



# The Connected Continent

How the internet is transforming the Australian economy

August 2011

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# Executive summary

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The internet has transformed the Australian economy over the last 10 years, and is poised to play an even greater role in our daily lives and businesses as Australia positions itself to become a leading digital economy

To help reach the goal of becoming a leading digital economy, this report aims to promote a deeper understanding of the role of the internet in the Australian economy.

**The direct contribution of the internet to the Australian economy is worth approximately \$50 billion or 3.6% of Australia's Gross Domestic Product (GDP) in 2010.** This contribution is of similar value to the retail sector or Australia's iron ore exports.

There are currently some obvious and direct economic benefits of the internet, such as the **190,000 people employed in occupations that are directly related to the internet** – including IT software firms, Internet Service Providers (ISPs), and companies providing e-commerce and online advertising services.

But, just as the roll out of electricity changed many aspects of peoples' lives and transformed the way businesses operate, the internet provides wider benefits beyond its direct economic impact.

These wider benefits – which are not fully captured in GDP calculations – include:

- Approximately **\$27 billion in productivity increases to businesses and government** in the form of improvements to the way they operate and deliver services. These services also flow through to consumers through lower prices and the introduction of new products
- The equivalent of **\$53 billion in benefits to households** in the form of added convenience (e.g. of online banking and bill paying) and access to an increased variety of goods and services and information.

**The internet is a catalyst for the success of Australia's small and medium-sized enterprises (SMEs), improving how they interact with their customers and suppliers and manage their internal operations.**

A customised national survey of 150 SMEs found that:

- There is substantial scope for SMEs to take greater advantage of the internet, with all respondents using the internet but only half having their own website
- The benefits of SMEs getting online should flow to other Australians, as SMEs suggest they are more likely to use the internet to find additional customers and suppliers locally, rather than overseas.

Growth in internet activity is accelerating. This is driven by infrastructure investment, the uptake of new technologies (e.g. smartphones) providing access to the internet, new applications such as social media sites and an increase in business and government use of the internet. **Activity has doubled over the past four years**, according to indices developed in this report:

- More Australian households and businesses are going online and they are rapidly upgrading to faster connections as they become available
- Australians are doing more on the internet. Web searches across categories ranging from banking to retail continue to increase more than 30% year on year. SMEs are steadily getting online with basic websites, and an increasing number of people are engaging with government services online
- An index capturing consumer spending on e-commerce and business spending on online advertising has increased by 100% over the past four years. This strong growth is set to continue as Australia catches up to more developed internet economies like the US and UK, and a larger share of commerce and advertising moves online.

**The direct contribution of the internet to the Australian economy is set to increase by \$20 billion over the next five years, from \$50 billion to roughly \$70 billion.**

- This represents a growth rate (at 7%) that is twice as fast as that forecasted for the rest of the economy and will see the internet's contribution approach that of the healthcare sector today
- Over the same period the growth of the internet will also result in approximately 80,000 more Australians employed in areas directly related to the internet
- Australia's use of the internet will expand rapidly to progressively close the gap between Australia and the world's leading digital economies
- These expectations reflect the rollout of the National Broadband Network connecting more Australians at higher speeds, government and business making better use of the internet, and government developing a policy framework that supports investment and innovation in the internet economy.

*Deloitte Access Economics*

# 1 Introduction

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## Many technologies have a big impact on a particular industry, but a few enabling technologies change every business and many aspects of peoples' lives

In that sense, the impact of the internet is more akin to that of steam power or electricity than it is to mass production of automobiles or agriculture: it changes the way people work, learn, relax and interact. It has already had a profound effect on the Australian economy, and it is poised to play an even greater role in our daily lives and businesses.

The advance of the internet will occur through infrastructure investments such as the National Broadband Network<sup>1</sup> (NBN) and as a raft of new applications and services become available and users learn to take better advantage of the opportunities these new technologies present.

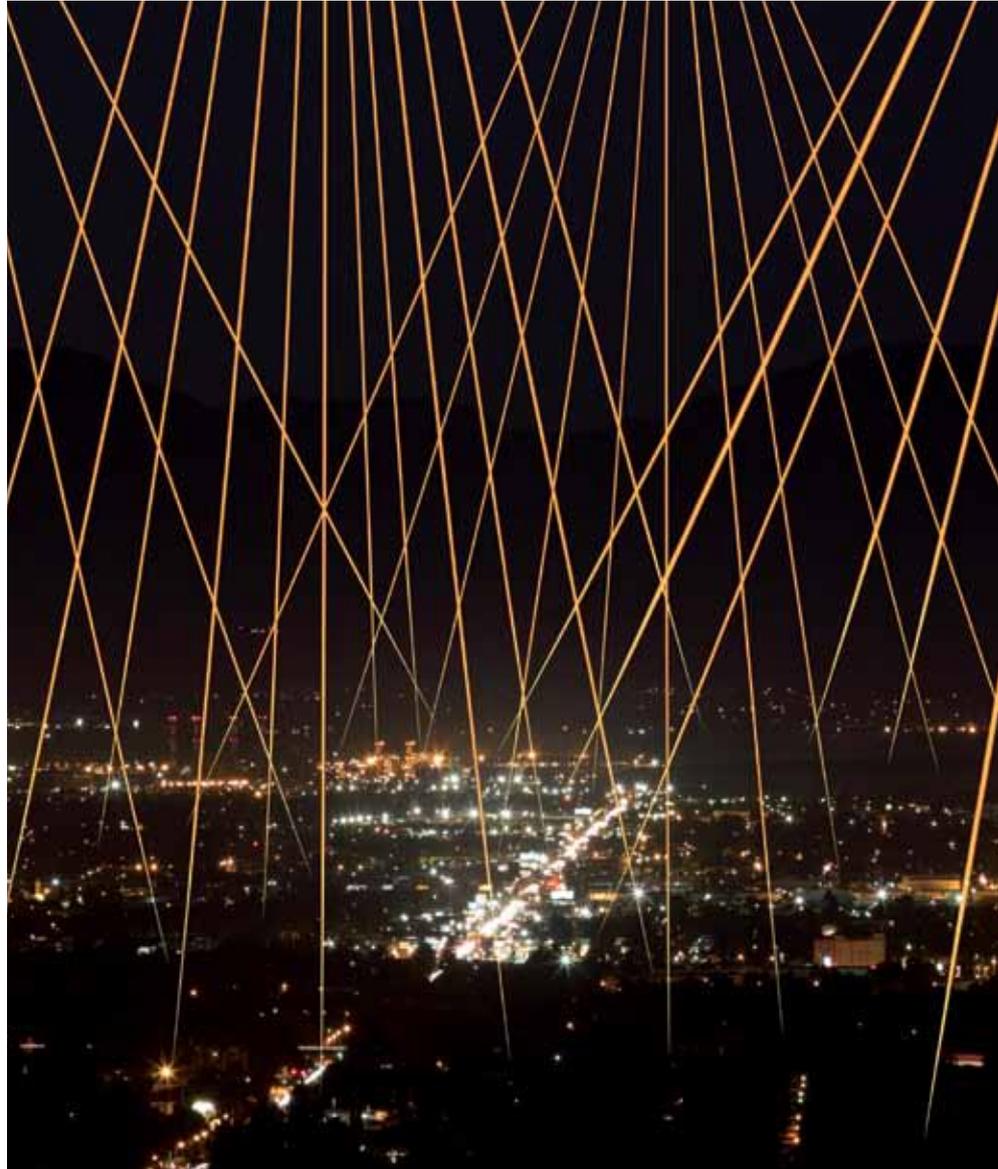
This research provides insights into the economic impact of the internet through a combination of analyses involving:

- Estimating the dimensions of the internet's direct contribution to the market economy in terms of Gross Domestic Product (GDP)
- Analysing the internet's transformational economic welfare benefits to businesses and households that are not readily captured in traditional measures of economic performance such as GDP
- Surveying Australian SMEs' use of, and readiness to use, internet services and applications
- Constructing indices to chart the rise of internet economy in the future
- Assessing where the trends of today will take the internet tomorrow.

Despite its pervasiveness, it is difficult to define which parts of an industry sector – or indeed an individual company – exist because of the internet. Unfortunately, there are no classification systems used by the Australian Bureau of Statistics (ABS) or other statistical agencies that easily lend themselves to measuring this section of the economy. Rather, each sector of the economy needs to be examined to separate out businesses that fall within the definition of the internet economy. Moreover, many of the economic benefits that are generated by the internet – such as those related to improved choice or convenience – are simply not measured in national statistics. For the purpose of this study, the scope of the internet is broadly defined as those segments of the economy whose existence relies on the internet.

The approach adopted in this report is to explore how the internet impacts on various aspects of economic well-being in Australia, and to provide estimates of the magnitude of the economic benefits that accrue. While each aspect of the analysis is subject to qualifications related to the quality of the data involved, when combined, the various elements provide a sense of the importance of the internet to the economy and the daily lives of Australians.

<sup>1</sup> In April 2009 the Australian Government announced a policy to invest \$43 billion in the creation of a national Fiber-To-The-Home network, see [www.nbnco.com.au](http://www.nbnco.com.au).



# 2

## The direct economic contribution of the internet

**\$94b** Construction

**\$27b**  
Agriculture  
and fishing

**\$62b** Transport

**\$25b**  
Electricity,  
gas and  
water

**\$100b** Mining

**\$50b**  
Internet

**\$33b** Rental  
and real estate

**\$53b** Retail

**\$75b** Healthcare

**\$10b** Arts and recreation

**\$127b** Finance and insurance

**\$53b** Education and training

## 2 The direct economic contribution of the internet

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The direct contribution of the internet to the Australian economy is around \$50 billion, or 3.6% of GDP

To put the internet's contribution to the economy into context, the analysis begins by considering more traditional sections of the economy whose values have been calculated for many years as part of GDP. Indeed, GDP represents an attempt to measure the size of the economy within practical limits. As discussed below, it does not capture all elements of economic welfare, but is a useful start.

This chapter examines the share of Australia's output that can be directly attributed to the building and maintaining of infrastructure necessary to support access to the internet, the facilitation of its use, and the development and distribution of content

It is not straightforward to define which segments of the economy to include in the analysis. Despite the importance of the internet, there is no agreed definition of the internet economy. The chapter begins by discussing how to define the scope of the internet economy for the purpose of the analysis and summarises definitions applied in economic contribution studies in the US and UK.

There is no definitive approach for measuring the contribution of the internet to GDP. In theory, there are three sets of measures that can be used to construct GDP:

- The value of *production* of goods and services, net of the costs of goods and services inputs
- The *expenditure* on final goods and services produced
- The *income* earned by companies and individuals from this production.

Conceptually, each approach should deliver identical results. They are simply measuring the value-added output from different perspectives. They are accurate for segments of the economy where there are well defined markets and where the labour and capital inputs can be clearly identified.

In practice, the paucity of available data measuring the different aspects of the internet economy places limitations on each of these methods. The approach taken in this chapter is to calculate the internet's contribution to GDP using both the expenditure approach and the income approach. While both methods have their shortcomings, they provide a useful cross check and combined, they highlight that the internet is an important component of Australia's economy.

## Measuring GDP: The expenditure approach vs the income approach

### Expenditure approach

Most studies that have attempted to measure the size of the internet economy have adopted an expenditure-based method, which sums up the amount spent by consumers, businesses, government and overseas residents on internet-related goods and services:

- A study by BCG (2010) found the economic contribution of the internet in the UK was £100 billion in 2009, or 7% of UK GDP
- A team at McKinsey (2011) used a similar expenditure-based approach to estimate the size of the internet in GDP terms for 13 economies, including the G7 and the BRICs.<sup>2</sup> The McKinsey researchers calculated that the internet contributed between 0.8% and 6.3% of GDP to the economies of the countries they studied, including 5.4% to UK GDP.

The main drawback of this approach is that data limitations make it hard to isolate the value added by the internet in some sectors. For example, both studies adopt a broad definition of the internet economy which includes, among other things, the value of all goods and services sold online. The BCG report acknowledges that it is not ideal to attribute the entire value of online transactions to the internet economy. In theory, only the value added by the internet to the transaction should be counted rather than the entire value of the goods or services sold. However, there is no data available that could accurately apportion this internet-related value.

However, this method is also likely to underestimate the total value to the extent that it does not capture all economic activity – like online advertising and online publishing – due to the internet. Overall, the expenditure approach is judged to better reflect the size of the direct contribution of the internet and so is used in this report as the primary figure.

### Income approach

An alternative approach was taken in a US study by Hamilton Consultants, where the contribution of the internet was calculated using an income-based method. This calculation is based on an estimate of the number of people employed in jobs that rely on the internet.

The US study found that the contribution of the internet amounted to US\$300 billion, or 2% of US GDP in 2008, and found that the internet economy employed around 1.2 million people (Hamilton Consultants, 2009).

The income approach is able to isolate the value-added by the online retail sector, and is generally the more conventional methodology for estimating economic contributions. Its chief weakness is the difficulty in identifying all internet-related employment given that most such activity will form only a small part of individual jobs throughout the economy. As a result, these estimates will tend to understate the scale of the internet economy, but they do provide a useful lower bound for the economic contribution of the internet.

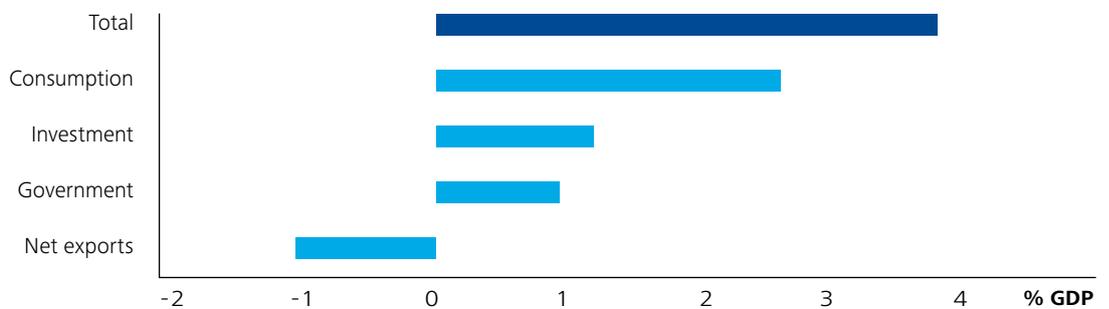
<sup>2</sup> The full sample comprised Brazil, Canada, China, France, Germany, India, Italy, Japan, Russia, South Korea, Sweden, the UK and the US.

## 2.1 Expenditure-based estimate

The expenditure approach measures the amount spent by consumers, businesses, government and overseas residents on internet related goods and services that are produced in Australia (further details about the methodology are provided in the Appendix). Using the definition adopted by the BCG study, the direct economic contribution of the internet in Australia is estimated to be 3.6% of GDP (Chart 2.1). The main elements of this total figure are as follows:

- Household consumption is the largest component of the internet economy, representing 2.6% of GDP and roughly 70% of total expenditure. Household consumption comprises goods and services bought by households over the internet, which accounts for around two thirds of spending, and household spending on ISPs and devices to access the internet, which accounts for the remaining one-third of spending
- Capital investment by telecommunication firms that provide infrastructure to support the internet, as well as business spending on computers and software to access the internet is also substantial, accounting for a further 1.2% of GDP
- Spending by government on ICT represents a further 0.9% of GDP
- Some spending by households, businesses and governments is on goods and services that are produced overseas, while foreigners buy some goods and services produced in Australia. Overall, reflective of the broader economy, Australia is a net importer of e-commerce and ICT equipment, which together subtract around 1.1 percentage points from GDP

Chart 2.1: The size of the internet economy: the expenditure approach



Source: Deloitte Access Economics

### Case study: Not playing games

The growth of the Digital Economy is providing new export and growth opportunities for innovative online businesses like **Halfbrick**.

Founded in 2001, Halfbrick has been on the forefront of the Australian game development industry for a decade and has expanded to a team of 45.

After developing licensed titles for platforms such as Gameboy, Nintendo DS and Playstation Portable, Halfbrick has begun expanding its portfolio with a range of independently released games for downloadable platforms.

Halfbrick is proving the virtues of new online business models and backing it up with prolific sales.

Halfbrick's popular title Fruit Ninja – a game which costs 1.19 AUD in Australian App stores – has been downloaded over 33 million times.

Over the next year, Halfbrick will focus on creating original apps for the expanding Smartphone and Tablet marketplaces. With the success of Fruit Ninja on the Apple and Android platforms, Halfbrick has become one of the most well known indie developers in the world, proving that Australia has the world class skills needed to make a big splash on the global games market.

## 2.2 Income-based estimate

The income approach adds together the income accruing – to workers in the form of wages, businesses in the form of profits and governments in the form of taxes – that is directly related to the internet economy.

The first step in this approach is to estimate the number of workers whose jobs are directly related to the internet. Income accruing to workers can then be estimated using the appropriate wage rates across sectors.

Data on the relationship between wages, profits and taxes across sectors – the value of the employment – can be grossed up to obtain an estimate of the value-added to GDP by internet activities (see the Appendix for further details).

Table 2.1 sets out estimates of the number of Australian employees by segment, together with an estimate of the value added to Australia's GDP by each of the segments. Overall, the internet is estimated to employ around 190,000 people in Australia and directly contributes \$22 billion to Australia's GDP.

**Table 2.1: Employees and wages for segments of the internet**

Segment	Internet employees no.	Value-added \$b
ISPs, web search portals and data processing	15,000	3.7
Hardware	4,000	0.6
IT software and consulting	40,000	4.5
Online information services	4,000	0.6
Advertising and enterprise sites	75,000	5.6
Government	2,000	2.3
E-commerce	50,000	4.9
<b>Total</b>	<b>190,000</b>	<b>22.3</b>

Source: Deloitte Access Economics, ABS, IBISWorld, eBay

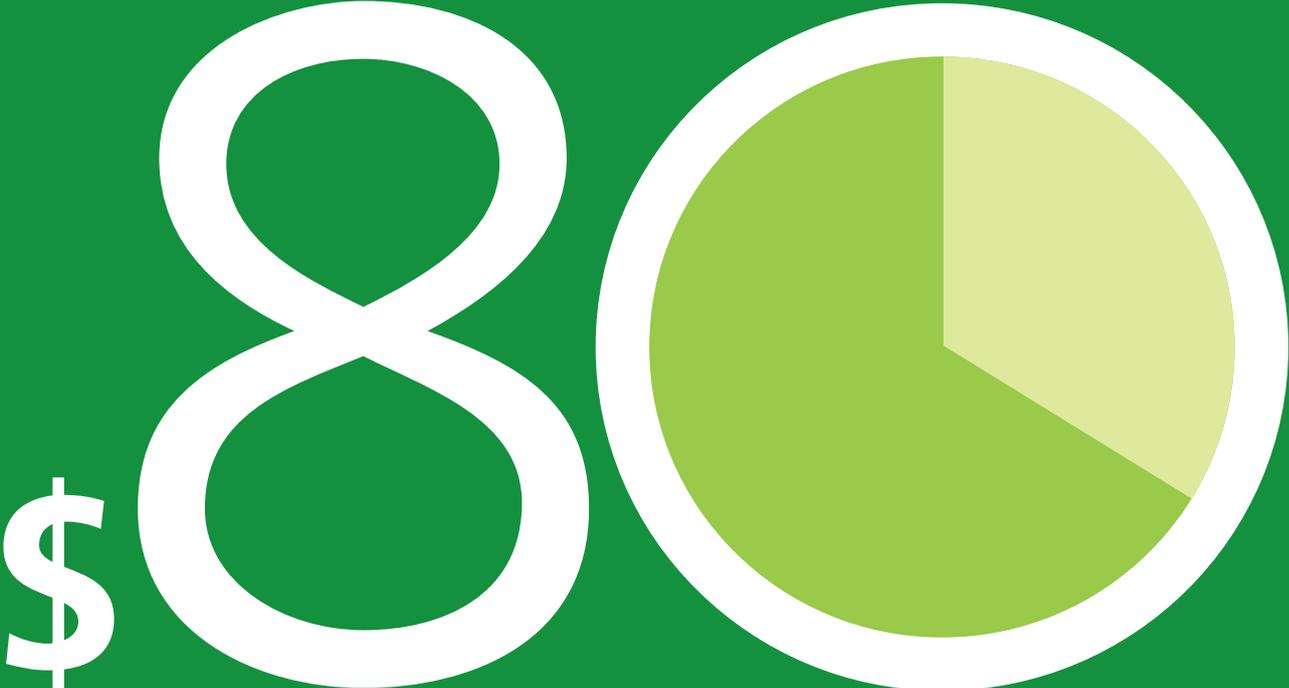
The value-added by each segment represents all income accruing to internet-related businesses from production of goods and services and is directly comparable to GDP. It comprises compensation to employees, accrued profits and net taxes paid to the government (less subsidies). Compensation to employees represents the largest component, accounting for close to 60% of the total value-added and is calculated by multiplying the number of internet employees by the average annual wage across each of the segments of \$67,000.

The difficulty in identifying all such jobs means that this approach does not portray the full impact of the internet on the economy. In addition, this approach does not capture non-market activities (e.g. education) or employees in other sectors who use the internet to help them do their jobs (e.g. economic consultants). As a result, the expenditure approach is judged to better reflect the size of the direct contribution of the internet and so is used in this report as the primary figure.

# 3

## How the internet is transforming the economy

# Value of wider economic benefits to households, business and government



billions

- \$53 billion Households
- \$27 billion Business & government

### 3 How the internet is transforming the economy

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The internet provides substantial benefits to individual Australians and businesses beyond the direct economic contribution outlined in the previous chapter. The total economic benefit from the internet, including the wider benefits that are not captured in GDP, is estimated to be worth the equivalent of \$80 billion

The internet changes the way in which business is done, affecting production, which is largely captured in GDP, but there are also other benefits. These additional impacts may be felt in business and government, but the benefits largely accrue to households. There is some degree of overlap between the figure for total economic benefit used in this section and the direct contribution figure as outlined in Chapter 2. Both approaches represent different methods of looking at the economic contribution of the internet.

Household benefits from internet use include added convenience and increased access to a greater variety of goods, services and information. These *indirect* benefits have value but are not fully reflected in GDP because the price households pay for internet access is substantially smaller than the benefits they receive. Fortunately, these important internet spill-over effects can be captured using other approaches that are introduced in this chapter. Although measures of welfare gains, in particular, are inherently much more difficult to quantify, they are likely to be substantially larger than the benefits that are captured in traditional GDP measures.

The first section of this chapter provides an overview from a business perspective. It discusses some of the ways in which the internet improves business productivity and provides a guide to the magnitude of the effect in Australia drawing from a range of US studies. Results from a customised survey of SMEs augment the analysis of the ways in which the internet is changing business.

The second section considers government, which is also responding to the opportunities provided by the internet. Not only are there new methods of service delivery and new services that can be delivered to the community, but there are more opportunities for the community to be directly involved in the decision making process. People are actively seeking increased transparency of political decision making and the greater avenues for freedom of expression that are provided by the internet.

These changes in the way business and government function improve the productivity of the economy. This greater productivity manifests itself in benefits for consumers, particularly through lower prices.

The third section in this chapter measures the additional benefits for households. A number of US studies have attempted to gauge the order of magnitude of some of these elements, and their methodology provides a basis for estimating the magnitude of the gains in an Australian context.

### 3.1 The impact of the internet on businesses

It is estimated that the boost to productivity for business and government provided by the internet amounts to an increase in 2011 GDP of around \$27 billion

The internet has transformed the way that firms operate. The ability to communicate information at faster speeds and in ways that allow it to be used more efficiently has allowed critical improvements in virtually all aspects of business operations. These include (Varian et al 2002):

- Reduced transaction cost of locating and purchasing supplies
- Efficiency of producing and delivering goods and services through, for example, lower inventories and better cooperation among designers of new products and services in different locations
- Reduced costs and improved effectiveness reaching and dealing with customers
- Enhanced competition in a number of markets, which intensifies pressures on firms to adopt further cost-saving improvements.

The internet is not new and has been in use in larger, established firms since the 1990s.

For businesses looking to become established or to grow significantly – e.g. SMEs – the potential value of the internet is higher and more exciting.

The Australian Government's National Digital Economy Strategy (NDES) recognises the importance of an effective online presence for businesses and has set a goal for Australia to: *'Rank in the top-5 OECD countries in the portion of businesses and not-for-profit organisations using online opportunities to drive productivity improvements, expand their customer base and enable jobs growth.'* (NDES 2011, p3)

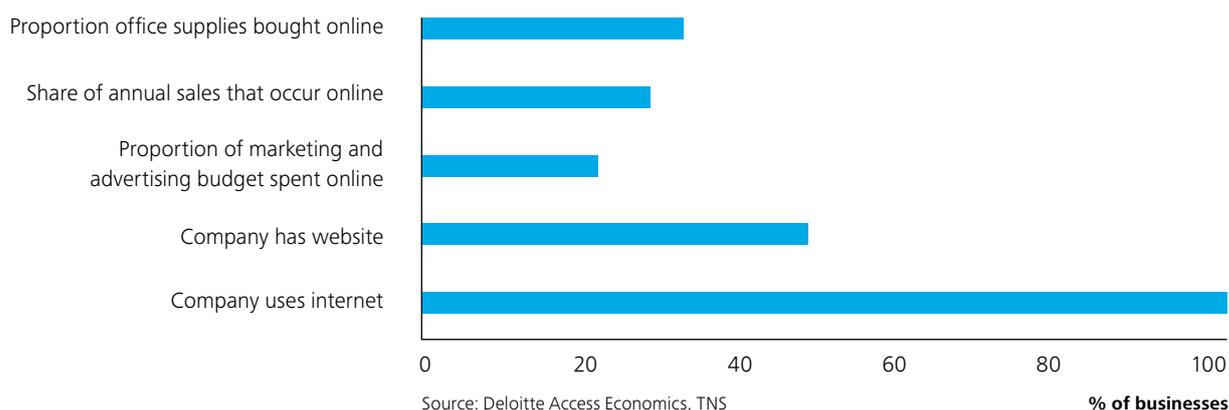
#### 3.1.1 Usage amongst SMEs

A customised survey of 150 SMEs was undertaken by TNS to find out how the internet was affecting the way SMEs do business. Detailed methodology and results from the survey can be found in the attachment at [www.deloitte.com/au/connectedcontinent](http://www.deloitte.com/au/connectedcontinent).

All businesses surveyed use the internet (Chart 3.1). However, the intensity of use varied markedly:

- Less than half of the SMEs had a website and, overall, there is significant potential for increased uptake
- Around 30% of businesses were using the internet for marketing, sales and procurement.

Chart 3.1: SMEs using the internet for marketing, sales and procurement



### Case study: Fishing for customers online

For the past six years, **Shoal Bay Sportfishing** of Howard Springs, NT, has offered fishing tours. Shoal Bay is Darwin’s premier barrumundi and mud crab fishing spot, and owner and guide Bob Morris offers full and half-day tours.

For Bob, it’s all about getting people on board and that’s why he signed up with the Getting Aussie Business Online program. Previously, Bob had put off setting up a website because of complexity and cost. Bob created his website, [www.shoalbaysportfishingtours.com.au](http://www.shoalbaysportfishingtours.com.au), by himself. “Considering my computer knowledge, the whole thing was pretty easy,” he explains. “I read some instructions and felt my way through it.”

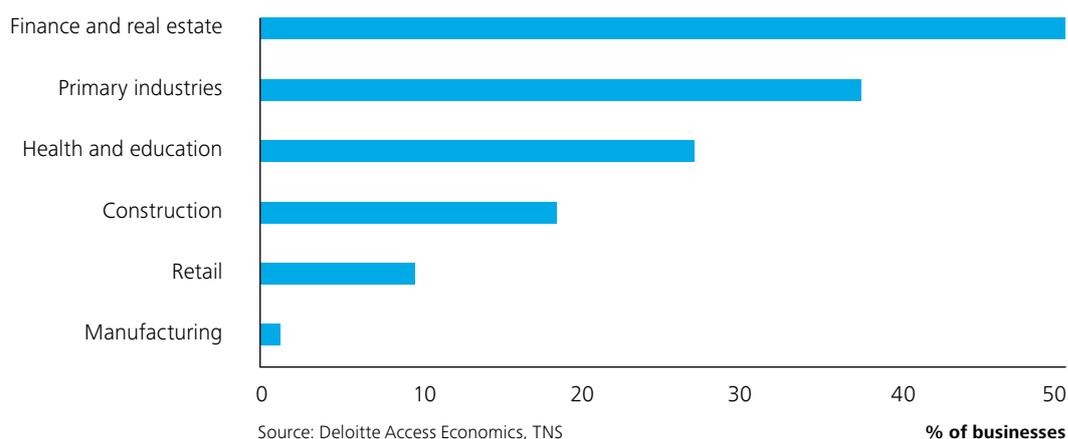
Apart from using the website to tell people about the fishing tours, Bob updates content daily and adds photos from each trip, including the best catch of the day.

Bob’s online presence has made a huge impact on his business. Now, 50% of phone inquiries he gets are from people who have visited the site. “I wasn’t getting many inquiries before,” he said. “Now I have around six a week and these are people looking to book months ahead.” Bob is confident that the website will continue to help increase the popularity of his tours.

The finance and real estate industries have the highest average proportion of internet utilisation in the marketing, sales and supplies categories, with

close to half of sales occurring online (Chart 3.2). The manufacturing industry achieved the lowest rating on these categories.

**Chart 3.2: Proportion of annual sales that are transacted online; by industry**

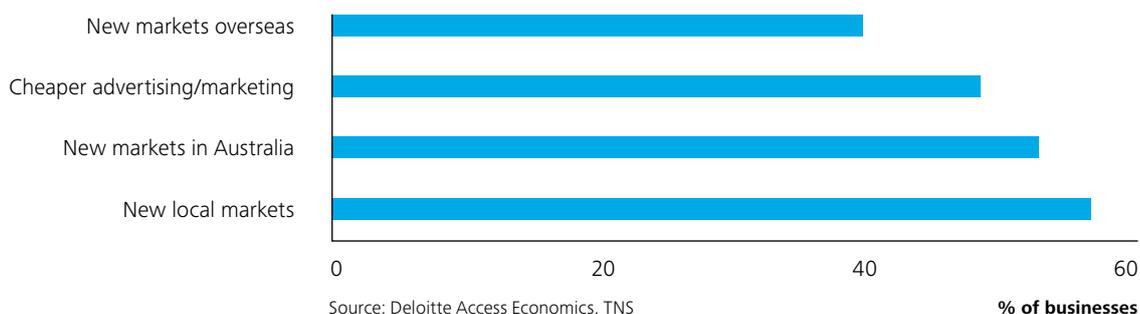


Many SMEs reported the internet provided benefits related to sales, marketing and advertising (Chart 3.3).

- The majority of businesses surveyed expect that the internet will increase their access to local and Australian markets over the next two years, while only a minority expected that access to markets overseas would change

- Across all industries, primary industries – defined as agriculture and mining – reported greatest sales, marketing and advertising benefits from using the internet, with an average 70% of these businesses reporting benefits
- The manufacturing industries found the lowest benefits from the internet in the sales, marketing and advertising categories, with only around one-third of businesses reporting benefits.

**Chart 3.3: Benefits the internet provides in relation to sales, marketing and advertising**

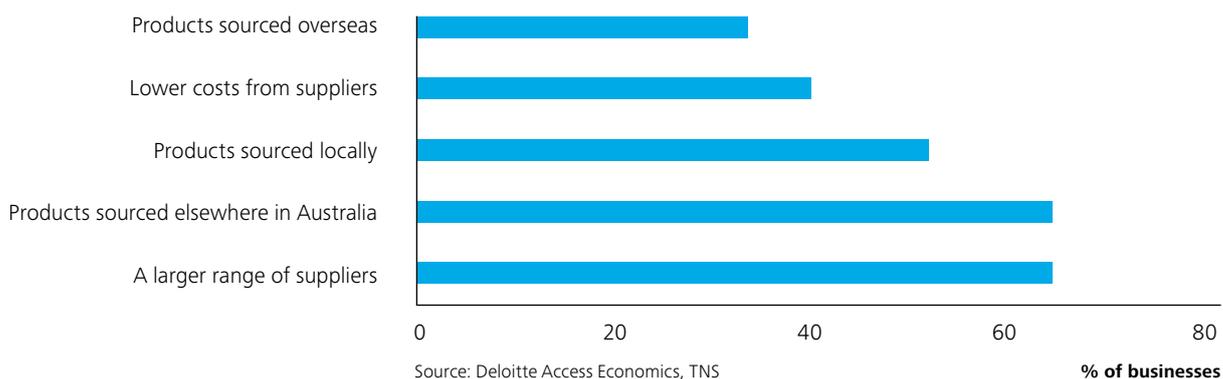


Many respondents also reported the internet having a positive impact on sourcing supplies (Chart 3.4).

- Again, the majority of respondents found that the internet helped source supplies locally and around Australia, with less than half (35%) indicating that the internet helped source supplies from overseas

- Primary industries reported the greatest benefits in relation to supplies as a result of using the internet, with the large majority of businesses reporting that the internet has increased the range of available supplies
- The manufacturing industry found the least benefit from using the internet in terms of supplies and products sourced, with only 40% businesses citing benefits.

**Chart 3.4: Benefits the internet provides in relation to supplies**



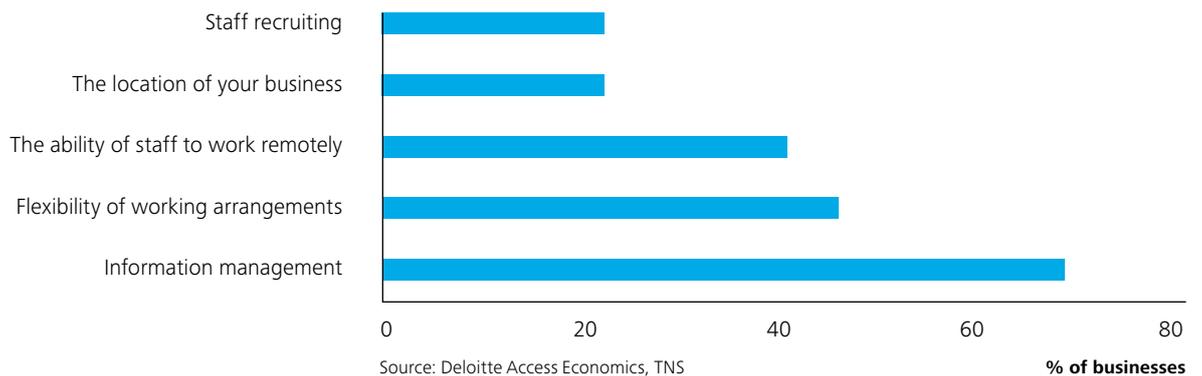
Many respondents reported the internet had affected the way they organised their business, notably for managing information and improving flexibility of their workforce (Chart 3.5).

- The primary, and finance and real estate industries reported the greatest benefits in terms of the ways that the internet has impacted on general business and management, with around 50% of businesses citing benefits

- On the other hand, the manufacturing and retail industries reported the least benefit in relation to general business and management from using the internet, with only 28% of businesses identifying benefits in these areas

The Australian Government is promoting these sorts of improvements in working arrangements and has set a goal of doubling the level of teleworking in the Australian economy by 2020 (NDES, 2011).

**Chart 3.5: Ways in which the internet has impacted general business and management**



## Case study: Small business success online

### 1. Sweet smell of online success for White Owl

White Owl Trading of Western Australia specialises in the sale of incense, candles, crystals, essential oils and accessories. Owner Robert Higginbottom aims to provide customers with great quality at the best possible prices by constantly seeking out the cheapest wholesalers to purchase stock from.

Robert created [www.whiteowltrading.com.au](http://www.whiteowltrading.com.au) himself using the Getting Aussie Business Online program, despite the fact that he says, "In all honesty, technology and me don't usually mix." He is able to sell more items in bulk on the site than he can at the markets, which has led directly to an increase in profits.

### 2. Steady flow of customers to Woolly's Water Works new website

Woolly's Water Works is a Sydney licensed plumbing company run by Paul 'Woolly' Woollett and his wife Belinda.

Launching [www.woollywaterworks.com.au](http://www.woollywaterworks.com.au) has made a big difference to their business. "We're coming up in the results when someone searches online for a plumber in our area and we've had customers saying they've found us online," Belinda says. She uses the site as an information point, to show that Woolly's is local and to provide pictures of quality workmanship.

### 3. Friends Café is going down a treat

Friends Café in Launceston sources fresh quality ingredients from around Tasmania.

Owner Wilma Ashby created the [www.friendscafelanceston.com.au](http://www.friendscafelanceston.com.au) website to grow the reputation of her great café among a wider audience. "Customers email the café through the address listed on the site," she says, "And business catering is also going strong". In fact, going online has proved so successful for Wilma that she's dropped all other forms of advertising.

### 4. New website is child's play for Toys In The Park store

Toys In The Park of Victoria Park, Western Australia is an independent toy specialist dedicated to selling children's products with a real learning value.

Jan Stearn, owner of Toys In The Park, knew that the first place people look for anything nowadays is online so it was vital to have a web presence listing her products. So, how has having a website made a difference to Jan's business? Jan says, "People are coming in and asking for specific products, which means they're looking at the site. It's nice when that happens."

### 5. Mouth-watering website better for business

Richard Bartlett opened an authentic Thai restaurant, Eagle Thai, in Eagle Heights, Queensland in 2003.

Having a website has helped Eagle Thai tremendously. Richard explains, "The number of people coming through the door has increased. It's so easy for people to search on Google and find us. But I also get existing customers calling up and asking if we have a website. We direct them to our site which has our menus and heaps of information. I have even put a link to Menulog, the food ordering and eating out guide, on the site so, after they've checked our menu, customers can order online."

### 6. Eye-catching website

Glamm Lash Eye Lash Extension in Scarborough, Queensland is a niche business specialising in high-quality eye lash extensions.

Owner Amy Aperios set up [www.glammlash.com.au](http://www.glammlash.com.au) to grow her business because 'everyone is on the internet'. Many new clients say they found Amy because the Glamm website is prominent in the search results for extensions and Amy also receives a steady flow of email inquiries directly from her website.

### 3.1.2 Productivity gains for business

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#### Businesses and government have benefitted from productivity increases worth \$27 billion

Efficiency gains generated by the internet are captured by improvements in the rate of productivity growth in the Australian economy, or the additional output per worker, as a result of the internet.

Since the internet is still a relatively recent phenomenon and the ways in which it is utilised are still evolving rapidly, there are few studies that have estimated its likely impact on productivity.

A report by Varian et al (2002) estimated the impact of the internet on productivity growth in the US, UK, France and Germany based on a survey of around 2,700 firms. At the time, the authors forecast that the cumulative cost savings would account for 0.43 percentage points of the future annual US productivity growth rate between 2001 and 2011. This represented almost half of the projected increase in US productivity over the period. The report also found that productivity gains in the UK, France and Germany were expected to account for a combined 0.11 percentage points of the further increase in productivity of the three largest European economies.

More recently, a request released by Enterprise LSE (2010) found that ICT has a large impact on firm productivity. Furthermore, this impact is larger than expected given the average share of ICT in firm output, suggesting that there are unmeasured, complementary factors that also play a role in determining the overall impact of ICT. ICT also plays a significant role in the reallocation of resources in the economy with ICT-intensive businesses more likely to grow and less likely to exit markets.

A report by the Productivity Commission (2003) found that the use of ICT has contributed to Australia's growth in output and labour productivity. Using firm-level econometric analysis, it found a positive relationship between ICT use and productivity growth in all the industry sectors examined with significant interactions between ICT use and complementary organisational variables including human capital, history of innovation, use of advanced business practises and the intensity of organisational restructuring. Indeed, the Productivity Commission estimated that ICT – including the internet – contributed around 0.2 percentage points per year to GDP growth over the late 1990s.

In summary, transformations enabled by the internet are likely to have contributed a similar magnitude to productivity growth for businesses and government as that contributed by the ICT sector over the past decade, amounting to an increase in GDP in 2011 of around \$27 billion.

### Case study: Mapping more effective energy

The Queensland corporation, **Ergon Energy** is using cloud based geo-spatial mapping to provide more reliable energy services for consumers and better management of its broad array of assets. Ergon Energy operates as an electricity distributor, retailer and generator and services around 680,000 customers across its vast operating area of over one million square kilometres – 97% of the state of Queensland – from the expanding coastal and rural population centres to the remote communities of outback Queensland and the Torres Strait.

To service Queensland, Ergon Energy is building an interactive, 3D online map of its electricity network to process and visualise data from its Remote Observation Automated Modelling Economic Simulation (ROAMES) project.

A joint project of the Queensland University of Technology, Seabird Aviation, the Queensland Government, and industry partners, ROAMES will collect terrain data on some 150,000 kilometres of Ergon Energy's powerlines.

The information generated by this project would initially be used to scope and schedule Ergon Energy's extensive vegetation management program, which would generate savings of \$44 million over five years, but there would be a broader series of dividends for Ergon Energy's customers. ROAMES simulations will assist Ergon Energy in planning for, or responding to, natural disasters or growth in demand. The improvements generated by the ROAMES project will result in improved power supply reliability and community safety.

### 3.2 Public sector and government

The internet also offers the potential to transform the way that the government interacts with the community. Effectively utilising the internet to deliver government services increases customer satisfaction, reduces costs and promotes innovation.<sup>3</sup>

The Australian Government aims for Australia to be one of the world's leading digital economies in 2020. One of its main goals is improved online government service delivery and engagement (NDES, 2011).

One of the key aims of Australia's National Digital Economy Strategy, released in May 2011, is that four out of five Australian's will choose to engage with the government online. A recent report by PriceWaterhouseCoopers (2010) for the UK government found that it cost the equivalent of \$16 to have a face-to-face transaction with the government and \$5 for a telephone engagement, compared to \$0.12 to engage online.

There has been significant improvement in the provision of government services online already. A report into Australia's use and satisfaction with e-government services in 2009 showed that close to one-third of people use the internet for the majority of their contact with government (AGIMO, 2009). Some of the benefits of engaging with government via the internet, in terms of added convenience, are explained in the consumer section.

Separate to the benefits to individuals, the internet also offers a number of ways for government to operate in a more efficient and cost effective manner, many of which have been outlined in the business section above. Cloud computing, in particular, provides the opportunity to reduce the cost of ICT and improve efficiency.

<sup>3</sup> These productivity gains are captured in the estimate provided in the business section.

## Cloud computing

Cloud computing refers to internet-based computing where data and information is available over the internet for access by computers, mobile phones and other devices through a web browser. While the technology is still evolving, it offers substantial benefits for governments in terms of innovation and cost reduction. Already, the Department of Education and Training in NSW has utilised this technology to provide a more reliable and available email system for students. This is estimated to have reduced costs by 66% and provided a more effective tool for students to collaborate and learn (NDES, 2011).

The UK government has estimated that, by adopting cloud computing, it could save £3.2 billion from its annual £16 billion IT budget (PWC, 2010). Assuming that a similar saving as a share of government IT spending could be achieved in Australia, this would equate to \$4 billion. Beyond the direct cost saving, there are also substantial advantages in terms of business agility, reliability and potential for innovation.

A recent report released by Global Access Partners identified a range of opportunities for the Australian Government and the Australian economy more broadly (GAP, 2011). These include the reduced costs and the productivity gains associated with increased flexibility, innovation and improved resilience of IT systems. For government in particular, this should facilitate an increase in applications to streamline government services and increase the breadth of services available online.

The Government recognises the potential of cloud computing in helping to achieve better service delivery, more open engagement and improved government operations, and has outlined steps towards the comprehensive adoption of cloud computing in its Draft Strategic Vision for the Australian Government's use of ICT (AGIMO, 2011).

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## Education and health are two key government services where there are significant potential benefits from accessing and sharing information over the internet, particularly for delivery to regional and remote communities

### 3.2.1 Health

The internet provides huge potential for improving healthcare services in Australia. The current healthcare system is under substantial pressures because of the ageing population and increased cost of healthcare provisions.

The internet can improve delivery of services, enable innovation in the sector and reduce funding pressures on the health system.

With the appropriate applications, early diagnosis, post-treatment patient monitoring and aged-care services are all areas that can be provided to the community in their homes.

The government also aims, by 2020, to provide access to individual electronic health records to priority customers, including older Australians, mothers and babies, and people with chronic diseases.

These improvements to the way that healthcare is delivered will foster improved health outcomes across the country and reduce costs associated with the health system. More broadly, improvements in the healthcare system should help to drive stronger workforce productivity growth which is vital for Australia's longer-term economic outcomes.

### Case study: Closing the gap between urban and rural medicine

The growth of the digital economy is providing new opportunities to train world class doctors for regional Australia and closing the gap in quality between urban and rural medical care.

**The University of New England's (UNE)** groundbreaking partnership with **University of California's Irvine School of Medicine (UCI)** will connect General Practices in rural and regional communities with world class medical teaching institutions via fast broadband connections to share simulation facilities and teaching resources.

Fast broadband enables high speed data exchange, and gives UNE's 300 students of rural medicine the ability to upload and download large packets of complex medical data, such as MRIs, quickly and efficiently. Rural medical, nursing and health students will now have access to state of the art simulation as well as teaching resources that would be otherwise impossible to transport, develop, service and maintain in regional Australia. Soon the participating general practices and clinics will also be able to access the information.

The UNE-UCI partnership provides students and teaching staff with the opportunity to connect 'anywhere' to lectures, tutorials, workshops

and simulation. The program is already creating communities of practice and medical education engagement among general practices and specialist clinics in regional Australia.

Connecting professionals and students across Australia with state of the art teaching institutions here and abroad is also driving medical innovation. Health educators and clinicians can now work together to develop new forms of digital education that allow medical, nursing and allied health students to interact with medical and health practitioners in surgeries, clinics and classrooms around the world. The implementation of fast broadband across Australia means that these institutions will be able to share more life-saving information and techniques quickly and efficiently.

The project represents a more efficient and cost-effective way to train doctors, nurses and allied health professionals for rural and regional communities. It is often difficult to attract an adequate number of doctors to regional hospitals. The UCI-UNE partnership will double the number of the teaching staff who can participate as rural medical and health educators: a major contribution to the medical and health rural workforce.

### 3.2.2 Education

The internet also opens up a number of possibilities for e-education. In addition to reducing administrative and infrastructure costs, there are huge opportunities for long-distance education and other forms of e-learning which would allow a much wider range of learning opportunities to be accessed throughout the sector. The internet facilitates greater collaboration and more flexible learning environments. Teaching and training can be supplemented with access to experts outside of the local area, and broadband technologies enable more intensive online interactions resulting in better quality educational outcomes.

International studies (Carter, 2009; European Commission, 2006) have shown that online learning at universities can reduce the time it takes to learn a subject while substantially increasing course completion rates, and broadband access in high school classrooms can significantly improve students' performances.

#### Case study: Connecting the continent in crisis

With more and more people going online to find out about government services and programs, the internet is providing new ways for emergency services to connect with people in times of crisis.

During the devastating floods and Cyclone Yasi in 2011, **Queensland Police** used Facebook and Twitter to communicate urgent information to the public. Before the adoption of online social media strategies, over 90% of QPS communications were reactive as it tried to respond to questions from journalists seeking minute-by-minute updates.

After the adoption of the online strategy, QPS estimated that about 70% of its public relations efforts during the crises were proactive. With Facebook and Twitter, it was able to develop a direct connection with the general public. The agency's Facebook page became the de facto one-stop-shop for all of Australia and for journalists across a range of media around the world.

This was made possible because of the incredible reach of the internet.

QPS was one of the first public-facing organisations to widely and effectively use social media in crisis communication, and that came to a fore at the height of the floods in January, described by Premier Anna Bligh as the worst natural disaster in the state's history.

For their efforts, Queensland Police Director of Media and Public Affairs Kym Charlton won the Gov 2.0 Innovator Award for her leadership and innovative use of social media. Kym was instrumental in introducing this approach. Kym took responsibility for streaming media briefs with the Premier, the State Disaster Coordinator and other high-ranking officials live to the internet, in order to keep the community up to date and accurately informed.

### 3.3 The internet's benefits to households

The estimated annual value to the Australian economy that accrues to households from accessing the internet is **\$53 billion**

These benefits are not fully reflected in GDP because the price households pay for access is substantially smaller than the benefits that they receive. The benefits that households receive fall into four main categories (Table 3.1). The estimated annual values are presented with explanations of how they are derived in the following sections.

There is likely to be a small amount of overlap between each of the categories but each one is largely identifying separate benefits. There is some double counting of the time spent searching, performing chores and shopping online, but the majority of recreational time spent online is spent on activities such as social networking, instant messengers and email (comScore, 2011).

Table 3.1: How the internet benefits households

Benefit	Description	Annual value
<b>Search</b>	The internet is a far more efficient search tool than anything available prior to its development. Although Australians do not devote a large proportion of their time on the internet to searching, the amount of time saved in acquiring information is substantial.	<b>\$7 billion</b>
<b>Variety</b>	Prior to the availability of the internet, consumer purchases were largely restricted by physical location. The internet opens markets up to consumers that were not previously available. The increased variety available to consumers from the internet holds significant value in itself, while the increased competition also reduces prices in a number of markets.	<b>\$16 billion</b>
<b>Convenience</b>	This category captures the reduction in time it takes to perform various household chores, for example, the added convenience of online banking and using the internet to pay bills, and submit forms and other government communications.	<b>\$8 billion</b>
<b>Recreation</b>	Consumers spend a considerable share of their leisure time on the internet. This category places a value on the time Australians spend on recreational activities on the internet, such as browsing, using social media, and other forms of communication with friends and relatives.	<b>\$22 billion</b>

Source: Deloitte Access Economics estimates

### 3.3.1 Search

**The ability to search for information more efficiently on the internet is estimated to be worth the equivalent of \$500 per person per year, or \$7 billion in total nationally**

Internet search engines and browsers allow consumers to quickly and easily find information on anything from products and services, academic literature, the availability of jobs or houses to simply obtaining directions or information on the weather. Specialised price and product comparison sites, for example Webjet and Wotif, also allow consumers to compare prices from a variety of sellers and can result in consumers identifying a wider range of options and paying a lower price.

#### A day without a search engine

The benefits that accrue from quick and easy access to information are difficult to quantify. Research by Hal Varian estimates the benefits that Google provides to US consumers. His calculations are based on a paper by Chen et al (2010) titled *A Day without a Search Engine: An Experimental Study of Online and Offline Search*, which finds that it takes an average of 7 minutes to search for a particular item online compared to 22 minutes for an offline search, saving an average of 15 minutes per search.

Varian assumes that a person currently asks, on average, one answerable question every two days. If the web were not available, the extra search time needed to answer a question (15 minutes plus travel time, according to Chen et al) reduces the number of questions a person asks to close to zero. Using this information, Varian creates a 'demand curve for questions', and calculates that the consumer gains generated by search on the internet is 3.75 minutes per person per day.

Assuming Australian workers value their time at the average after-tax wage of \$22 per hour, a saving of 3.75 minutes per day is worth \$1.40

per day or \$500 per year. Extrapolating this across all of Australia's internet users, the equivalent benefit for Australia is \$7 billion. The Use Index in Section 4.2 of the following chapter shows that the number of searches has increased rapidly in recent years, suggesting that the total value of search is increasing.

### 3.3.2 Variety and prices

**The increase in the variety of goods and services available online across major online retail spending categories is worth \$16 billion to Australians**

Two related implications of the reduction in search costs are the increased variety of goods and services available to consumers on the internet and the reduction in prices associated with this increase in competition. Many markets tend to be dominated by a small number of best-selling products. 'Top 40' music sales, books by best-selling authors and blockbuster movies provide a few examples. However, by increasing the availability of niche products the internet is shifting this balance (Brynjolfsson, Hu and Simester, 2003). This phenomenon of niche products making up a larger share of total sales has been labelled 'the long tail'.

Potentially, there are large gains from the internet for consumers if they can better match their preferences and pay lower prices. Indeed, a survey by the Australian Communications and Media Authority (ACMA) found that increased variety is one of the key reasons for purchasing goods and services online (ACMA 2010).

While no research has attempted to quantify the gain from increased variety in aggregate terms, Brynjolfsson, Hu and Smith (2003) focuses on the gains in consumer surplus resulting from the increased catalogue of books available online compared to a bricks-and-mortar book store and the reduction in prices of online books. They find that the welfare effects are substantial, and perhaps surprisingly, the increase in variety

provides much more benefit to consumers than the reduction in prices.

The paper estimated that in the year 2000, there were around 23 million books available on the online store Amazon.com compared to 100,000 in the largest bricks-and-mortar bookstores. This implies that the number of books available online is around 23 times larger. The paper also estimated that close to 40% of books sold online would not have been available in a conventional bookshop.

For Australia, data collected by Forrester on behalf of PayPal found that Australians spent \$606 million on book sales over the internet in 2010. It is likely that a similar share of online book purchases by Australians are not available elsewhere and we can also assume that the elasticity of demand for books is between -1.6 and -1.8 in line with Brynjolfsson et al (2003).<sup>4</sup> Based on these assumptions, consumer welfare in Australia has increased by between \$300 million and \$420 million from the increased variety of books available online.

In addition to the consumer surplus gain from increased variety in accessible books, Brynjolfsson and Smith (2000) calculated that book prices on the internet, including shipping and handling, were around 6% lower due to increased competition and operational efficiency. However, the consumer welfare gains as a result of the price declines are estimated to be much smaller than the gains from increased variety. A 6% decline in online book prices in Australia is estimated to increase consumer surplus by around \$35 million. This is 9 to 12 times smaller than the gains in surplus resulting from increased variety.

Beyond books, the increased variety of other goods and services available on the internet – including apparel, electronic goods and travel, among other things – is likely to be a factor in a substantial share of online purchases. Assuming that 40% of all goods and services purchased online would not be readily available to consumers in the absence of the internet (the same as for books), the increase in consumer welfare across all online retailing activities would be in the order of \$16 billion.

### Case study: New markets online for regional Australia

**Aussie Farmers Direct** ([www.aussiefarmers.com.au](http://www.aussiefarmers.com.au)) is showing how online sales can simplify ordering and delivery and provide consumers with a greater choice of fresh local produce. Aussie Farmers Direct is a free home delivery service providing produce that are 100% Australian owned and produced via an online ordering system.

It is also an example of the growth potential of online retail in the digital economy. Aussie Farmers Direct topped the *BRW* Fast 100 list of rapidly growing companies in 2009 and 2010, and topped the *BRW* Fast Franchises list for 2010 and 2011. In the three years since it was launched, Aussie Farmers Direct has averaged annual revenue growth of 150%. It now generates over \$100 million per annum in revenue and has expanded to 170 franchises with 100,000 customers Australia wide.

Aussie Farmers purchased a dairy in Camperdown, Victoria, in 2010, which now employs 25 locals and produces one-third of its customers' milk purchases. The firm plans to buy more production dairies, and establish direct lines of production for other key perishables. Because of the way the ordering system is designed, consumers select only what they need from over 50 seasonal items to create a customised delivery box.

Aussie Farmers Direct aims to transport produce fresh from the farm to the consumer within 24-48 hours where possible. Using products like *My Butcher*, consumers are able to order a variety of locally sourced beef, lamb, chicken and seafood. Few other retailers can match the convenience, speed of delivery and freshness of Aussie Farmers Direct's perishable produce.

<sup>4</sup> The elasticity of demand refers to the change in quantity demanded for a given change in price. In this example, a 1% increase in the price of books reduces sales of books by 1.6 to 1.8%.

### 3.3.3 Convenience

The internet saves people a substantial amount of time performing necessary everyday tasks like banking, paying bills and dealing with government. Assuming a typical internet user saves around half an hour each week, the estimated value of the benefit to consumers is \$8 billion

Households make significant gains by saving the time it would otherwise take to perform menial tasks such as banking, paying bills and submitting government tax returns and other forms. The measure of benefits from convenience attempts to capture the value of time gained performing household chores that must be undertaken one way or another, and is separate from recreational activities discussed below.

There are no studies to use as a basis for the calculations in this section. Instead, the method outlined in Section 3.3.1 on search, which values the time saved by performing chores online, is used. Unlike the section on search, we assume that there are a set number of chores that need to be competed regardless of the time that it takes.

For example, prior to the widespread availability of the internet, completing most banking transactions involved a physical trip to the bank during opening hours and waiting in line to be served. Likewise, registering a car and renewing a driver's licence involved a trip to the motor registry, paying bills and submitting a tax return involved buying an envelope and a stamp, filling out the form and dropping it at the nearest post office.

For the vast majority of the working age population, the ability to perform all of these tasks and more online saves a substantial amount of time every week. A recent report by ACMA (2010) found that over a six month period, 70% of internet users performed banking transactions online, nearly 70% paid bills online, and more than a third used the internet to access government services.

This saved time is valuable. We assume that people with access to the internet save half an hour each week on these tasks. Assuming that they value their time at the average after-tax wage rate of \$22 per hour, this time saved is worth \$11 per week or \$600 per year.

Extrapolating this across Australia's internet users, the equivalent benefit for Australia is \$8 billion. Further research into the amount of time saved by performing necessary tasks over the internet may uncover additional benefits not included in this estimate.

### Case study: Mobilising users to drive competition

Consumer group **Choice**, in conjunction with the finance comparison site Mozo, has developed a price comparison website to enable consumers to make informed decisions about their financial provider. The 'Compare, Ditch and Switch' website provides consumers with a free comparison tool to compare their current provider to others in the market and then switch if they find one which is offering a better service.

According to the Compare, Ditch and Switch site, customers who switch from their existing bank can save as much as \$2500 a year on a mortgage, \$440 on a credit card account and \$330 on savings accounts.

Choice has said this simple tool will assist in mobilising consumers and encourage competition in the sector.

### Case study: Banking on better customer service

Australia's increasingly competitive banking sector has seen a sharp increase in online activity from across the banking sector, as institutions seek new ways to streamline customer service and offer competitive rates to customers.

In 2008, the NAB launched **UBank**, a customer oriented financial institution with no branches. Instead, customers can contact the bank online or seek service over the phone from customer service representatives working around the clock.

All of this means lower operating costs with the bank passing savings in overheads on to the customer via competitive rates.

UBank offers competitive rates in savings, term deposits, superannuation and home loans. In three years, UBank has grown to become Australia's 12th largest retail deposit bank with over 100,000 customers.

### 3.3.4 Recreation

**Consumer gains from recreational use of the internet are estimated to be around \$2,000 for the average person, an amount equivalent to \$22 billion to Australia**

Australians spend a substantial proportion of their leisure time surfing the net. A survey by TNS Global (2008) found that, on average, Australians spend 1.5 hours of leisure time each day online. This implies an average of 9.4% of waking hours is spent each day online for personal reasons. People choose to use the internet for such a significant proportion of their time because they value the experience.

An interesting feature of the internet is that, like television, the main cost of consumption is the forgone leisure time that could have been spent on other things. The direct expenses incurred by households to access the internet are comparatively much smaller.

Based on data from the ABS Household Expenditure Survey (HES), a typical subscriber spent around 0.5% of their income on the internet. Assuming this share has held fairly steady over time, the time share is close to 20 times larger than the expenditure share.

A paper by Goolsbee and Klenow (2006) develops a simple utility model for estimating the welfare gain to consumers that takes into account the opportunity cost of leisure – or more precisely, the value of alternative uses of leisure time, e.g. working longer hours. The authors estimate the welfare gains from internet use by calculating the difference between the maximum price consumers are willing to pay for the internet and the price they actually do pay (also known as the consumer surplus).

Assuming that, for the average person, half of their 1.5 hours of leisure time each day is spent on recreational activities like using social media, email and browsing, the annual consumer surplus is estimated to be around \$1,600 per person.

# 4

## Charting the growth in internet use

Internet activity has doubled  
over the past four years



## 4 Charting the growth in internet use

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### Internet activity has doubled over the last four years

Despite the economic transformations that have already taken place as a result of the internet, there is still a long way to go. The full impact of other important innovations, like the automobile and electricity, was not felt for many decades after their initial invention. The internet is likely to be no different.

Increased use of high speed broadband over the coming decade will create a new wave of adoption and innovation in Australia. More broadly, global internet uptake has been expanding rapidly as infrastructure is extended and people adapt to the new technology. As the number of internet users increases, this provides a catalyst for further innovation in the way we use the internet and provides access to even more markets and information.

We have developed three indices to provide a picture of how internet use in Australia is evolving. We have taken a similar approach to BCG (2010) and focused on three measures of internet activity:

- Access: the increase in the number of internet connections for households and businesses, and the average access speed
- Use: changes in the way that consumers, businesses and government are utilising internet technologies
- Expenditure: the value of online advertising and online retail spending.

The indices show strong growth in recent years across the board, which looks set to continue. The Access Index has accelerated in the past couple of years, underpinned by a switch by households and businesses towards faster access speeds and steady growth in the number of internet connections; the Use Index has grown strongly, with the number of internet searches growing particularly rapidly; and the Expenditure Index also exhibits solid growth, with strong growth in spending on advertising and online goods and services.

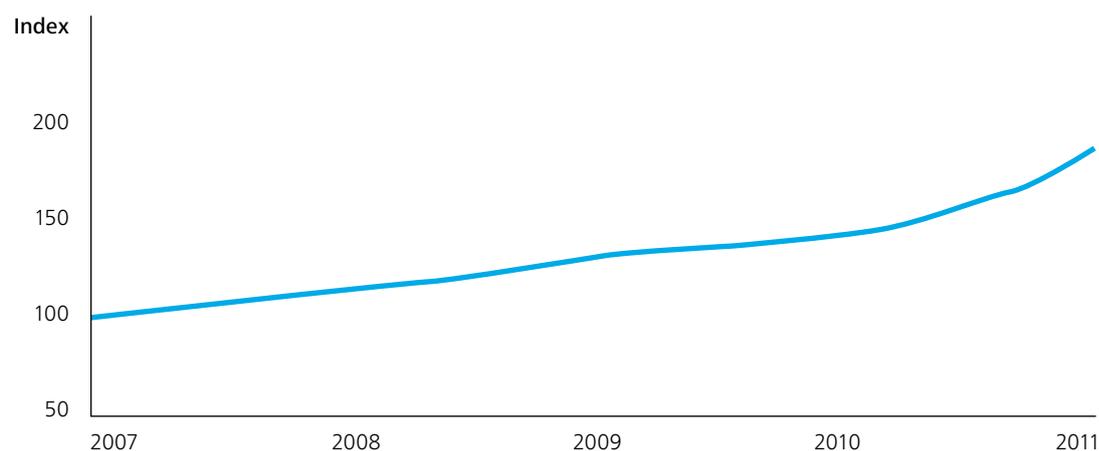
With a significant proportion of households and SMEs still not online, and huge potential for more intensive use of the internet by households, businesses and government, the current acceleration in activity is set to continue in the period ahead.

## 4.1 Access

The Access Index provides a sense of how the number of internet connections, and the speed of those connections, is changing over time. The Index comprises data on the number of household and business internet connections, and an estimate of the average speed of connections.<sup>5</sup>

The Index has accelerated in recent years, increasing by 80% over the four years to the end of 2010. The strong performance reflects a steady increase in the number of connections per household, a pick-up in the number of connections per business, and a switch towards faster connections for both businesses and households.

Chart 4.1: Access Index



Source: Deloitte Access Economics, ABS

### Mobile internet

The internet has become much more pervasive with the phenomenal growth of mobile internet connections. According to the Nielson Online Consumer Report (2010), over half of Australians that use the internet can access the internet on their mobile and over one-third have smartphones. Although data usage through this channel remains relatively modest at this point, activity is expected to pick up as consumers adapt to the convenience of having internet access in their pocket.

A survey by the Australian Interactive Media Industry Association (AIMIA, 2010) found that an

increasing number of people are using their mobiles to access information services, like weather, news and maps. Nearly a quarter of respondents used their mobile for banking at least monthly, and around 10% bought goods and services on their mobile.

The burgeoning popularity of other types of access devices, like tablets and e-readers, is also likely to influence how Australians use the internet. While only 8% of online Australians owned a tablet in 2010, Nielson expects ownership to more than triple by the end of 2011 (Nielson, 2010).

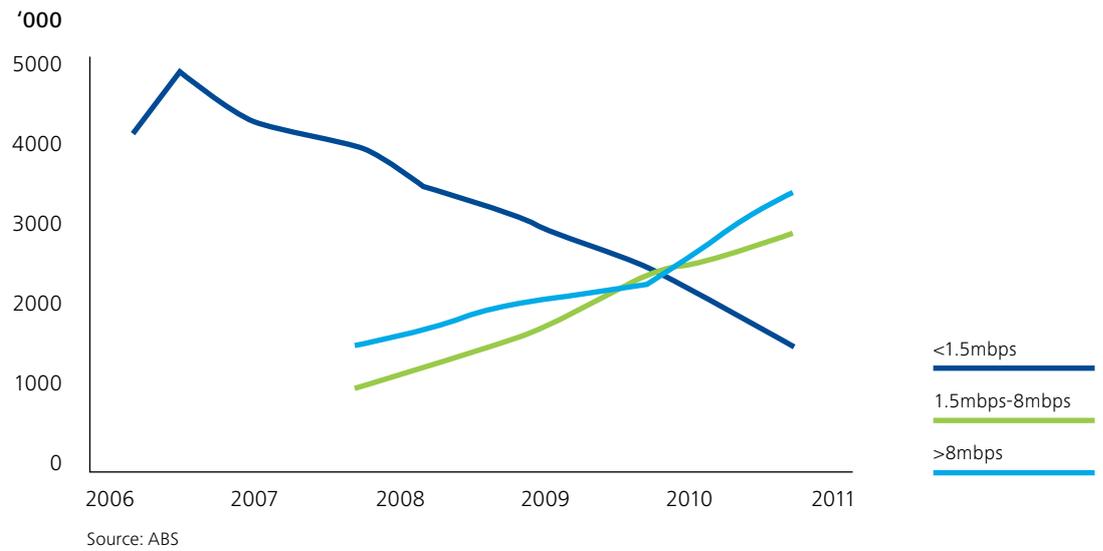
<sup>5</sup> It should be noted that the connection speed is likely to reach a point at which the additional benefits from a faster connection will diminish as the connection speed increases. Our Index has not adjusted for this because data is not available to explicitly measure the additional benefits associated with increased speeds.

There has been a clear trend in recent years towards faster connections for both households and businesses (Chart 4.2, Chart 4.3).

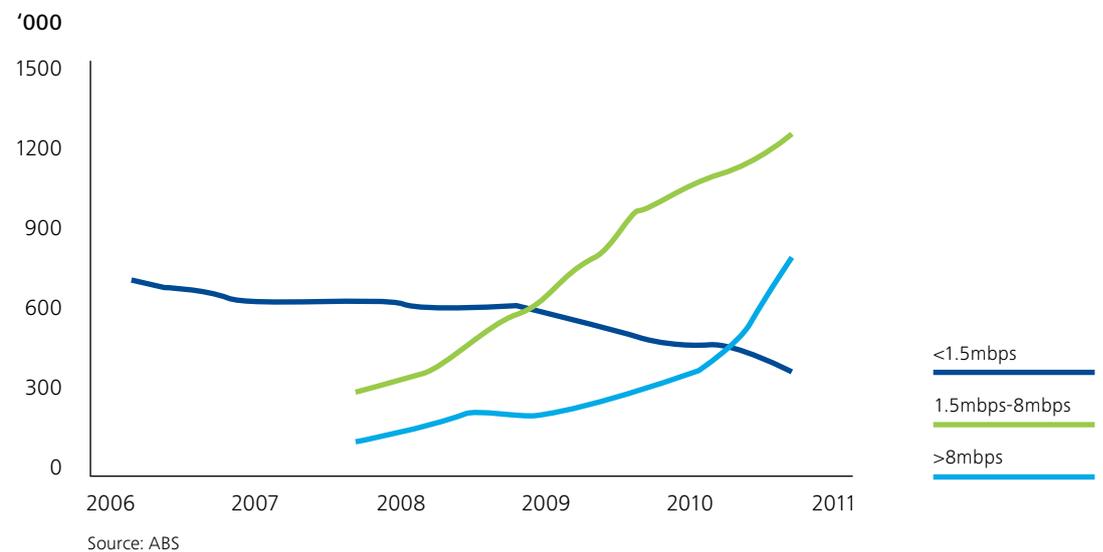
The number of connections at slower speeds (less than 1.5mbps) has steadily declined for both sectors since 2007, while the popularity of the very fast speeds (8mbps and over) took off in 2010, with business access connections in particular jumping three-fold over the year.

Despite the aggregate growth, demographic differences remain. ABS data shows that, in 2008/09, 76% of households in metropolitan areas had access to the internet compared to 65% of households in non-metropolitan areas. Across states, 88% of people in the ACT had an internet subscription, compared to around two-thirds in Tasmania and South Australia. This suggests that there are substantial further benefits to be realised as usage increases across rural and regional areas of Australia.

**Chart 4.2: Number of household access connections by internet speed**



**Chart 4.3: Number of business access connections by internet speed**



## 4.2 Use

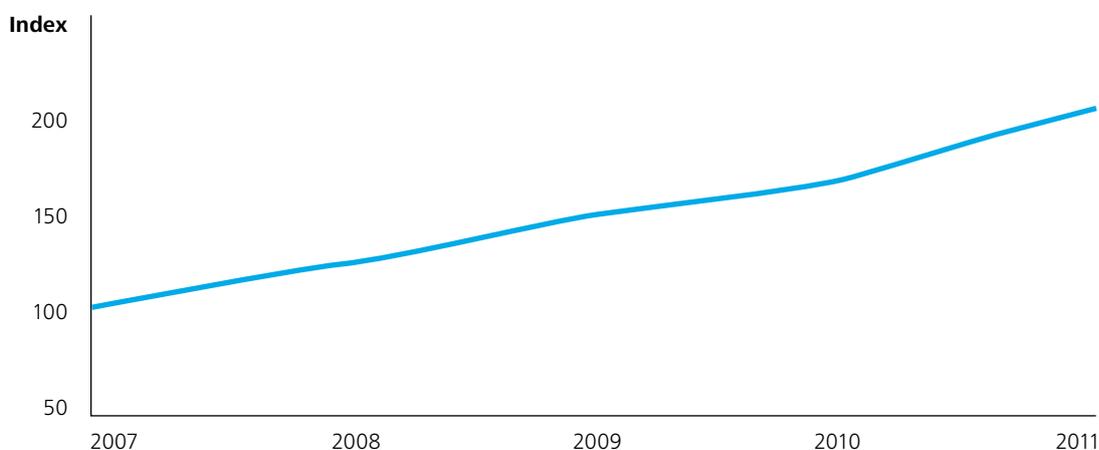
The Use Index measures the extent to which households, businesses and government are embracing the internet. The following measurements are incorporated:

- The number of web searches for various industries <sup>6</sup>
- The number of SMEs with a website, and the number of SMEs that sell goods and services online
- The proportion of consumers that have contacted the government via the internet in the past 12 months, and the proportion of consumers who use the internet as their primary means for contacting the government.

The Index shows a steady increase in recent years, more than doubling over the past four years. There has been solid growth in utilisation by each of the three sectors, but the number of searches has grown particularly rapidly.

The Sensis E-Business Survey also suggests that the number of SMEs utilising the internet has increased solidly since 2007, and engagement with the government via the internet has also improved. This trend is likely to continue as internet use becomes more prevalent and more government services are offered online.

Chart 4.4: Use Index



Source: Google, Sensis, Australian Government, Deloitte Access Economics

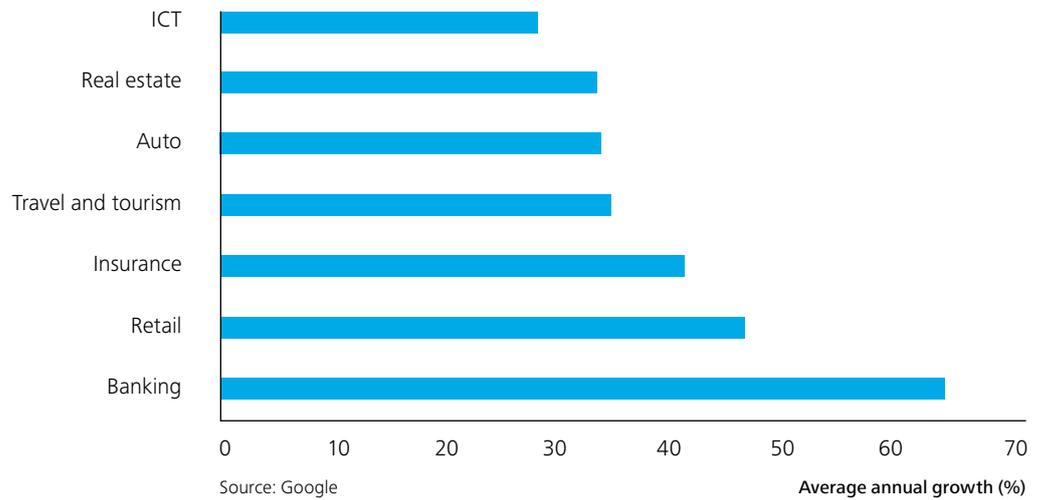
<sup>6</sup> Like the data on average speed, the additional consumer benefits from a greater number of searches are likely to decline as the number of searches increases.

#### 4.2.1 Searching online

The number of searches undertaken on the internet has grown rapidly over the period, increasing at an annual rate of around 30%. The information searched for on the internet is diverse – banking-related searches have increased particularly quickly, but searches related to retail and travel have also grown strongly.

Consumers have been increasingly turning to the internet to seek information and purchase goods and services, and the current trend suggests that the importance of the internet for consumers will continue to expand.

Chart 4.5: Web searches across sectors (from 2007)



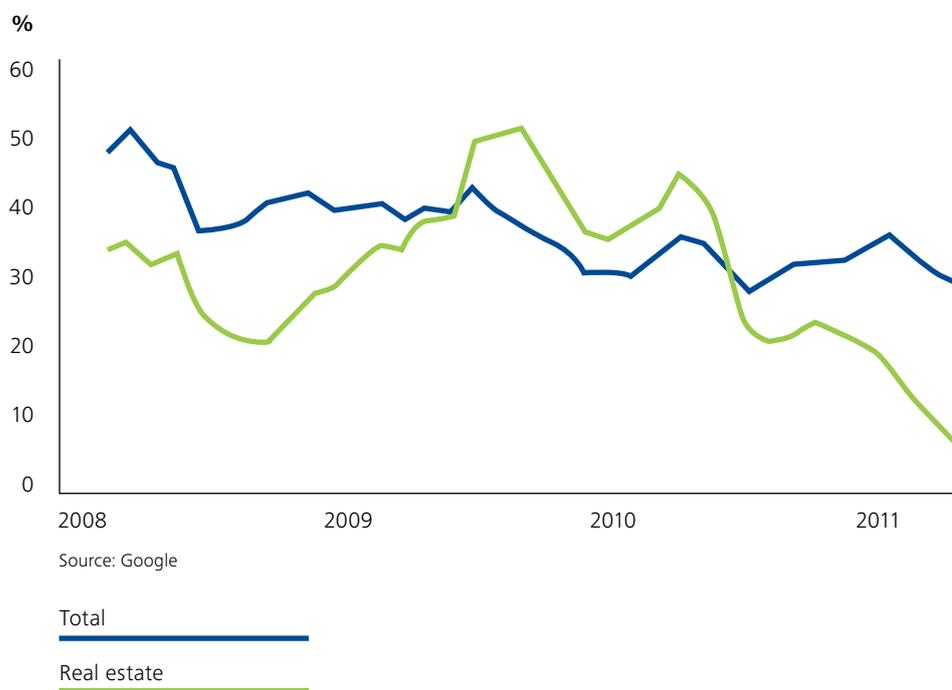
## Web searches as an indicator of economic activity

The search volume data, used for Chart 4.5, provide a number of interesting observations at the sectoral level. Chart 4.6 shows the annual rate of growth across all search categories and for real estate searches. Growth in real estate searches increased rapidly in the second half of 2009 and start of 2010, outpacing total search growth. However, growth in real estate search volumes has since slowed substantially. This trend mirrors developments in Australia's housing markets, where conditions have cooled significantly since early 2010.

Research by the Bank of England (McLaren & Shanbhogue, 2011) found that publicly available Google search data is an accurate indicator of developments in labour and housing markets in the UK.

Despite some limitations, these data perform well against existing indicators. In line with studies from other countries, the search term variables are as useful as existing indicators at predicting changes in unemployment in the UK, while for house prices, these data have outperformed some existing indicators since 2004. The paper also finds evidence that these data could have useful applications for a broad range of issues.

Chart 4.6: Smoothed year-on-year growth in web searches\*



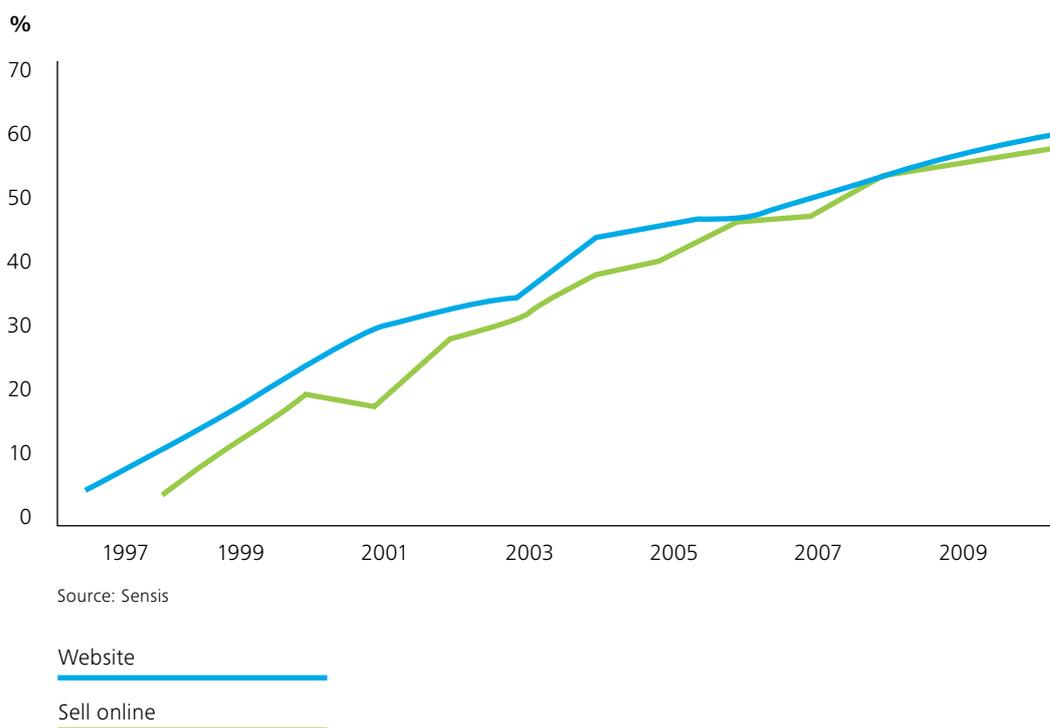
\* Searches in the latest three months divided by searches in the three month period of the prior year.

### 4.2.2 Businesses

The share of businesses that have an online presence has grown steadily over the past decade (Chart 4.7). In 1998, 12% of businesses surveyed by Sensis had a website and just 5% sold goods and services online. Twelve years later in 2010, the Sensis survey suggests that 60% have a website and the vast majority of those sell goods and services online. While this is a substantial improvement, 40% businesses surveyed did not yet have a website.

These findings are broadly in line with the survey commissioned for this report, which suggested that almost 50% of SMEs had a website. Both surveys show that the impact of the internet on businesses is set to continue to grow in coming years, and the range of goods and services available online to consumers will continue to expand.

Chart 4.7: Proportion of SMEs that are online



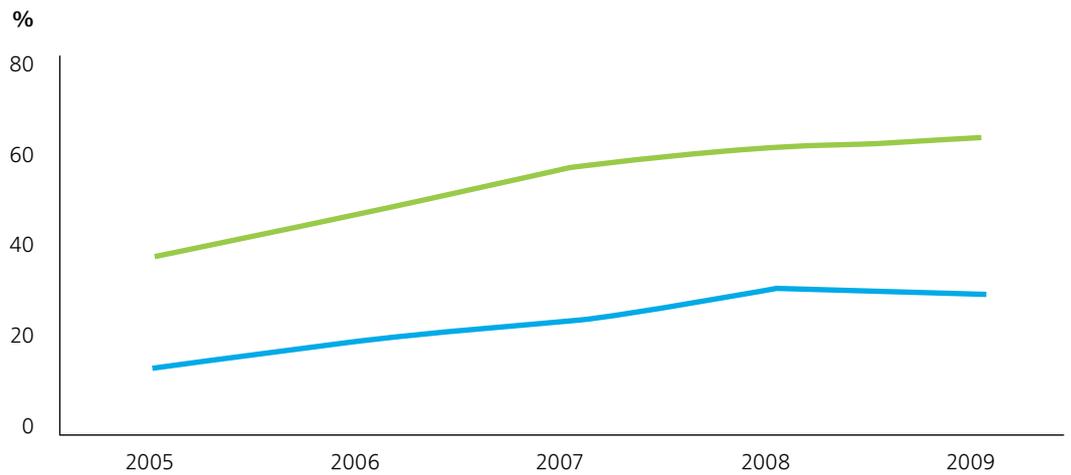
### 4.2.3 Government

The internet is transforming the way consumers and businesses interact with the government. As the range of government services provided online expands, an increasing number of people are engaging with the government online in place of more traditional face-to-face and telephone contact (Chart 4.8).

This has allowed government to deliver services more efficiently and made accessing those services much more convenient for the community.

There is still substantial room for improvement as more services become available online and internet use continues to expand to all sections of the community.

Chart 4.8: Proportion of people accessing government services through the internet



Source: Australian Government

Used the internet to access government services in last 12 months

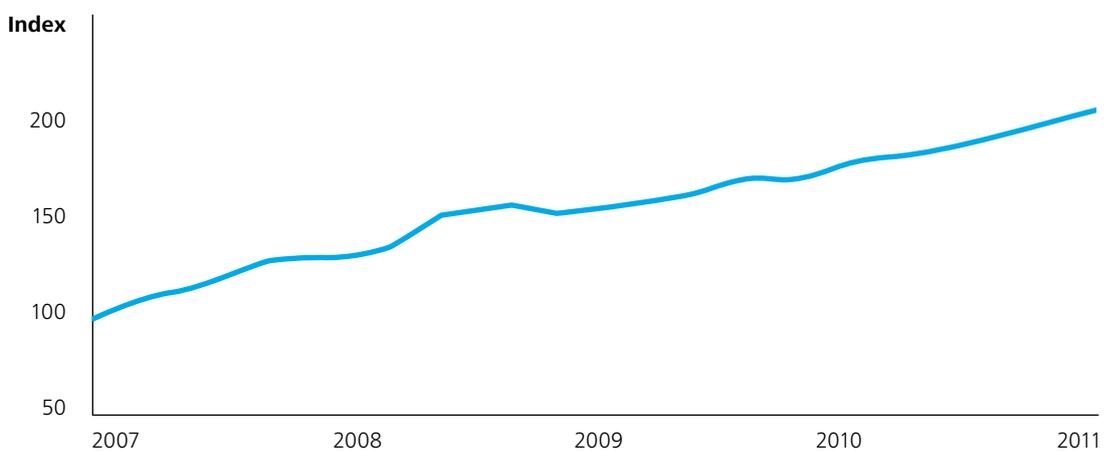
Used the internet more often than other methods to access government services in the last 12 months

### 4.3 Expenditure

Finally, the Expenditure Index charts the increase in spending on online advertisements by businesses and on e-commerce by consumers. The Index has doubled over the past four years, outstripping nominal GDP growth by three-to-one (Chart 4.9).

Yet, the share of commerce and advertising that occurs online is still smaller in Australia than in countries like the US and UK, suggesting that growth in the Index will continue to outpace growth in aggregate economic activity.

Chart 4.9: Expenditure Index



Source: IAB Australia, PayPal, Deloitte Access Economics

# 5

## Prospects for the internet economy

The infographic consists of two overlapping circles. The top circle is light blue and contains the text '\$50b' and '2011'. The bottom circle is a darker blue and contains the text '\$70b' and '2016'. The circles overlap in the center, creating a darker blue area.

\$50b

2011

\$70b

2016

## 5 Prospects for the internet economy

---

The direct contribution of the internet to the Australian economy is forecast to grow at 7% over the next five years, increasing from \$50 billion to roughly \$70 billion by 2016

The Organisation for Economic Co-operation and Development (OECD) judges that the outlook for the ICT sector globally is bright (OECD, 2010). The sector is expected to grow faster than GDP in the medium term throughout the OECD as businesses, governments and households further embrace new online opportunities. In addition, increased internet penetration into developing countries will produce network effects that increase the value of the internet to all, including Australia. Australia's investment in broadband infrastructure will increase use of the internet, which will create quick growth as it will allow Australia to catch up to comparable countries in activities where it is lagging behind, such as online shopping or engagement by SMEs. As a result, the growth of Australia's internet economy over the coming decade can be expected to be stronger than other developed economies.

Growth in the size of the internet economy can occur in two ways, namely:

- Through increased access to the internet
- Increased uptake of services and intensity of use of the internet.

Several factors affect either access or use or both and therefore the growth of the internet economy, including:

- Improvements in broadband infrastructure, as carriers need to be able to increase capacity to support the growth in the use of the internet
- Transformations in how businesses and governments use the internet to engage with suppliers, employees and customers, including through greater reliance on online commerce
- Further acceptance by consumers of the use of the internet in their daily lives including through increased consumer confidence in the security of payment systems and privacy which increase willingness to spend online
- Increases in embedded internet functionality as the internet becomes more pervasive with the rise of machine-to-machine connectivity.

This section considers how well placed Australia is to enjoy an expansion in the use of the internet. It considers aspects of how well both households and businesses are placed to further embrace the internet before presenting an assessment of the outlook over the coming decade.

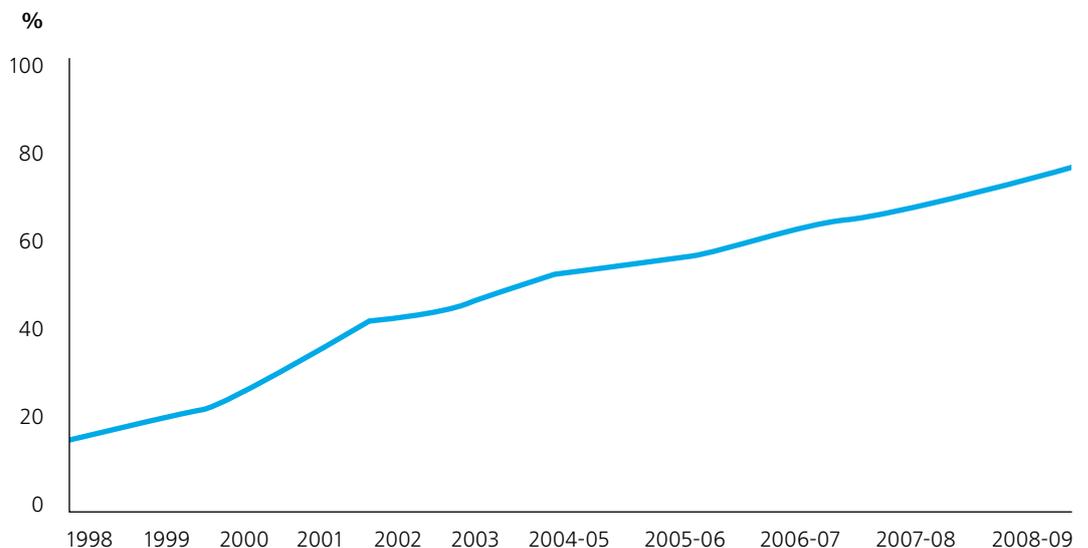
## 5.1 Household access

It is likely that the number of households connected to the internet will increase by 20% over the next five years, increasing the value of the internet economy by around \$15 billion or at least 1% of GDP<sup>7</sup>

Access to the internet in Australia has been steadily growing with 77% of households having access to the internet in 2008-09 (ACMA, 2010). Chart 5.1 demonstrates the growth of home internet access between 1998 and 2008-09. Between 1998 and 2009-10, household internet access has grown at an annual average rate of 15.6%.

Within an international context, 60% of households across the EU27 countries had access to the internet in 2008, compared to 72% in Australia. Nevertheless, several countries have higher rates of access, with Korea having the highest rate at 94.3%, suggesting scope for further growth in Australia.

Chart 5.1: Households with home internet access, 1998 to 2008-09



Source: ABS

<sup>7</sup> This is assuming those additional households have similar and increasing usage characteristics to those already online.

Chart 5.2: Households with access to the internet, 2008

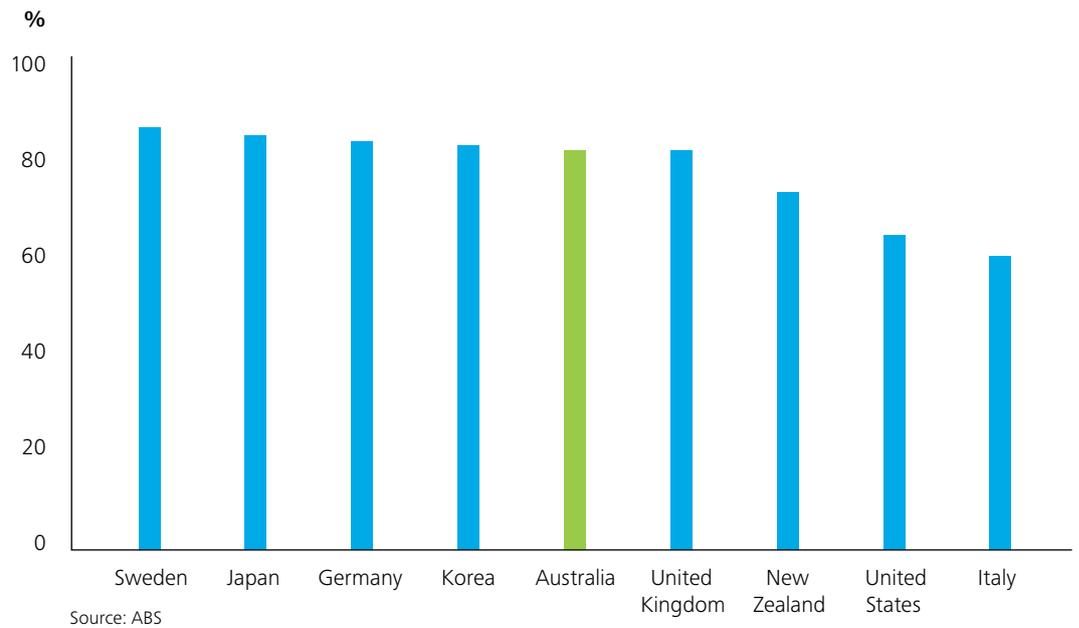
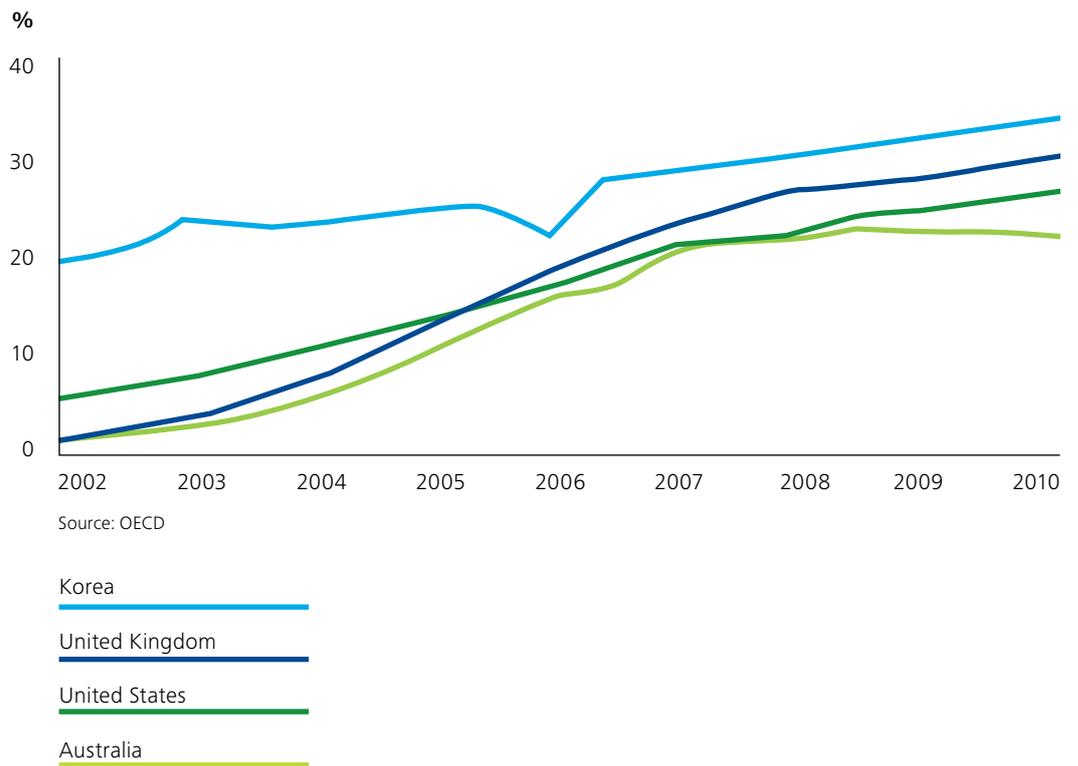


Chart 5.3: Fixed broadband penetration rates



The NBN offers greater coverage and speeds which will act as a catalyst for the growth of the internet, both in terms of access and intensity of use. It will provide high speed broadband coverage to 93% of Australian premises, with the remaining 7% connected via wireless broadband or satellite.

In addition, recent years have seen the rapid expansion of the use of wireless broadband which is set to continue. Improvements in technology and the increasing capacity of mobile networks and devices to support internet access also help to improve diffusion. It is also changing the dynamics of internet use by offering increased flexibility in terms of how and when Australians can go online with an increasing number of services also supported by mobile technologies (ACMA, 2010).

The combination of the rollout of the NBN and the expansion of wireless broadband will see businesses and governments make greater use of the internet in their relationships with customers as well as encourage more households to get online. Given recent trends in penetration and the expansion of the basic infrastructure, a sizeable lift in the proportion of Australian households using the internet can be expected over the remainder of this decade. A 20% increase in the proportion of households using the internet through at least one type of device (from 77% to 92%) would seem to be quite feasible within five years.

## 5.2 Intensity of use

The use of the internet will also grow as the range of services offered online increases, such as online entertainment, communications, buying and selling, banking and general government services. This will be facilitated by the increased speeds offered by greater broadband coverage.

The National Digital Economy Strategy has targeted increasing use of the internet in Australia, setting goals for increasing access to smart technology for managing energy use, tele-health and online education; and increasing internet or online engagement with government and for regional Australia.

### 5.2.1 Households and e-commerce

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**Separate analyses of the near-term outlook for online shopping imply an average annual growth rate of 11.2%, three times as fast as forecast growth in GDP. These studies imply that online retail will increase by \$10 billion over the next three years, and if this pace were to persist it would reach \$24 billion by 2016**

In 2007, 42% of Australians purchased or ordered goods or services over the internet, compared to 26% of people on average in the OECD. The largest proportion was in Japan, where over 51% of people made online purchases. While Australia ranks relatively highly in terms of the proportion of households that do some shopping online, the available evidence indicates that Australia lags in total sales over the internet. For example, Frost and Sullivan judge that Australia's consumer e-commerce market is lagging those in both the US and UK by approximately three years (Frost and Sullivan, 2010). Excluding spending on overseas sites and on services, online retail spending accounts for around 3% of Australia's total retail sales. This compares to over 5% in both the US and UK.

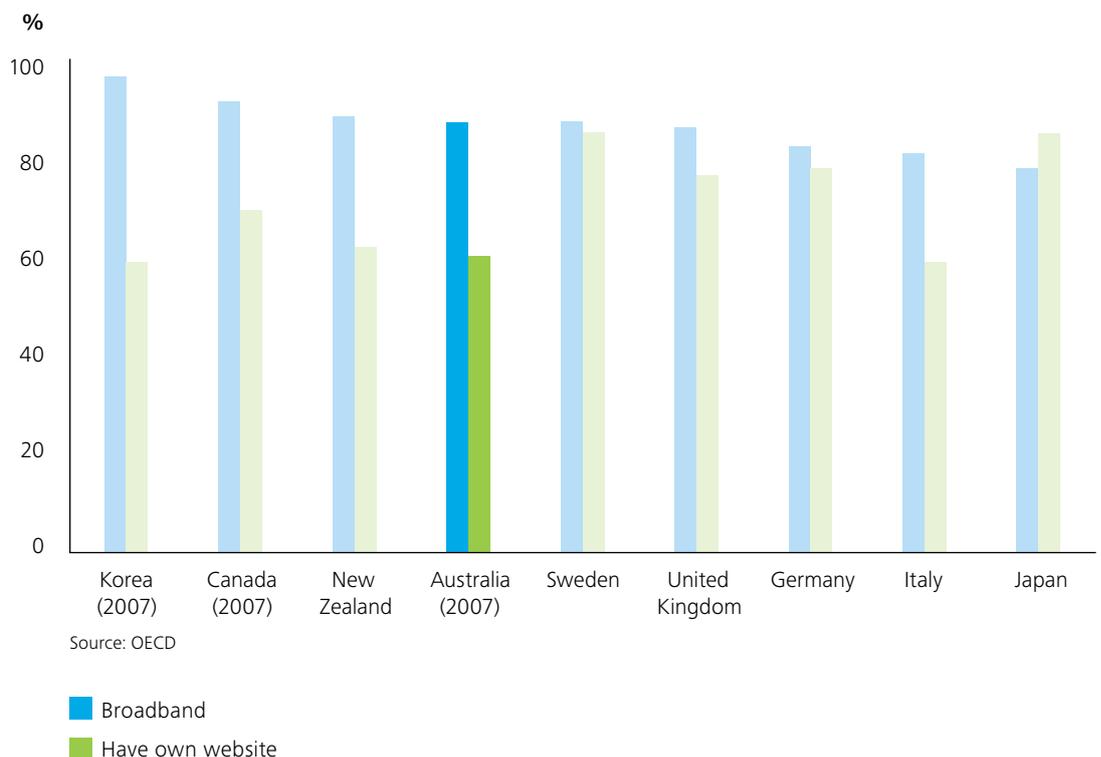
From this lower base, forecasts for the Australian online retail market suggest that it will grow rapidly. While there are a range of estimates as to the precise size of the online market, several analyses highlight the growth potential. For example, PayPal estimates that the market has increased from \$24 billion in 2009 to \$27 billion in 2010 and predicts further growth of a little over 10% a year over the next few years. The growth is driven by the launch of new online stores, an appreciating Australian dollar and continued increases in the proportion of Australians who shop online as there is increased confidence and willingness to purchase and spend online.

Similarly, Frost and Sullivan predict that domestic online retail spending will grow from \$12 billion in 2010 to \$17.7 billion by 2014, implying an annual growth rate of 10.2%.

### 5.2.2 Business

Australia has a high level of broadband adoption by businesses relative to the OECD average; 90% of businesses with 10 or more employees had a broadband connection in Australia in 2007 (OECD, 2010). However, as highlighted by Korea in Chart 5.4, high levels of adoption do not imply that businesses are actively engaging over the internet. Indeed, although Australian businesses have a high level of broadband use, the number of businesses with their own websites is comparatively lower, suggesting broadband adoption is not necessarily part of an integrated e-business strategy. This, however, can be expected to increase with the rising number of Australian consumers who purchase online.

Chart 5.4: Business use of broadband and websites, 2008



### 5.3 The outlook for the internet economy

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In line with the indices presented in Chapter 4, we project that the direct contribution of the internet to the Australian economy will grow at least twice as quickly as forecast GDP growth over the next five years, increasing from \$50 billion to roughly \$70 billion by 2016

Just how rapidly the use of internet services by households, businesses and governments will grow is difficult to gauge. Past predictions have often erred on the conservative side. For example, in a project on related issues, Crandall and Singer (2010) updated research that they conducted in 2001 and 2003 on the take-up of broadband services in the United States. They found that 'many of our predictions concerning economic welfare and employment/output effects were conservative because we could not envisage the myriad of applications made possible by broadband connections.'

The figures set out in this chapter imply that more households will use the internet over the next 5-10 years, and that all households will use it more intensively. This projection is based on the following expectations:

- The continued rollout of the National Broadband Network and wireless broadband, which will act as catalysts for change
- The expectations of Australian businesses in how they are already planning to embrace the internet more intensively in dealings with suppliers and customers as well as how they organise their workplaces
- The fact that Australia's use of the internet lags that in comparable countries in certain respects such as online shopping
- Efforts by various areas of government to make much more use of the internet in areas such as health and education.

It is also inevitable that the wider contribution made by the internet to economic activity and economic welfare, not captured by GDP – such as improved convenience and choice, reduced search costs and additional recreational services – is also set to increase substantially.

Achieving these increases will also require an on-going commitment from government to develop and implement a policy framework that supports investment and innovation in the internet economy.

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# Appendix

## Methodologies

### Expenditure-related approach

This methodology adds up the amount of internet-related spending by households, businesses, government and international consumers on goods and services produced in Australia. The scope adopted by BCG in their report on the impact of the internet in the UK is replicated for the Australian context to ensure comparability. However, it should be noted that components included in this method are broader than those included in our other approaches.

**Consumption:** Includes online spending and spending on accessing the internet – both ISP charges and a proportion of spending on interface devices such as computers and mobile phones.

**Investment:** Includes telecommunications investment, a proportion of business spending on computer software, computers and peripheral investment, and investment in telecommunications equipment.

**Government:** Public spending on ICT by all levels of government.

**Net exports:** Net exports of e-commerce and ICT equipment.

Data sources are ABS, Paypal Australia (2010), PricewaterhouseCooper Australia Entertainment and Media Outlook (2011), Gershon P (2008).

### Income-related approach

To estimate the value added to Australia's GDP by the internet using the income approach, the internet was classified into seven segments. The choice of segments primarily reflects data availability, but was also influenced by definitions used in the IAB study (2009), together with OECD and ABS definitions:

#### **ISPs, Web Search Portals & Data Processing:**

ISPs provide the connection between the user and the internet. This category also includes web hosting companies, who store web pages of content on their servers and make it accessible to visitors, and internet search engines, which have become a vital part of the internet, allowing people to find information quickly and easily.

**Hardware Providers:** This category includes a proportion of computer and peripheral equipment hardware manufacturers and wholesalers.

#### **IT Consulting and Software Companies:**

IT consulting companies can provide a range of services including consultants specialising in the internet, departments dedicated to designing IT platforms that rely on the internet, data centres to store material from the internet, and IT maintenance and support. Companies also produce software to manage the flow of information across the internet and enables design, storage and movement of content.<sup>8</sup>

#### **Internet publishing and broadcasting:**

This segment comprises of news, entertainment, research and information services, but excludes search engines, e-commerce sites, and websites of enterprises such as businesses, government and academia, all of which are classified in other segments.

<sup>8</sup> Adjustments were made to reflect that not all software programs rely on the internet. For example, enterprise software that is accessed by employees over the internet may also be operatable over private data networks in the absence of the internet.

**Advertising and enterprise sites:** These days most businesses, government and non-profit organisations have an online presence. This segment captures staff that develop and maintain these websites, and may be employed by ad agencies, web design firms or internally by the organisations. Aside from developing websites, advertising agencies also create advertisements for clients and place them with online publishers. Services that support online advertising, such as market research companies, are also captured in this segment.

**Government:** In response to the increasing role that the internet plays in today's society, the Australian government has set up a number of government departments and agencies that are responsible for a broad range of internet-related policies.

**E-commerce:** This segment is one of the largest and fastest growing of the segments identified in this study. It includes online retailing, e-broking, e-travel, e-banking and other e-services, as well as companies involved in the delivery of online retailing packages. The segment contributes to GDP to the extent that value is added to intermediary goods and services.

The main data sources were the ABS, IBISWorld, company annual reports and websites, government websites, eBay Australia and IAB (2009).

## Multipliers

The ABS input-output tables provide information on the ratio between 'compensation to employees' and 'value added for Australian industries' (that is, the relationship between the total wage bill and profits and taxes for each industry). The industry multipliers are larger for industries where a substantial share of income accrues as profit to businesses or government taxes, and close to 1 for industries where value-added predominantly flows to workers. For the segments selected in our analysis, the industry multipliers range from 2.85 for the communication services – where profits represent a large component of value-added – to 1.14 for government administration.





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