



# Connecting Australia:

How technology  
is levelling the  
playing field for  
small business



**αlphaβeta**  
strategy x economics



# Report

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**This paper was commissioned by nbn and prepared by Alphabeta with the support of Xero, the global small business platform.**

Data from Xero is made available under its Xero Small Business Insights program which provides a snapshot of the sector's health, updated monthly. Xero Small Business Insights data also supports a range of special reports to enable it to champion the interests of Australian small businesses. Xero Small Business Insights metrics are based on anonymised, aggregated data drawn from hundreds of thousands of Xero's subscribers.

<https://www.xero.com/small-business-insights/>

Other data sources have included both proprietary research and publicly available data. Where information has been obtained from third-party sources, this is clearly referenced in the footnotes.



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# Content

-	<b>Executive Summary</b>	<b>4</b>
<b>1</b>	<b>Technology is levelling the playing field for small businesses</b>	<b>6</b>
1.1.	Australian businesses have embraced high-speed broadband over the last two decades	6
1.2.	Average small business connection speeds have increased five-fold over the last ten years	7
1.3.	Six in seven small businesses say that high-speed internet is important to their business	8
1.4.	Small businesses now access tools that were once only available to large enterprises	8
1.5.	Technology is becoming more affordable for small businesses	9
<b>2.</b>	<b>Small business technology adoption still lags behind big business</b>	<b>10</b>
2.1.	Smaller firms are using the internet to connect with customers and suppliers at only half the rate of larger businesses	10
2.2.	Smaller firms are much less likely to use the internet to reduce costs and lift productivity	11
2.3.	Most small firms spend less than 1% of revenue on technology	12
2.4.	Small firms in finance and professional services are the most likely to be investing in technology	14
<b>3.</b>	<b>Small businesses that invest in technology grow more quickly</b>	<b>16</b>
3.1.	Businesses in mature nbn regions saw revenue grow faster than those in non-nbn regions	16
3.2.	Small businesses with high technology spending have faster revenue growth	17
3.3.	Small businesses with high technology spending create more jobs	19
-	<b>Conclusion</b>	<b>20</b>
-	<b>Methodology</b>	<b>21</b>
-	<b>Disclaimer</b>	<b>23</b>

# Executive summary

Technology is democratising business, enabling the smallest firms to access tools and capabilities that were once only available to large enterprises. While Australian small businesses have embraced high-speed internet, they are still a long way behind in how they use these connections to reach new customers and boost efficiency. Using anonymised, aggregated data from Xero Small Business Insights, this report shows that increased spending on technology is associated with greater success for Australian small businesses.

Technology has always been an important driver of business success. However, the powerful business systems that underpinned the commercial success of large enterprises were historically out of reach for smaller businesses which couldn't afford the high up-front capital investment or ongoing costs of sophisticated IT support. This 'digital divide' had a measurable impact on small business performance. Ten years ago, workers in small businesses were only about **half as productive** (52%) as those in big businesses, which typically had better access to efficiency-enhancing technologies.<sup>1</sup>

Over the last ten years, the digital divide has been closing. Improvements in internet connectivity and the rise of cloud-based platforms have changed the game for small business. Almost all Australian small businesses now have access to high-speed, always-on broadband that has redefined the way they operate. Cloud technologies have reduced the upfront investment associated with many powerful business applications including accounting, web publishing, human resources, business planning and collaboration tools.

This report is the latest in a series of Connecting Australia research, focussed on the social and economic benefits of broadband and digital technology. It uses real accounting

data to examine the use of technology within Australian small businesses with less than \$10 million in revenues and/or fewer than 20 employees.<sup>2</sup> Using Xero Small Business Insights data from tens of thousands of Australian small businesses, we are able to analyse **how small businesses are investing in technology and the correlation with business performance.**

The report shows that Australian small businesses are embracing connectivity. Broadband has become a near-ubiquitous feature of small businesses with 99% broadband penetration by 2019. There has been an acceleration in the number of small businesses with access to fixed line broadband as a result of the rollout of the nbn, which has helped increase the average internet speed available to Australian small businesses five-fold over the last ten years. Broadband has also become more affordable during that time, with the cost of telecommunications down 6% since 2000.<sup>3</sup>

Around 86% of small businesses say that high-speed internet is important to them. Higher speeds are helping to drive adoption of game-changing cloud-based tools: 42% of all Australian businesses use paid cloud services today, compared with 31% just three years ago.<sup>4</sup> These new business technology platforms are blurring the line between

<sup>1</sup> ABS (2009), 8155.0 - Australian Industry, 2007-08. Worker productivity was estimated by dividing industry value added by the total number of workers in large businesses and in the small and micro business sector.

<sup>2</sup> Gilfillan G (2015), 'Definitions and data sources for small business in Australia: a quick guide'.

<sup>3</sup> ABS (2018), 6401.0, Consumer Price Index - September 2018.

<sup>4</sup> Australian Bureau of Statistics (2019), Characteristics of Australian Business, 2017-18. Available at <http://www.abs.gov.au/ausstats/abs@nsf/mf/8167.0>

systems intended for large enterprises and those designed for small businesses. Smart small business entrepreneurs are taking advantage of everything the technology marketplace has to offer.

However, small businesses are yet to fully embrace the opportunities afforded by these new technologies. Smaller firms are using the internet to connect with customers and suppliers at only half the rate of larger businesses. Australian small businesses are also far less likely to use technology to support **business processes** such as stock control, marketing, business planning, production operations, invoicing, payroll and accounting.

The gap between small and large business productivity is closing too slowly.<sup>5</sup> Most small businesses in our sample make only modest investments in technology. The average small business spends around **\$5,000 per year on technology**, although the amount spent by individual firms varies greatly.<sup>6</sup> This represents less than 1% of revenue and comprises internet, telephony, hardware and computer expenses and other related costs.<sup>7</sup>

There is a noticeable gap between digital leaders and the rest of the pack: while about half of firms spend 1% or less of revenue on technology, one in 10 firms are 'Tech Leaders' that dedicate more than 4% of revenue to technological investments. Firms in the finance and insurance, information media and telecommunications, and professional, scientific and technical services sectors tend to invest more of their revenues on technology, while firms in the wholesale trade, agriculture, forestry and fishing and accommodation and food services sectors spend the least.

Our analysis found a strong correlation between technology investment and business performance. Businesses that increased their technology spending the most grew revenues and employment by 4.9% and 4.7% a year on average. Businesses in the lowest quartile of technology spending growth saw only 1.4% revenue growth and shed 0.4% of jobs. **Internet spending was the strongest indicator of firm performance** among all technology spending categories. Firms with the highest internet spending growth grew revenue and employment by 6% and 4.8% respectively, while firms with the lowest internet spending growth saw only 0.3% revenue growth and shed 0.6% of jobs.

While it is important to note that our findings imply correlation, and not necessarily causation, they also reflect the crucial role of fast, reliable broadband in connecting small businesses with software, customers and partners. As nbn continues to connect more homes and businesses across the country to a new broadband network, these connections will continue to improve. AlphaBeta's and Xero's previous research on digital connectivity in Australia found that small businesses in mature nbn regions grew employment a third more, and revenue almost two thirds more, than those in non-nbn regions.<sup>8</sup>

Small businesses are critical to the Australian economy, accounting for 98% of all businesses.<sup>9</sup> But many are still not fully realising the potential of digital technologies. Increasing technology adoption among Australian small businesses would help these firms be more productive, successful and competitive. It would also have significant benefits for the wider economy.

5 ABS (2019), 8155.0 - Australian Industry, 2017-18. Small business workers were only about 56% as productive as those in big businesses in the 2017-18 financial year.

6 Xero small business insights

7 Xero small business insights

8 AlphaBeta, Xero (2018), 'From little things, big things grow'.

9 ABS (2019), 8165.0 - Counts of Australian Businesses, including entries and exits. June 2014 to June 2018.

# 1. Technology is levelling the playing field for small businesses

Technology is levelling the playing field for small business. The connectivity, software and hardware currently available to small businesses are more powerful and affordable than ever before. They are enabling small businesses to compete with large enterprises, across the country or around the world.

Until recently, many of the powerful business systems that underpinned the commercial success of large enterprises were out of reach for smaller firms. Large businesses could operate customer relationship management systems, enterprise resource planning platforms, business intelligence systems, inventory management, human resource systems, advertising platforms and many other systems that boosted their productivity and expanded their customer reach.

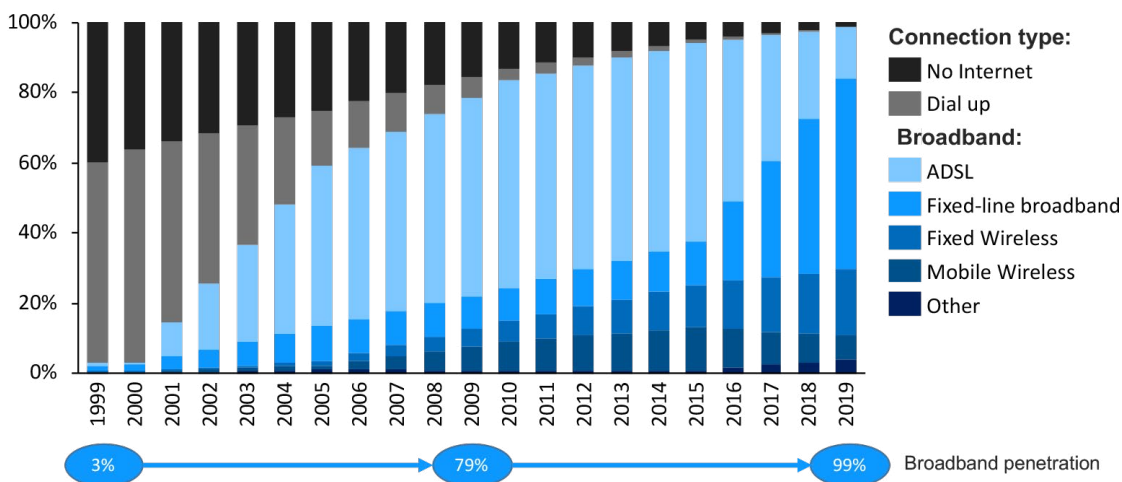
These tools once involved large up-front investments as well as significant ongoing support costs that were beyond the resources of smaller businesses. However, the falling cost of business technology is blurring the line between systems intended for large enterprises and those designed for small businesses. Smart small business entrepreneurs are taking advantage of increasing connectivity and falling costs to close the technology gap with their larger peers.

## 1.1. Australian businesses have embraced high-speed broadband over the last two decades

### Exhibit 1

**Broadband has become a near ubiquitous feature of small businesses, with penetration growing from 3% to 99% over the last two decades**

Main broadband connection of small businesses  
Australian small businesses 1999 - 2019



Note: Data refers to the smallest category of businesses, post 2015-16 data estimated from nbn trends  
Source: AlphaBeta; ABS 8129.0 - Business Use of Information Technology; nbn corporate plan

The adoption of high-speed broadband is one of the most significant changes in small business over the last two decades. In 1999, only 3% of Australia’s smallest businesses had access to broadband. A majority (57%) of small businesses relied on dial-up connections and 40% had no internet connection at all.

In the subsequent two decades, Australian small businesses have embraced high-speed broadband. Broadband has become a near-ubiquitous feature of small businesses with 99% broadband penetration by 2019. The nbn rollout has brought nearly three-quarters of all Australian small businesses within reach of a high-speed fixed line broadband connection in the past five years.

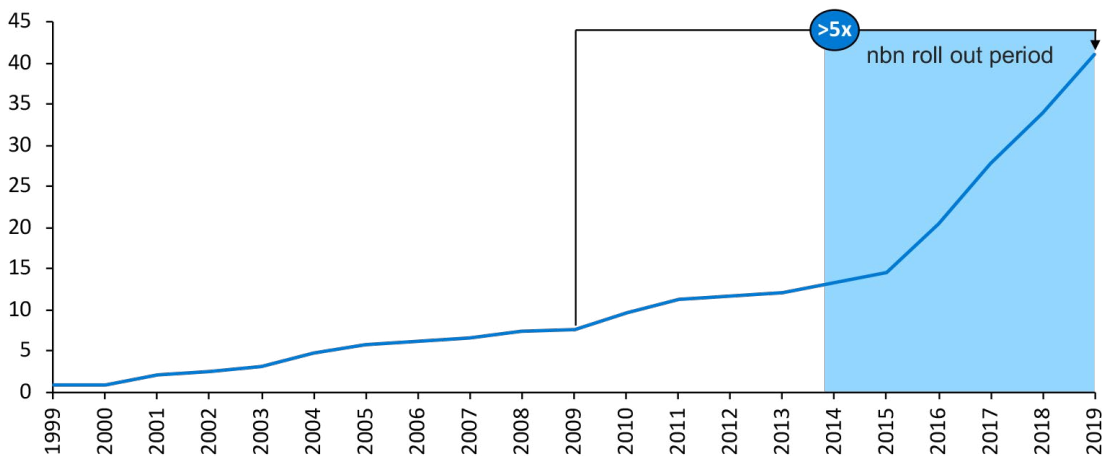
## 1.2 Average small business connection speeds have increased five-fold over the last ten years

The average speed available to Australian small businesses has increased five-fold over the last ten years. In 2009, most small businesses accessed the internet via a DSL connection with speeds in the range of 5-12 Mbps. Today, the average small business can access speeds of around 30-50 Mbps (**Exhibit 2**). The increase in speeds has coincided with the rollout of the nbn, which has facilitated improved connections and higher performance. nbn activations increased from around a quarter-million in 2014 to 5.5 million in 2019.

### Exhibit 2

#### Average small business speeds have increased five-fold over the last decade, and accelerated during the nbn rollout period

**Average speed of small business internet connections**  
Speed of main connection, Mbps 1999 - 2019



Note: Data refers to the smallest category of businesses, post 2015-16 data estimated from nbn trends  
Source: AlphaBeta; ABS 8129.0 - Business Use of Information Technology; nbn corporate plan

### 1.3 Six in seven small businesses say that high-speed internet is important to their business

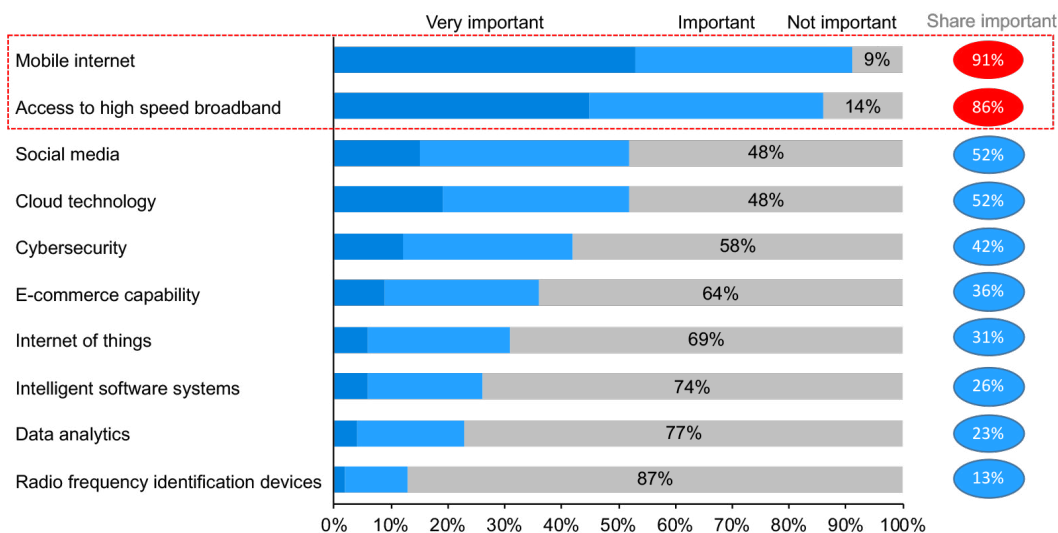
High-speed broadband and mobile internet are the top technology spending priorities among Australian small businesses. More than nine in 10 small businesses say mobile internet is “important” or “very important”, while 86% of small businesses highly value high-speed broadband (**Exhibit 3**). This underscores the fact that fast, reliable internet connections are the foundation of business success as more business processes, opportunities and consumer activity move online.

#### Exhibit 3

### Internet access is the most critical technology need for small businesses, with 86% saying that broadband is important

#### How important is technology to Australian small business

Survey response to question about the importance of digital technologies, latest data



Note: Data from ABS Business Characteristics Survey, with a sample size of 14,000. Businesses could select either “not at all” (not important), “a small extent or a moderate extent” (Important), or “a major extent” (very important). The “mobile internet” category refers to general mobile connectivity, not mobile broadband hotspots. Source: AlphaBeta; Australian Bureau of Statistics 8129.0 – Business Use of Information Technology, 2015-16

### 1.4. Small businesses now access tools that were once only available to large enterprises

A major change in activity for small business has been the rise of cloud-based business applications. These “apps” are ideal for small businesses because they have low barriers to entry in terms of both cost and usability. Cloud uptake is growing rapidly, with 42% of Australian businesses now using paid cloud services compared with 31% in 2015-16.<sup>10</sup>

Cloud-based apps are tools such as accounting and job management systems that small businesses can access via the internet. They make information easily accessible, reducing administration time and costs. Software and customer data are stored on secure, enterprise-grade remote servers instead of on a business’s premises. This gives workers the freedom to access their information, updated in real time, regardless of whether they log on from home, work or via a mobile device.



Perhaps most importantly, cloud-based apps are providing large-enterprise capabilities to small businesses, enabling them to access a range of systems that were once available only to large firms. To better understand how apps are transforming small business, we looked at apps available in the Xero app marketplace. We found that many small businesses are using apps from this marketplace to automate several key functions in their business. The most popular apps relate to finance (38% of usage) marketing, sales and customer management (26%), strategic management (21%), human resources (8%), and procurement, logistics and distribution (3%).<sup>11</sup>

### 1.5. Technology is becoming more affordable for small businesses

Fortunately, as demand for internet access and internet-based applications have increased, unit prices for broadband connectivity have become more affordable.

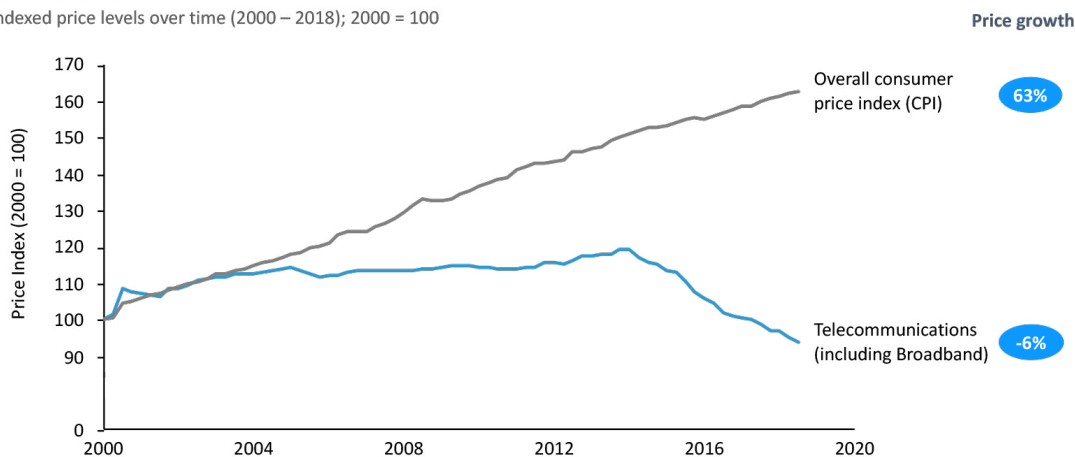
The Australian Bureau of Statistics tracks telecommunications prices in the consumer price index (CPI). For example, if the level of service increases (i.e. greater speed or data) and the price does not change, this will be reflected in the unit value decreasing, and a price fall being recorded. Telecommunications equipment and services have experienced much slower price growth than the overall Australian CPI. Telecommunications unit prices have fallen 6% since 2000 while the CPI has grown by 63% (**Exhibit 4**).

#### Exhibit 4

### Telecommunications prices have grown more slowly than the consumer price index

#### Consumer price index

Indexed price levels over time (2000 – 2018); 2000 = 100



Note: Broadband is a component of the CPI sub-group 'Telecommunication equipment and Services'. While CPI focuses on consumer prices, businesses are often on residential-like broadband plans.  
Source: ABS 6401.0, Consumer Price Index – September 2018, Table 7 (Group, Sub-group and expenditure class weighted average of eight capital cities).

As a whole, small businesses in our dataset have spent more money on technology over time, with the average annual technology spending increasing by 5.2% between 2015 and 2017. However, technology spending did not grow as quickly as overall revenues, suggesting that technology has become more affordable.<sup>12</sup> This is reflected in national accounts that show that consumer prices for telecommunications and computing fell 11% and 8% respectively during the period, while the overall consumer price index grew 3%.<sup>13</sup>

<sup>12</sup> Xero Small Business Insights

<sup>13</sup> ABS (2019), 6401.0 – Consumer Price Index, Australia, Jun 2019. Growth from June 2015 to June 2017.

## 2. Small business technology adoption still lags behind big business

Technology has democratised many business capabilities that were once only available to larger enterprises. However, small businesses are yet to fully embrace the opportunity afforded by these new technologies. Many still lag big businesses in terms of how they use technologies to reach new customers and lower their costs.

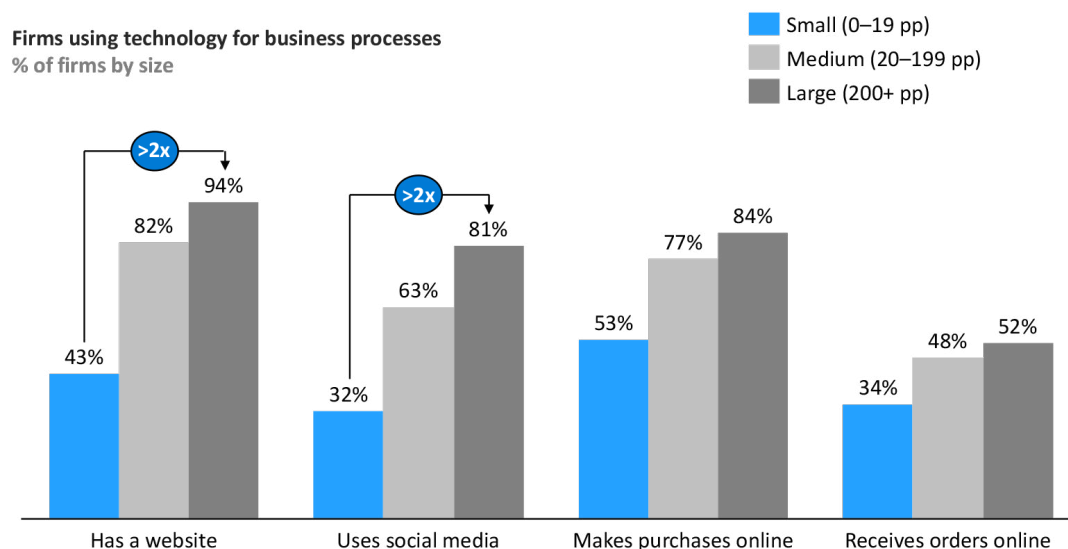
### 2.1. Smaller firms are using the internet to connect with customers and suppliers at only half the rate of larger businesses

More than 14.7 million Australians now subscribe to high-speed, always-on broadband that has redefined how they live, work and shop. Online commerce in Australia is growing rapidly, with more than 73% of Australian households shopping online in 2018. Australians spend a total of \$27.5 billion online (10% of total retail sales); this is growing rapidly at 24.4% each year.<sup>14</sup>

As consumers move online, businesses large and small are positioning themselves to capitalise on e-commerce opportunities. As shown in **Exhibit 5**, 43% of small businesses have a website, and 34% receive orders online.

#### Exhibit 5

##### Smaller firms are much less likely to connect with customers and suppliers using the internet



Note: % of firms that report they use these technologies to a high extent.  
Source: Australian Bureau of Statistics

However, despite many small businesses capitalising on the opportunities afforded by the internet to expand, many are still a long way behind larger businesses. The latest data from the Australian Bureau of Statistics shows that small businesses are less than half as likely to have a website than large businesses (43% vs 94%), and only 32% use social media compared with 81% of large businesses.

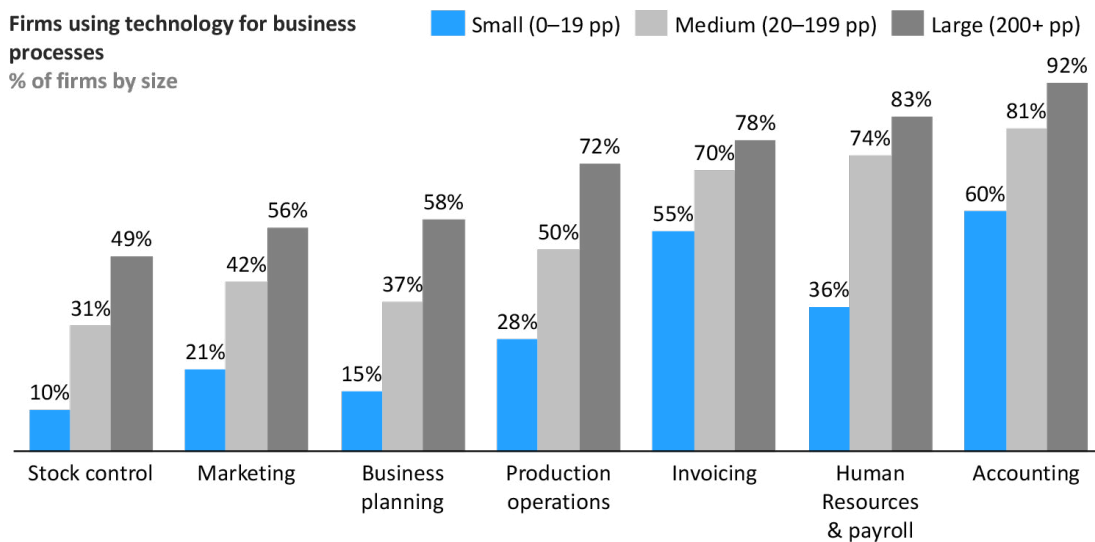
## 2.2. Smaller firms are much less likely to use the internet to reduce costs and lift productivity

Running any business involves managing the back office as well as serving customers in the front office. A typical small business manager can face up to 50-70 different tasks just to keep the business running.<sup>15</sup> These tasks include finance, administration, legal and management tasks such as accounting, bookkeeping, managing contracts, managing finances, facilities maintenance, asset management, security, cleaning, rostering, payroll, compliance, recruitment and many other activities.

Today, business owners can use technology-enabled productivity tools to help make these back-office tasks easier, quicker and cheaper to complete. Contemporary productivity tools have gone beyond the label of “helpful” for small businesses and instead become crucial for their success.

### Exhibit 6

#### Smaller firms are less likely to use technology for business processes such as stock control, marketing, operations and business planning



Note: % of firms that report they use these technologies to a high extent.  
Source: Australian Bureau of Statistics

However Australian small businesses are far less likely than larger businesses to use technology to support **business processes** such as stock control, marketing, business planning, production operations, invoicing, payroll and accounting (**Exhibit 6**). This is consistent with 2017 OECD findings that small businesses lag in the adoption of more sophisticated digital technologies.<sup>16</sup>

This difference is partially due to need: big businesses are more complex and are thus more motivated to use software to keep track of their many moving parts. However, small businesses also face significant barriers to adopting technology, including cyber security risks and a lack of knowledge and time.<sup>17</sup> In a 2017 survey by the NSW Small Business Commissioner, 42% of small to medium businesses said they limited their digital presence to reduce the risk of cyber threats, overlooking some of the significant economic benefits of conducting business digitally.<sup>18</sup>

<sup>15</sup> Porter, Michael E. (1985), *Competitive Advantage*; Rowe, Mason, Dickel, Mann, Mockler (1994), *Strategic Management: a methodological approach*.  
<sup>16</sup> OECD (2017), 'Enhancing the Contributions of SMEs in a Global and Digitalised Economy'.  
<sup>17</sup> Department of Industry, Innovation and Science (2018), 'Small Business Digital Taskforce: Report to Government March 2018'.  
<sup>18</sup> NSW Small Business Commissioner (2017), 'Cyber Aware 2017'.

### 2.3. Most small firms spend less than 1% of revenue on technology

Technology used to be expensive. Hardware involved significant upfront costs and software was usually installed at a company’s premises. Both required highly skilled IT specialists to install, operate and maintain. Today’s cloud-based software is more accessible and easier to implement. There is almost no specialist hardware required, the software is delivered as a service (often without any upfront costs), and most applications require few specialist skills to operate. As a result, technical capabilities are available to small businesses today at relatively low costs.

The small businesses in the Xero Small Business Insights data set used for this report spend on average **less than 1% of total revenue on technology**, or **\$5,000 a year (Exhibit 7)**.<sup>19</sup> The largest component is spending on internet access, which comprises 52% of total technology spend. Telephone costs account for a further 20%, hardware and computer expenses 10% and ‘general ICT’ – which includes software and cloud applications – accounts for the remaining 18%. However, the amount spent by individual firms vary greatly. There is a noticeable gap between digital leaders and the rest of the pack: while about half of firms spend 1% or less of revenue on technology, one in 10 firms are Tech Leaders that dedicate **more than 4% of revenue** to these technologies (Exhibit 8).

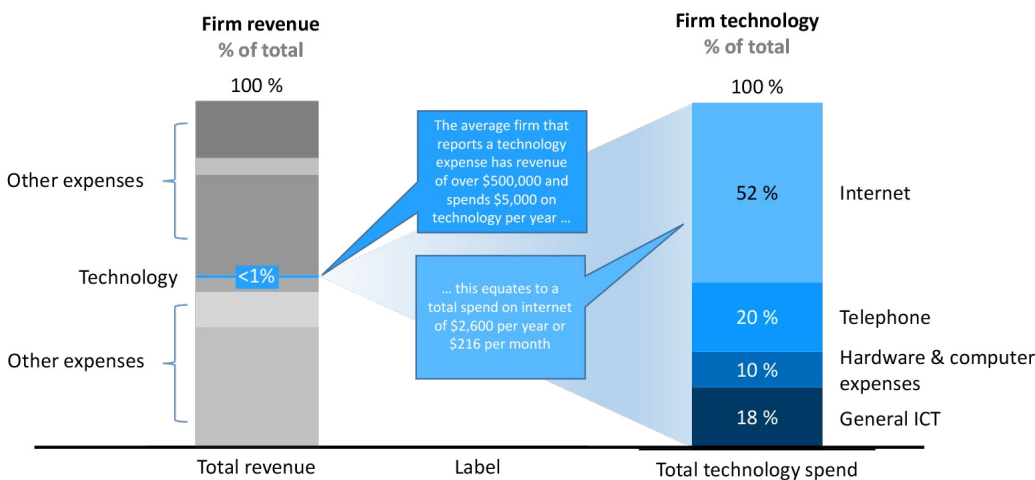
Sole traders have the smallest technology budgets, spending an average of \$3,749 on internet, telephony, hardware and computer expenses and general ICT expenses a year. This represented 1.10% of their revenue. Technology is proportionally cheaper for larger businesses: while businesses with 10-19 employees spend an average of \$9,096 a year on technology, their total revenues also tend to be higher. On average, these businesses spend only 0.57% of total revenue on technology.<sup>20</sup>

The average spend on technology also varies by state. Firms in New South Wales spend the most with an average technology spend of \$5,300. Firms in Tasmania spend the least with an average technology spend of \$4,740. The average percentage of revenue allocated to technology is less than 1% across all states, however on average firms in Queensland spend the highest portion of revenue on technology at 0.9% (Exhibit 9).

#### Exhibit 7

### An average small business spends less than 1% of total revenue on technology, of which about half is expenditure on internet

Technology costs  
% of total revenue, 2017



Note: Firms with no technology expenses are excluded. Weighted by state and industry population counts.  
Source: AlphaBeta, Xero SBI, ABS 8165.0

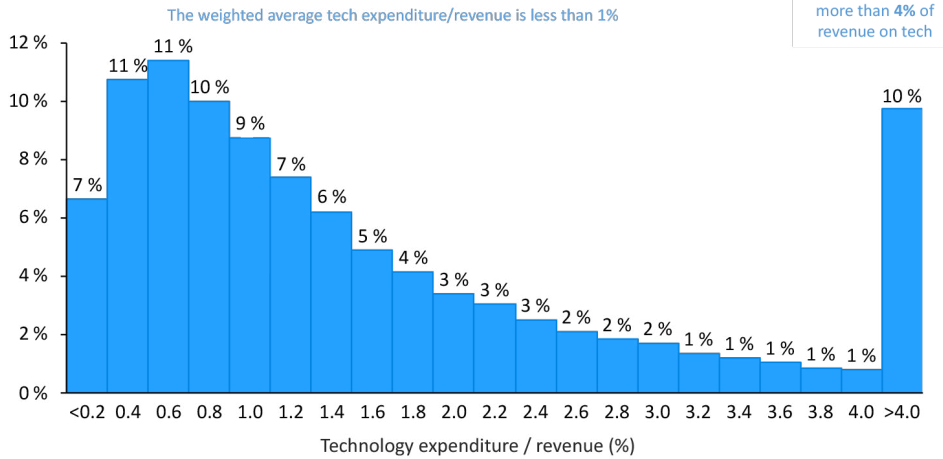
<sup>19</sup> Previous studies have reported significantly higher average levels of technology spend by SMBs; however, these were survey-based and are likely to overstate spending estimates due to hypothetical bias. They <sup>19</sup> also included medium-sized businesses of up to 200 employees, while this study focuses on small businesses with revenues with less than \$10 million in revenues and/or fewer than 20 employees.  
<sup>20</sup> Xero Small Business Insights

## Exhibit 8

The average Australian small business spends less than 1% of revenue on technology; however one in 10 are leaders that spend more than 4%

### Technology spend distribution

% of all firms in each spend category, 2017



Note: Firms with zero technology expenses are excluded. Weighted by state and industry population counts.

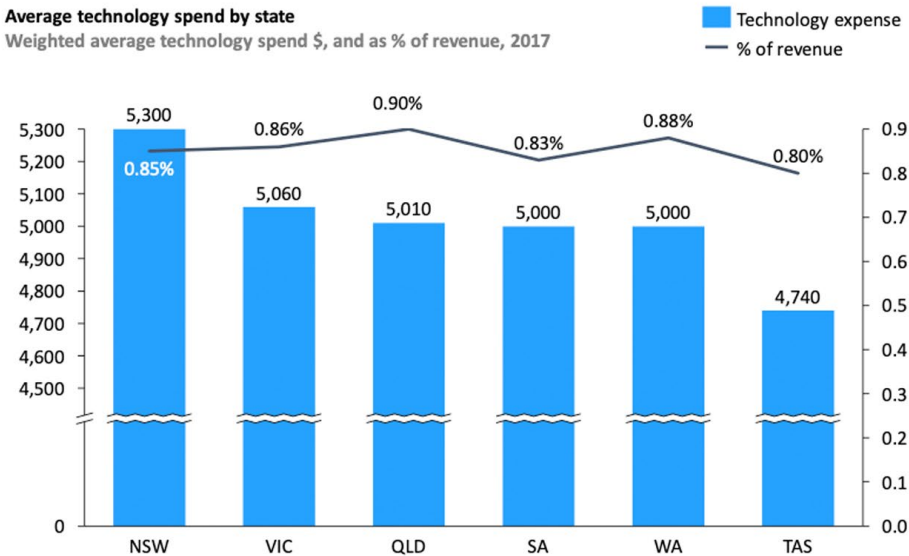
Source: AlphaBeta, Xero SBI, ABS 8165.0

## Exhibit 9

Firms in NSW have the highest average technology \$ spend; However, firms in QLD and WA spend the highest % of revenue on technology

### Average technology spend by state

Weighted average technology spend \$, and as % of revenue, 2017



Note: Firms with zero technology expenses are excluded. Weighted by state and industry.

Source: AlphaBeta, Xero SBI, ABS 8165.0

## 2.4. Small firms in finance and professional services are the most likely to be investing in technology

On average, knowledge sector firms – including those in finance and insurance, information media and telecommunications (IMT) and professional, scientific and technical services sectors – tend to invest more of their revenues on technology. Firms in these sectors tend to generate more data, rely more heavily on digital supply chains or create more digital assets than those elsewhere in the Australian economy, and have been leaders in digital intensity and maturity for some time.<sup>21</sup>

Firms in the agriculture, forestry and fishing, and accommodation and food services sectors tend to invest the least in technology, spending only two thirds as much of their revenues as the average Australian small business and 44% as much as the average finance firm (**Exhibit 10**).

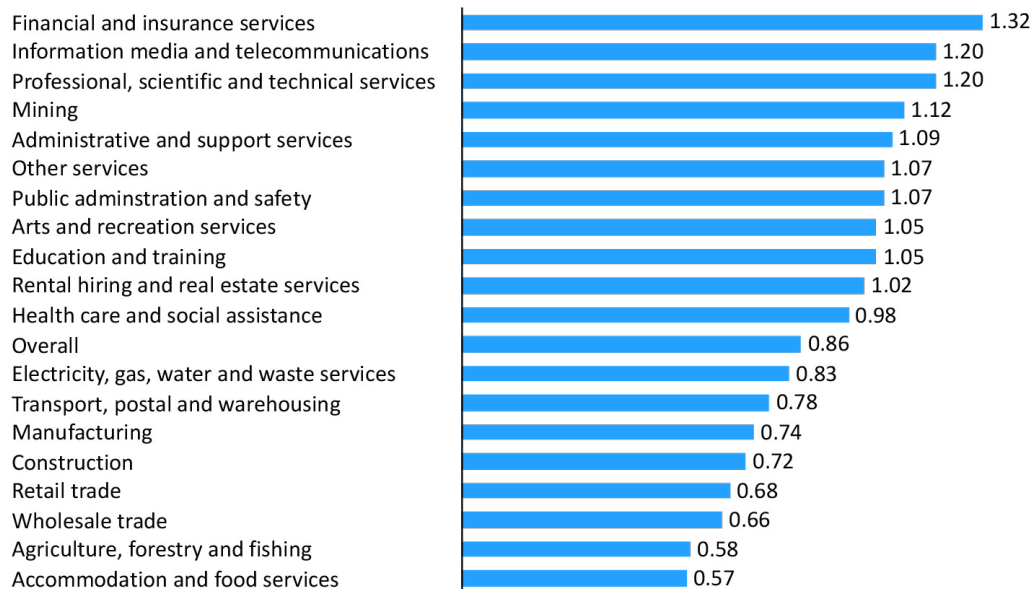
Small businesses vary greatly across sectors, regions and sizes, and can range from independent, mobile hairdressers to 20-person web development teams. To analyse levels of technology spend within sectors, we identified the top 10% of spenders by revenue, as well as the bottom 10% of spenders. The top spending firms are ‘**Tech Leaders**’ that spend at least 4% of revenues on technology. The bottom spending firms are ‘**Low Spenders**’ that spend less than 0.27% of revenues on technology.

### Exhibit 10

#### Financial and insurance services sector has the highest technology spend as a share of revenue at 1.32%

##### Technology spend by industry

Weighted average technology spend as a % of revenue by industry, 2017



Note: Firms with zero technology expenses are excluded. Weighted by state and industry population counts.  
Source: AlphaBeta, Xero SBI, ABS 8165.0

Small businesses in the IMT sector are most likely to be in the Tech Leaders cohort. This reflects the fact that digital technologies are particularly important to IMT businesses, which include news outlets and blogs, software developers, and web hosts. These businesses use technology not only as a means to improve efficiency, but also as a critical part of their supply chains and the basis of new products, business models and innovation.

One in five IMT sector small businesses are Tech Leaders; this means they are twice as likely as the average small business, and more than five times as likely as hospitality businesses, to be investing heavily in technology. IMT sector companies are also less likely than the average small business to be in the cohort of Low Spenders (**Exhibit 11**).

Firms in the accommodation and food services sector are most likely to be Low Spenders with almost one in five firms falling within this cohort. These firms are also less than half as likely as the average small business to be Tech Leaders.

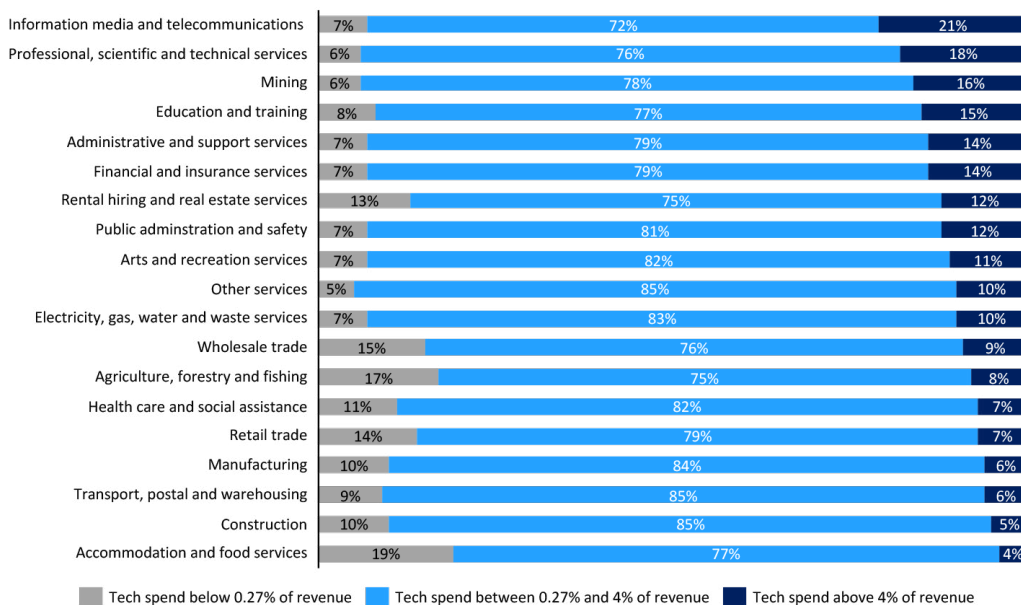
Meanwhile, technology spending within rental, hiring and real estate services is the most varied. These firms are more likely than average to be within both the Tech Leaders and Low Spenders cohorts. This reflects the wide range of businesses within the sector, which includes real estate agencies, heavy equipment rental, and pet boarding kennels.

## Exhibit 11

### Knowledge sector firms are more likely to be Tech Leaders that invest in technology; hospitality firms are more likely to be Low Spenders

#### Technology spend groups by industry

% of firms spending at least 4% of revenue or more, or less than 0.27% of revenue on technology by industry, 2017



Note: Firms with zero technology expenses are excluded. Weighted by state and industry population counts. 4% is the cut off for the highest 10% of technology spenders and 0.27% is the cut off for the lowest 10% of technology spenders.  
Source: AlphaBeta, Xero SBI, ABS 8165.0

## 3. Small businesses that invest in technology grow more quickly

Australian small businesses have benefited from better access to broadband in the last decade. This is driving better business outcomes as digital connectivity makes it easier for businesses to access applications and software that improve productivity and reach new customers. Evidence from Xero Small Business Insights data shows that firms that invest in technology tend to grow faster and employ more people than those that do not make the same investments.

### 3.1. Businesses in mature nbn regions saw revenue grow faster than those in non-nbn regions

The nbn is supporting Australia's future economic growth. Previous research has demonstrated that nbn-connected areas have higher rates of business growth and more digital jobs than those areas that are still to be connected.<sup>22</sup> Connected areas also have a greater participation of women in the workforce and enjoy a stronger regional economy.

Building on this work, we used information from Xero Small Business Insights data to analyse the impact of the nbn on business growth and performance. The staged rollout of the nbn is one way to robustly observe the effect of improved digital connectivity on businesses. We compared jobs and revenue growth in small businesses in mature nbn areas (i.e. areas where the nbn has been established for more than 18 months) with those in non-nbn areas (i.e. where the nbn was yet to be rolled out at the time of analysis). We analysed each Australian postcode, controlling for significant economic factors including average population age, average income, and proportion of people employed in industries.

We found there was a positive relationship between the nbn, jobs and revenue growth for businesses. Businesses in mature nbn regions grew employment by one-third more than businesses in non-nbn regions in 2017.<sup>23</sup>



### 3.2. Small businesses with high technology spending have faster revenue growth

Our analysis also found a strong correlation between growth in technology spending and business performance. Businesses that spent more over time on technology – including high-speed broadband, software and computer hardware – tended to be more successful in growing their revenues.

To study the relationship between technology investment and business growth, we performed a regression analysis that compared the 25% of businesses whose technology spending increased the most with the 25% whose spending increased the least. The results show that firms with the highest levels of technology spending growth between 2015 and 2017 also **grew their revenues 3.5 percentage points more** than those in the bottom quartile of technology spending growth (**Exhibit 12**).

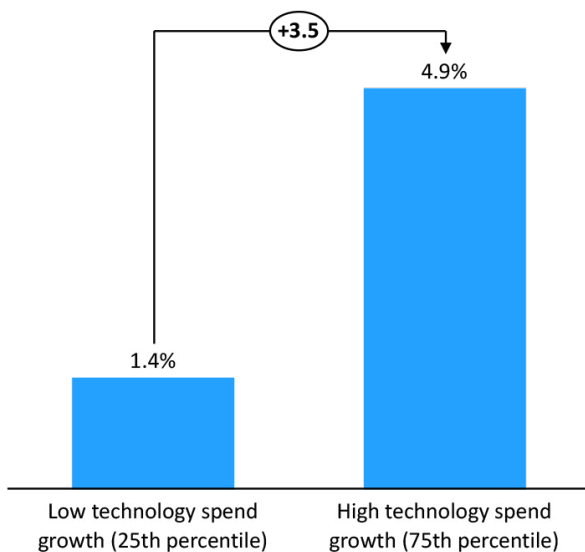
While it is important to note that our findings imply correlation, and not necessarily causation, our findings imply that technology contributes to small businesses' success for two overlapping reasons: technology helps small businesses grow more quickly; and successful small businesses tend to reinvest in technology.

#### Exhibit 12

### Small businesses with high TECHNOLOGY spending growth grew REVENUE 3.5ppt faster than those with low spending growth

**Firms with higher technology spending had higher revenue growth**

Revenue growth (%), 2015 -2017



Note: height of the bar represents the expected value of revenue growth at 25th and 75th percentiles of technology spend after controlling for other variables

Source: AlphaBeta, Xero SBI

#### Regression information

**Commentary:** The results of this OLS regression show that when a firm increases its technology spending, its revenue is also likely to be growing. The magnitude of the effect is large: Firms in the top quartile of technology spending growth have revenue growth of 3.5ppt higher than firms at the bottom quarter of technology spending growth. The result is highly significant. However, given the potential for reverse causation, this should be conservatively described as a correlation rather than a causal relationship. Also there are many unobserved factors that affect revenue growth and the R-squared from this regression is low. The result is robust to a range of alternative specifications.

**Total sample:** 151,624 firm year observations

**Independent variable:** Firm revenue growth (% p.a.)

**Main dependent variable:** Total technology expenditure (ppt change in spending as a proportion of revenue.

- Distribution: 25th percentile (-0.24), 50th percentile (0.00), 75th percentile (0.25)

- Coefficient: 7.13

- Significance: 37.2 (t-stat); 0.00 (p-value)

- 95% Confidence interval: 6.7-7.5

**Control dependent variables:** Revenue\*\*\*, firm age\*\*\*, industry dummies, metropolitan dummy\*\*\*.

**R Squared:** 0.0846

**Other specifications considered:** Alternatively specifications tested include using previous year technology spend, weighting by revenue and reducing the number of variables. The main dependent variable remains consistently positive and significant in all of these specifications.

As described earlier in this report, firms in our dataset reported four categories of technology spending: internet; telephone; hardware and computer expenses; and general ICT, which includes software. Of those categories, internet spending had the most significant correlation with firm performance.

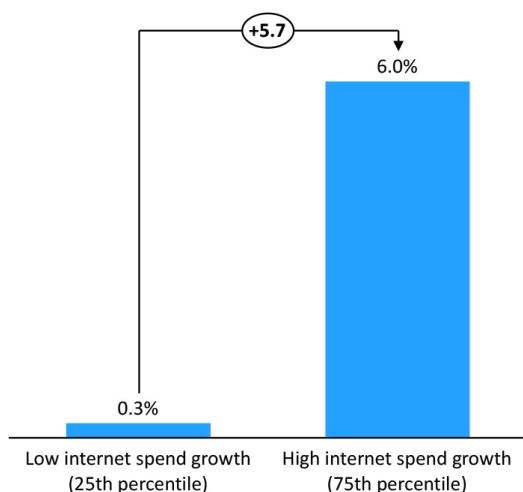
Our regression analysis shows that firms whose internet spending increased the most also achieved higher revenue and employment growth than their peers over the two-year study period. Firms in the top quartile of internet spending growth grew revenue 5.7 percentage points more than those in the bottom quartile (**Exhibit 13**).

## Exhibit 13

### Firms with high INTERNET spending growth grew REVENUE 5.7ppt faster than those with low internet spending growth

Firms with higher internet spending also had higher revenue growth

Revenue growth (%) 2015-2017



Source: AlphaBeta, Xero SBI

#### Regression information

**Commentary:** The results of this OLS regression show that when a firm increases its internet spending, its revenue is also likely to be growing. The magnitude of the effect is large: Firms in the top quartile of internet spending growth have revenue growth of 5.7 ppt higher than firms at the bottom quarter of internet spending growth. The result is highly significant. However, given the potential for reverse causation, this should be conservatively described as a correlation. Also there are many unobserved factors that affect revenue growth and the R-squared from this regression is low. The result is robust to a range of alternative specifications

**Total sample:** 86,615 firm year observations

**Independent variable:** Firm revenue growth (% p.a.)

**Main dependent variable:** Internet expenditure (ppt change in spending as a proportion of revenue

- Distribution: 25th percentile (-0.18), 50th percentile (0.01), 75th percentile (0.22)
- Coefficient: 13.5
- Significance: 37.7 (t-stat); 0.00 (p-value)
- 95% Confidence interval: 12.8-14.2

**Control dependent variables:** Revenue\*\*\*, firm age\*\*\*, industry dummies, metropolitan dummy\*\*\*.

**R Squared:** 0.0846

**Other specifications considered:** Alternatively specifications tested include using previous year technology spend, weighting by revenue and reducing the number of variables. The main dependent variable remains consistently positive and significant in all of these specifications.

### 3.3. Small businesses with high technology spending create more jobs

Our regression analysis also found a strong correlation between technology spending growth and employment. Small businesses in the top quartile of spending growth saw **employment grow 5.2 percentage points more** than those in the bottom quartile, which shed 0.4% of jobs on average (**Exhibit 14**).

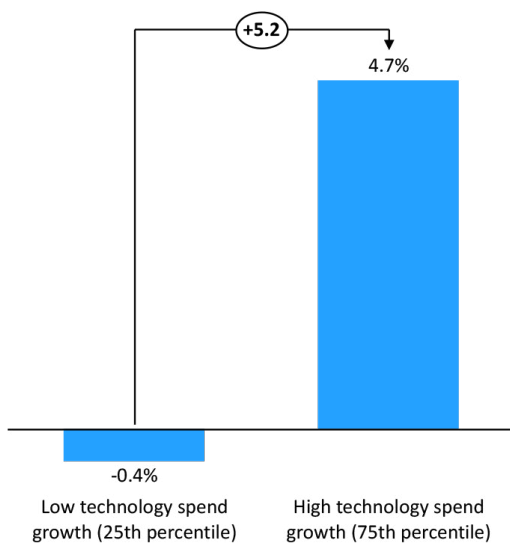
Again, internet spending had the most powerful effect on firm performance of all technology spending categories (**Exhibit 15**).

These are strong, positive correlations that reflect the importance of fast, reliable broadband connections to small businesses. These connections underpin all digital interactions, including consumer engagement, business partnerships, and access to cloud technologies that greatly improve efficiency and competitiveness.

#### Exhibit 14

### Small businesses with high TECHNOLOGY spending growth grew EMPLOYMENT 5.2 ppt faster than those with low spending growth

Firms with higher technology spending had higher employment growth  
Employment growth (%) 2015-2017



Note: height of the bar represents the expected value of employment growth at 25th and 75th percentiles of technology spend after controlling for other variables

Source: AlphaBeta, Xero SBI

#### Regression information

**Commentary:** The results of this OLS regression show that when a firm increases its technology spending, its employment is also likely to be growing. The magnitude of the effect is large: Firms in the top quartile of technology spending growth have employment growth of 5.2 ppt higher than firms at the bottom quarter of technology spending growth. The result is highly significant. However, given the potential for reverse causation, this should be conservatively described as a correlation rather than a causal relationship. Also there are many unobserved factors that affect employment growth and the R-squared from this regression is low. The result is robust to a range of alternative specifications.

**Total sample:** 26,140 firm year observations

**Independent variable:** Firm employment growth (% p.a.)

**Main dependent variable:** Total technology expenditure (ppt change in spending as a proportion of revenue.

- Distribution: 25th percentile (-0.23), 50th percentile (0.00), 75th percentile (0.23)

- Coefficient: 11.04

- Significance: 10.34 (t-stat); 0.00 (p-value)

- 95% Confidence interval: 10.34-11.75

**Control dependent variables:** Revenue\*\*\*, firm age\*\*\*, industry dummies, metropolitan dummy\*\*\*.

**R Squared:** 0.0846

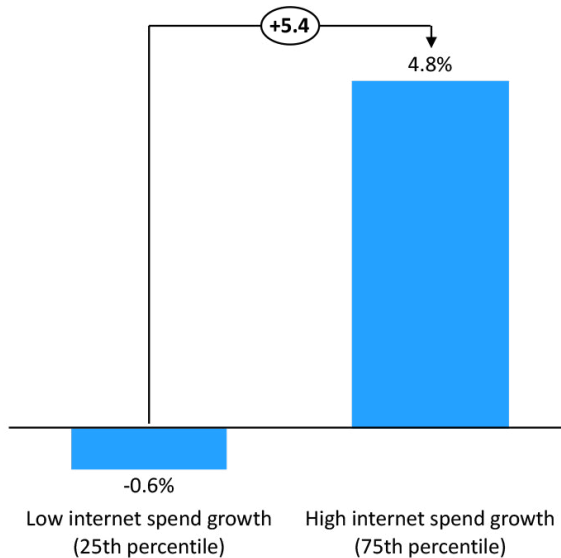
**Other specifications considered:** Alternatively specifications tested include using previous year technology spend, weighting by revenue and reducing the number of variables. The main dependent variable remains consistently positive and significant in all of these specifications.

## Exhibit 15

### Firms with high INTERNET spending growth grew EMPLOYMENT 5.4 ppt faster than those with low internet spending growth

Firms with higher internet spending also had higher employment growth

Employment growth (%) 2015-2017



Note: height of the bar represents the expected value of employment growth at 25th and 75th percentiles of internet spend after controlling for other variables

Source: AlphaBeta, Xero SBI

#### Regression information

**Commentary:** The results of this OLS regression show that when a firm increases its internet spending, its employment is also likely to be growing. The magnitude of the effect is large: Firms in the top quartile of internet spending growth have employment growth of 5.4 ppt higher than firms at the bottom quarter of internet spending growth. The result is highly significant. However, given the potential for reverse causation, this should be conservatively described as a correlation rather than a causal relationship. Also there are many unobserved factors that affect employment growth and the R-squared from this regression is low. The result is robust to a range of alternative specifications.

**Total sample:** 16,567 firm year observations

**Independent variable:** Firm revenue growth (% p.a.)

**Main dependent variable:** Total internet expenditure (ppt change in spending as a proportion of revenue.

- Distribution: 25th percentile (-0.15), 50th percentile (0.01), 75th percentile (0.18)
- Coefficient: 16.27
- Significance: 28.08 (t-stat); 0.00 (p-value)
- 95% Confidence interval: 15.14-17.41

**Control dependent variables:** Revenue\*\*\*, firm age, industry dummies, metropolitan dummy.

**R Squared:** 0.0565

**Other specifications considered:** Alternatively specifications tested include using previous year internet spend, weighting by revenue and reducing the number of variables. The main dependent variable remains consistently positive and significant in all of these specifications.

# Conclusion

The nbn build will soon be completed and provide access to all homes and businesses across Australia to fast, reliable broadband. With the right support from industry and government, this is an opportunity for small businesses – which account for 98% of all businesses and nearly half of all jobs – to improve their productivity and competitiveness, and grow.

The digital divide between small and large businesses is closing too slowly. While Australian small businesses have embraced internet connectivity, many are still not fully realising the potential of digital technologies either because they lack the skills, time and resources to invest in technology, or because they lack knowledge of the opportunities that digital technologies can enable.

This report quantifies the effect of technology adoption on small businesses in Australia. Using Xero Small Business Insights data from tens of thousands of Australian small businesses, it finds that the average small business spends around \$5,000 or less than 1% of revenues on technology, of which more than half goes towards internet expenditure. Our analysis further shows that businesses that increase their technology spend – and their internet expenditure in particular – tend to grow their revenues and employment more quickly than those that do not.

# Methodology

This report uses a range of data sources which have been referenced in the footnotes. One of the primary data sources is from Xero, a small business platform that supports online accounting and a range of other applications. The data used was aggregated and anonymised to ensure the privacy of Xero subscribers. We used a sample of the Xero subscribers that would best allow us to analyse technology expenses. This involved taking the whole Xero sample and selecting subscribers:

- with a paid subscription
- with an advisor linked to their account, such as an accountant or bookkeeper
- who had joined Xero before 30 June 2015

The remaining sample of small businesses is a high-quality sample of Xero subscribers with reliable data available over multiple years.

## Identifying technology expenses

The technology expenses in this report are based on a sample of expenses from Xero subscribers. Xero subscribers can use any description for their expenses. As such, key terms relating to technology were used to detect technology expenses. Specifically, the key search terms included the following: Internet, telephone, mobile, computer, telecommunications, broadband, nbn and adsl.

## Calculating the average technology expense

To make the Xero sample representative of the Australian business population, the data was sample weighted by state and industry according to the population totals in ABS 8165.0 - Businesses by Industry Division by Statistical Area Level 2 by Employment Size Ranges, June 2016, June 2017 & June 2018. The technology expenses reported are average figures that are weighted according to population totals. Businesses without a technology expense were excluded from the calculation.

## Analysing the impact of technology spending on firm performance

We analysed the impact of technology spending growth on the performance of small businesses using anonymised Xero Small Business Insights data to compare the performance of firms with high and low technology growth.

Technology growth was calculated as the percentage point change in spending as a portion of revenue. Firms with high technology growth are the firms with the highest 25% of technology growth. Firms with low technology growth are the firms with the lowest 25% of technology growth. We note that growth can be negative.

### § Revenue growth:

We analysed growth in revenue from 2015 to 2017 of the Xero sample and analysed the difference between the firms with high technology spending growth and low technology spending growth. Results are based on over 150,000 firm year observations.

### § Employment growth:

We analysed growth in employment from 2015 to 2017 of the Xero sample and analysed the difference between the firms with high technology spending growth and low technology spending growth. Results are based on over 25,000 firm year observations.

We present this information as correlations. These should not be described as a causal relationship as there are many unobserved factors that affect employment growth and revenue growth.



## Disclaimer

This report, including the insights and analysis contained within it, was prepared by AlphaBeta with the support of Xero, using Xero Small Business Insights data, publicly available data and AlphaBeta estimates for the purposes of informing and developing policies to support small business in Australia.

This report includes and is in parts based on assumptions or estimates. It contains general information only and should not be taken as taxation, financial, investment, or legal advice. Readers should not use this report as the sole basis for making business decisions and should always obtain specific and detailed professional advice about any business decisions.