2015/06/16/differences-in-selling-b2b-vs-b2c/>.
- CSID (2014), Survey: Small Business Security – a look at small business security perceptions and habits at each phase of business growth. Available at: https://www.csid.com/wp-content/uploads/2014/06/CSID_Whitepaper_SMB2014_FINAL.pdf.
- Curri, Michael (2015), 'Small Business and the Digital Divide', BroadbandCommunities, Available at: <http://www.bbpmag.com/Features/1115SmallBusinesses.php>.
- Deloitte (2014), The Collaborative Economy. Available at: <https://www2.deloitte.com/au/en/pages/economics/articles/collaborative-economy-unlocking-power-of-workplace-crowd.html>.
- Deloitte (2017), Connected Small Businesses US. Available at: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-connected-small-businesses.pdf>.
- Difference Engine (2016), 'A blueprint for getting more women into information technology', The Economist. Available at: <http://www.economist.com/news/science-and-technology/21711632-blueprint-getting-more-women-information-technology-high-techs-missing-xx-factor>.
- Duggan, Maeve and Horrigan, John (2015), Home Broadband 2015. Available at: <http://www.pewinternet.org/files/2015/12/Broadband-adoption-full.pdf>
- Holm, Sture (1979), 'A simple sequentially rejective multiple test procedure', Scandinavian Journal of Statistics 6, 65–70.
- Jacobs, Daniel (2015), 'Overworked and time poor: perils of SMEs', Dynamic Business. Available at: <http://www.dynamicbusiness.com.au/news/overworked-and-time-poor-perils-of-smes.html>.
- Karsten, Jack and West, Darrell (2016), 'Rural and urban America divided by broadband access', Brookings. Available at: <https://www.brookings.edu/blog/techtank/2016/07/18/rural-and-urban-america-divided-by-broadband-access/>.
- Leonard, Barry (2010), Connecting America: the national broadband plan, Diane Publishing.
- MYOB (2016), Harnessing digital technology for business growth. Available at: <https://www.myob.com/au/blog/harnessing-digital-technology-for-business-growth/>.
- Pew Center (2017), Tech Adoption Climbs Among Older Adults. Available at: <http://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/>.
- Ponemon Institute (2016), State of SMB Cyber Security Report 2016. Available at: <https://signup.keepersecurity.com/state-of-smb-cybersecurity-report/>.
- Potvin, Chloe (2016), Why embracing digital transformation isn't just for big business. Available at: <https://www.kochiesbusinessbuilders.com.au/embracing-digital-transformation-isnt-just-for-big-business/>.
- Nielsen (2016), The total audience report: Q1 2016. Available at: <http://www.nielsen.com/us/en/insights/reports/2016/the-total-audience-report-q1-2016.html>.
- Small Business Administration [SBA] (2016), Small Business Profile. Available at: https://www.sba.gov/sites/default/files/advocacy/United_States.pdf.
- SBA (2017a), Counselors to America's Small Business. Available at: <https://www.sba.gov/offices/headquarters/oed/resources/148091>.
- SBA (2017b) SBA Learning Center. Available at: <https://www.sba.gov/tools/sba-learning-center/search/training>.
- Sterling, Greg (2017), 'Survey: social and mobile are top drivers of new small business digital spending', Marketing Land. Available at: <http://marketingland.com/survey-social-mobile-top-drivers-new-small-business-digital-spending-204003>.
- Wall, Matthew (2016), Can we trust cloud providers to keep our data safe?. Available at: <http://www.bbc.com/news/business-36151754>.

Appendix: Statistical tests

Tests for statistical significance have been performed to compare the average digital engagement scores across different cohorts of US small businesses, including the business's location and the age, gender and ethnicity of the survey respondent (the business's owner or manager).

Two stages are involved in the testing process. In the first stage, the Analysis of Variance (ANOVA) procedure is used to test whether there exists a statistically significant difference between the average digital engagement scores across different cohorts for any given dimension (i.e. business or owner characteristics). This is a conservative two-sided test which compares the variation of average scores between cohorts, taking into account their within-group variances.

Table 1 shows the ANOVA results for each dimension tested, including the corresponding p-values. It can be seen that ANOVA tests reject the null hypothesis of no statistical differences in the average digital engagement scores between the cohorts defined by location, age, gender, veteran status and personal usage of digital tools at the 5% significance level (i.e. all p-values are less than 0.05 for these dimensions). However, we note that the veteran status characteristic shows strong positive correlation with the age characteristic; that is, respondents who were veterans were much more likely to also be from older cohorts (70% of veterans were aged over 55 years, compared to 42% of non-veterans). As such, it is likely that the statistically significant result for the veteran status dimension simply reflects the same result for the age dimension.

Table 1: ANOVA test statistics

Dimension	Cohorts	Test statistic	p-value
Location of business	Urban or regional center; Rural area.	5.26	0.02
Industry of business*	Construction; Manufacturing; Wholesale trade; Retail trade; Finance and insurance; Real estate and rental and leasing; Professional, scientific, and technical services; Educational services; Health care and social assistance; Arts, entertainment, and recreation; Accommodation and food services; Other services (except public administration)	2.71	0.1
Quality of internet connection of business	Adequate or more than adequate; Inadequate	1.55	0.21
Age of business owner/manager	18-34 years; 35-54 years; 55+ years.	175.77	0
Gender of business owner/manager	Male; Female.	14.24	0
Education level of business owner/manager	High school or below; Associate degree; Bachelors; Masters; Professional school degree; Doctorate degree.	2.44	0.12

Dimension	Cohorts	Test statistic	p-value
Veteran status of business owner/manager	Veteran; Non-veteran	8.05	0
Ethnicity of business owner/manager	White American; Minority group.	2.08	0.15
Personal usage of digital tools of business owner/manager	Regular user – daily or more frequent; Occasional users – weekly or less frequent.	127.04	0
Number of employees	1-9 employees; 10-99 employees; 100-250 employees	195.1	0

* Test was only conducted for industries with greater than 50 small business responses in the survey.

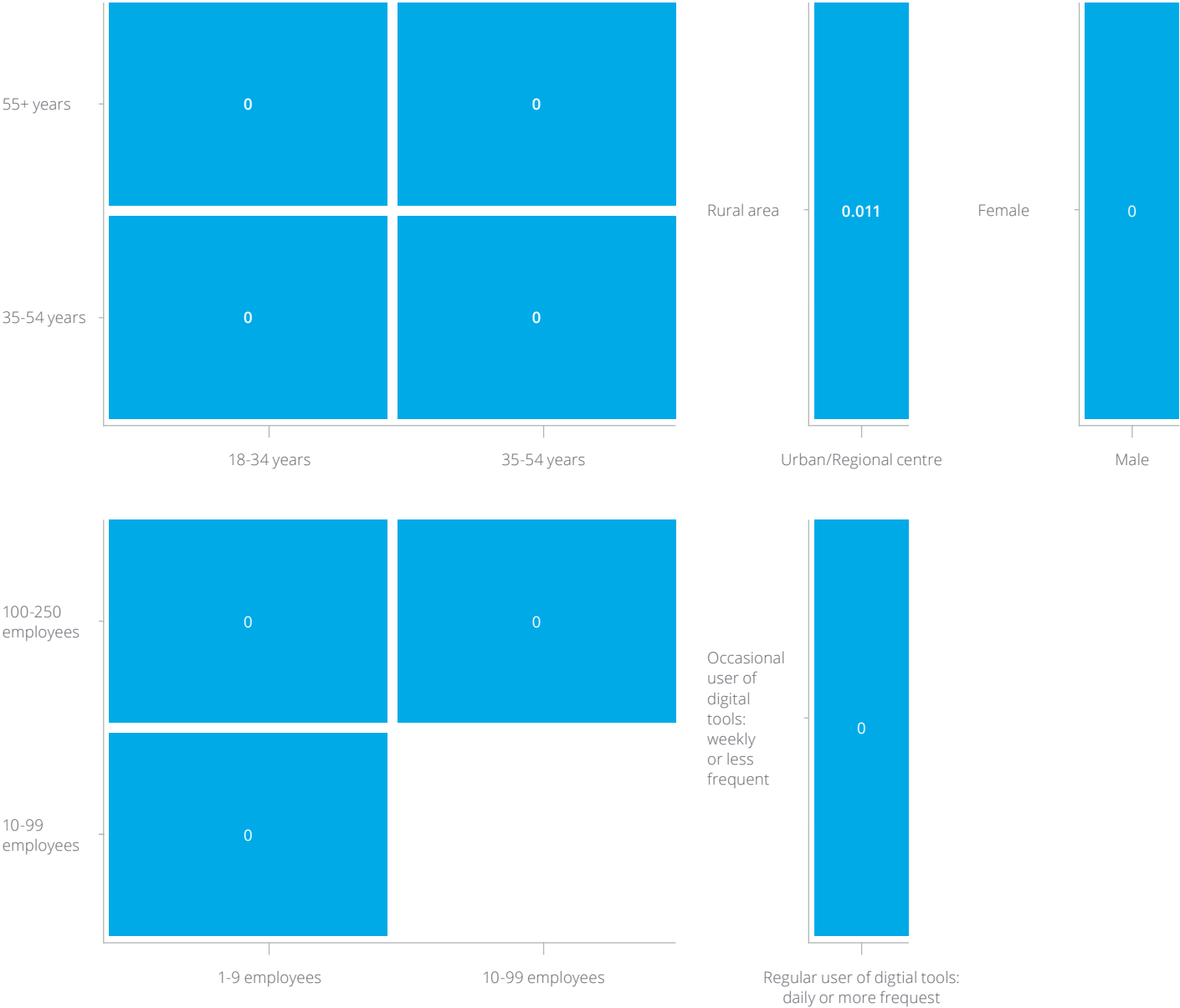
Source: Deloitte (2017)

The second step of the testing process involves a series of pairwise t-tests between each of the cohorts within each of the dimensions which were found to have significantly different average digital engagement scores using the ANOVA tests: location, age, gender, personal usage of digital tools and number of employees (we leave out veteran status due to its correlation with the age dimension). The tests are one-sided (and therefore less conservative), because the cohorts within each dimension are ordinal. More specifically, for example, while the ANOVA test established that the average digital engagement score of a small business located in a rural area is *different to* that of a business located in an urban or regional center, we would further like to establish whether the first is *less than* the latter. We do this by calculating test statistics that have been adjusted for multiple comparisons using to the approach outlined by Holm (1979).

Chart 13 shows the resultant p-values from the pairwise t-tests conducted across the business location, number of employees, owners' age, gender and personal usage of digital tools dimensions (that is, those dimensions found to have different average digital engagement scores at the 5% significance level in the first step). The comparison between different cohorts defined within each dimension are grouped in each quadrant. Results for dimensions with more than two cohorts are associated with an upper matrix; while for dimensions with two cohorts there will be a single tile as only one test is performed.

It can be seen that all of the p-values are less than 0.05. In other words, the pairwise tests reject the null hypothesis of no statistically significant difference in the average digital engagement scores between cohorts within the dimensions defined by location, age, gender, personal usage of digital tools and number of employees at the 5% significance level.

Chart 13: p-values from pairwise t-tests



Source: Deloitte (2017)

Meet the team

**George Collins**

Principal, Deloitte Digital
georgecollins@deloitte.com
+1 408 564 1995

**John O'Mahony**

Partner, Deloitte Access Economics
joomahony@deloitte.com.au
+61 2 9322 7877

**Sara Ma**

Manager, Deloitte Access Economics
sarama1@deloitte.com.au
+61 3 9671 5995



About Deloitte

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. Please see www.deloitte.com/about for a detailed description of DTTL and its member firms. Please see www.deloitte.com/us/about for a detailed description of the legal structure of Deloitte LLP and its subsidiaries. Certain services may not be available to attest clients under the rules and regulations of public accounting.

This publication contains general information only and Deloitte is not, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor. Deloitte shall not be responsible for any loss sustained by any person who relies on this publication.

Copyright © 2018 Deloitte Touche Tohmatsu. All rights reserved

MCBD_HYD_01/18_054113