



Information and Communication Technology in New Zealand and Australia

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1 Introduction

Information and communication technology (ICT) plays an important role in a nation's economic growth and social development, by improving productivity, communication, and international connectivity. There is an increasing need for statistics on ICT to inform debate and policy on the subject.

Information and Communication Technology in New Zealand and Australia presents a selection of ICT data produced by Statistics New Zealand and the Australian Bureau of Statistics (ABS). Where possible, adjustments have been made to the data to allow comparisons between the two countries. Where differences still exist (such as population coverage), these are stated. This paper provides data on the sales of ICT goods and services, business use of ICT, and Internet services in both countries.

New Zealand's Household Use of ICT Survey will be published in April 2010. This survey collects information on household and individual Internet access and activities.

2 Sales of ICT goods and services

The rise of the ICT industry in the past 50 years has spurred a worldwide change in the way people communicate and work. Internationally, it has been recognised that the contribution of the 'information economy' to a country's overall economic growth and performance is related to the consumption of, and investment and innovation in, ICT. As such, information about the sales of ICT goods and services provides good insight into an economy's use of this technology.

This section compares the sales of ICT goods and services between New Zealand and Australia using data from Statistics NZ's ICT Supply Survey and the ABS's ICT Industry Survey. The surveys use similar ICT definitions and the same industry classification but differ in population coverage, time period, and currency.

To increase comparability, some adjustments were made to the industries included in this analysis. Those that were not covered by Australian data were excluded from New Zealand's (for more information, refer to 'Technical notes'). Apart from being only a minor contributor to the total ICT sales of goods and services in both countries, the communication equipment manufacturing industry was excluded from both countries for confidentiality reasons.

To compare sales between both countries, percentages based on the gross domestic product (GDP) of New Zealand (year ended March 2008) and Australia (year ended June 2007) were used. It should be noted that these percentages are indicative of relative size only, and do not represent the actual contribution to GDP. GDP is a measure of value added while the ICT surveys measure sales. Value added is gross output (ie sales) less intermediate consumption (the value of goods and services consumed while producing the output).

Table 1

ICT Sales of Goods and Services
By industry
2007 and 2008

Industry	Total sales			
	New Zealand (2008)		Australia (2007)	
	NZ\$(million)	Percent of GDP ⁽¹⁾	AU\$(million)	Percent of GDP ⁽²⁾
Manufacturing				
Computer and electronic office equipment manufacturing	9	0.0	821	0.1
Other electronic equipment manufacturing	561	0.3	667 ⁽³⁾	0.1
Manufacturing total	570	0.3	1,489	0.1
Wholesale trade				
Computer and computer peripheral wholesaling	2,715	1.5	18,061	1.7
Telecommunication goods wholesaling	1,020	0.6	6,470	0.6
Other electrical and electronic goods wholesaling	2,593	1.5	6,435	0.6
Wholesale trade total	6,328	3.6	30,966	3.0
Information media and telecommunications				
Software publishing	5	0.0	909 ⁽³⁾	0.1
Telecommunication and Internet access services ⁽⁴⁾	6,657	3.8	37,000	3.5
Data processing and web hosting services	713	0.4	765 ⁽³⁾	0.1
Electronic information storage services	74	0.0	266	0.0
Information media and telecommunications total	7,450	4.2	38,939	3.7
Computer system design and related services	2,990	1.7	24,459	2.3
Electronic (except domestic appliance) and precision equipment repair and maintenance	155	0.1	889	0.1
Total ICT industry	17,492	9.9	96,742	9.3

(1) Based on GDP for New Zealand (current price) year ended March 2008 of NZ\$177,472 million.

(2) Based on GDP for Australia (current price) year ended June 2007 of AU\$1,045,674 million.

(3) Estimate has a relative standard error of 10 percent to less than 25 percent and should be used with caution.

(4) Includes ANZSIC06 classes wired telecommunication network operation, other telecommunication network operation, other telecommunication services, and Internet service providers and web search portals. These four classifications have been combined for confidentiality reasons.

Note: Figures may not sum to totals due to rounding.

Table 1 shows the total sales of ICT goods and services for the industries included in this analysis were lower in New Zealand in 2008 (NZ\$17 billion) than in Australia in 2007 (AU\$97 billion). However, when these values are expressed as a percentage of GDP the results are close (9.9 percent and 9.3 percent for New Zealand and Australia, respectively).

A comparison of ICT sales as a percentage of GDP at industry level yields similar results, with the largest difference at 1.5 percent in New Zealand and 0.6 percent in Australia (other electrical and electronic goods wholesaling industry, which involves the sale of TVs, radios, and MP3 players). The closest results were in the telecommunication goods wholesaling industry (0.6 percent both in New Zealand and Australia).

Table 2

Percentage of ICT Sales of Goods and Services
By industry
 2007 and 2008

Industry	Total sales	
	New Zealand (2008)	Australia (2007)
	Percent	
Manufacturing		
Computer and electronic office equipment manufacturing	0	1
Other electronic equipment manufacturing	3	1 ⁽¹⁾
Manufacturing total	3	2
Wholesale trade		
Computer and computer peripheral wholesaling	16	19
Telecommunication goods wholesaling	6	7
Other electrical and electronic goods wholesaling	15	7
Wholesale trade total	36	32
Information media and telecommunications		
Software publishing	0	1 ⁽¹⁾
Telecommunication and Internet access services	38	38
Data processing and web hosting services	4	1 ⁽¹⁾
Electronic information storage services	0	0
Total information media and telecommunications	43	40
Computer system design and related services	17	25
Electronic (except domestic appliance) and precision equipment repair and maintenance	1	1
Total ICT industry	100	100

(1) Estimate has a relative standard error of 10 percent to less than 25 percent and should be used with caution.

Note: Figures may not sum to totals due to rounding.

The telecommunication and Internet access services industry had the largest share of total ICT sales in both Australia and New Zealand, accounting for 38 percent of total ICT sales in both countries.

ICT sales from the computer system design and related services industry was the second largest in both Australia and New Zealand. This industry contributed 25 percent of Australia's total ICT sales in 2007 and 17 percent of New Zealand's total in 2008.

3 Business use of ICT

Businesses may use ICT to increase productivity and growth, for example, by investing in ICT infrastructure to streamline processes, or by engaging in e-commerce to expand into international markets.

In New Zealand, the Business Operations Survey provides data on business use of ICT, including information on the outcomes of ICT use and the barriers to implementation. In Australia, the Business Characteristics Survey collects similar information. These surveys use the same industry classifications but their population coverage is slightly different.

Table 3 compares the Internet activities of businesses in New Zealand and Australia. For comparability, businesses with less than five employees were excluded from the Australian data, while two industries (agriculture, forestry, and fishing; and the education and training industries) were excluded from the New Zealand data because they were not covered by the ABS survey.

Table 3

Business Internet Activities By business size 2008

	Total number of businesses		With broadband access		Have a web presence		Use Internet to place orders		Use Internet to receive orders	
	New Zealand	Australia	New Zealand	Australia	New Zealand	Australia	New Zealand	Australia	New Zealand	Australia
	Count		Percent							
Business size⁽¹⁾										
Small	23,595	197,000	89	95	54	48	61	51	41	29
Medium	5,706	47,000	94	96	74	63	71	60	43	33
Large	1,650	10,000	97	92	81	71 ⁽²⁾	76	53 ⁽²⁾	46	29 ⁽²⁾
Very large	1,437	6,000	95	100	88	93	78	70	46	24
Overall	32,391	260,000	91	96	60	53	64	53	42	29

(1) Business size bands are based on employee numbers:

	New Zealand	Australia
Small	6–19	5–19
Medium	20–49	20–49
Large	50–99	50–99
Very large	100+	100+
Overall	6+	5+

(2) Estimate has a relative standard error of 10 percent to less than 25 percent and should be used with caution.

In 2008, New Zealand had a lower percentage of businesses with broadband access compared with Australia. However, businesses in New Zealand were more likely to have a website and were more likely to place and receive orders over the Internet.

In both New Zealand and Australia, more than 90 percent of businesses had broadband access (91 percent in New Zealand and 96 percent in Australia). The percentage of businesses with a web presence (website) increases with business size. Sixty percent of New Zealand businesses had a website compared with 53 percent in Australia. Note

that the figure for Australia may be slightly understated due to the inclusion of businesses with five employees.

New Zealand businesses were more likely to use the Internet to receive and place orders than businesses in Australia in all size groups. In New Zealand, 64 percent of businesses used the Internet to place orders (compared with 53 percent in Australia) and 42 percent used the Internet to receive orders (compared with 29 percent in Australia). The percentage of businesses that used the Internet to receive orders varied little by business size, especially in New Zealand (41 percent of small businesses and 46 percent of large businesses).

4 Internet connections

The Internet has dramatically changed the way government, businesses, and individuals operate. High-speed Internet is seen as an enabler of international connectivity, which is important for a geographically isolated country such as New Zealand. High-speed Internet provides New Zealanders with access to international markets, and new ideas and knowledge, which are considered key drivers of innovation, productivity, and economic growth.

The New Zealand Internet Service Provider (ISP) Survey and the Australian Internet Activity Survey collect information on Internet services provided by ISPs, including speeds and connection technologies. The surveys use the same timeframes but slightly different population coverage.

Australian data for June 2009 excluded ISPs with less than 1,000 subscribers, while New Zealand data included all ISPs. However, it is estimated that this difference had minimal impact on the results and no adjustments were made to the data. Refer to 'Technical notes' for more information. All results are for June 2009.

Table 4

Non-analog Subscribers By connection type June 2009

Connection type	New Zealand	Australia
Number of subscribers⁽¹⁾		
Digital subscriber line	874,000	4,171,000
Other ⁽²⁾	257,000	3,162,000
Total	1,131,000	7,333,000
Percent of subscribers		
Digital subscriber line	77	57
Other ⁽²⁾	23	43

(1) Includes business and residential subscribers. Figures are rounded to the nearest 1,000.

(2) Includes cellular (mobile wireless), wireless, cable, satellite, and other connection types.

There were 1.1 million non-analog Internet subscribers in New Zealand compared with 7.3 million in Australia, more than six times that of New Zealand (Australia is around five times the size of New Zealand).¹

¹ Based on population estimates, but it should be noted that counts of subscribers are not the same as counts of people or businesses, because subscribers may have accounts with more than one ISP and a single ISP subscriber account may provide Internet access to multiple people.

Digital subscriber line (DSL) was the most common non-analog connection technology in both countries. Of non-analog users in New Zealand, 77 percent used DSL compared with 57 percent in Australia. This difference can be partly explained by the rapid growth of mobile wireless connections in Australia, from 1.3 million in December 2008 to 2 million in June 2009. Mobile wireless connections made up over half of the other non-analog connections in Australia at June 2009.

Table 5

Internet Subscribers by Download Speed
June 2009

	New Zealand	Australia
Number of subscribers⁽¹⁾		
Download speed		
Less than 256Kbps	434,000	1,103,000
Broadband		
256Kbps to less than 512Kbps	89,000	1,297,000
512Kbps to less than 1.5Mbps	C	1,249,000
1.5Mbps to less than 24Mbps	911,000	4,329,000
24Mbps or greater	...	443,000
24Mbps or greater and unknown	C	...
Broadband total	1,131,000	7,317,000
Total	1,565,000	8,420,000
Percent of subscribers		
Download speed		
Less than 256Kbps	28	13
Broadband		
256Kbps to less than 512Kbps	6	15
512Kbps to less than 1.5Mbps	C	15
1.5Mbps to less than 24Mbps	58	51
24Mbps or greater	...	5
24Mbps or greater and unknown	C	...
Broadband total	72	87

(1) Includes business and residential subscribers. Figures are rounded to the nearest 1,000.

Note: Due to rounding, figures may not add to the stated totals.

Symbols:

C confidential

... not applicable

Broadband users made up 72 percent of all Internet subscribers in New Zealand compared with 87 percent in Australia. Over half of all broadband users in both countries had speeds of 1.5Mbps or greater.

5 Conclusion

This paper showed the similarities between the supply and use of ICT in New Zealand and Australia. Figures for the total sales of ICT commodities expressed as a percentage of GDP were similar (9.9 percent in New Zealand and 9.3 percent in Australia); a high proportion of businesses used broadband to access the Internet (91 percent in New Zealand and 96 percent in Australia); and over half of all broadband users in both countries had speeds of 1.5Mbps or greater.

Areas of difference between the two countries included: some Internet activities of businesses and the percentage of Internet subscribers using narrowband (download speeds slower than 256Kbps); New Zealand businesses were more likely to have a website and were more likely to place and receive orders over the Internet; however, New Zealand had a higher percentage of Internet subscribers using narrowband (28 percent compared with 13 percent in Australia).

6 Technical notes

Information and Communication Technology in New Zealand and Australia presents a selection of ICT data on sales of ICT goods and services, business use of ICT, and Internet services in both countries, produced by Statistics New Zealand and the Australian Bureau of Statistics (ABS).

Sales of ICT goods and services

Data was sourced from the New Zealand ICT Supply Survey and the Australian ICT Industry Survey. Detailed technical notes for each survey are available (see ABS, 2007; Statistics NZ, 2008a) and a summary is provided below.

Reference periods

New Zealand data is for the year ended March 2008; Australian data is for the year ended June 2007.

Target populations

The industrial classification used in both surveys was the Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC 2006).

New Zealand

The target population includes all enterprise units with 2.0 or more rolling mean employees (RME) engaged in ICT activity in New Zealand. However, businesses that are known to be significant ICT enterprises were surveyed regardless of their RME count. RME is a 12-month moving average of the monthly employment count figure. The population for the ICT Supply Survey 2007/08 was 2,974 enterprises.

Australia

The scope of the survey includes non-employing businesses. For efficiency purposes, this was restricted to include only those which contribute to the top 97.5 percent of total turnover for all non-employers from ICT industries. This population was chosen based on Business Activity Statement (BAS) information previously submitted to the Australian Tax Office. When the survey sample was taken in June 2007, there were approximately 36,000 ICT businesses within this scope on the ABS Business Register.

Adjustments

To increase comparability, some adjustments were made to the industries included in this analysis. Those that were not covered by Australian data were excluded from New Zealand's. Apart from being only a minor contributor to the total ICT sales of goods and services in both countries, the communication equipment manufacturing industry was excluded from both countries for confidentiality reasons.

Response rates

The response rate for New Zealand was 78 percent and 94 percent for Australia.

Business use of ICT

Data was sourced from the New Zealand Business Operations Survey: 2008 and the Australian 2007–08 Business Characteristics Survey. Detailed technical notes for each

survey are available (see ABS, 2008; Statistics NZ, 2008b) and a summary is provided below.

Reference periods

The New Zealand survey was posted out in August 2008 and collected information for the last financial year for which the business had data available. In most cases this was the year ended March 2008.

The Australian reference period was for the year ended 30 June 2008.

Target populations

Both surveys used ANZSIC 2006.

New Zealand

The target population was economically significant enterprises on Statistics NZ's Business Frame that at the population selection date had:

- six or more employees
- been operating for one year or more.

The industries excluded from the population were:

- ANZSIC 2006 division O, public administration and safety
- ANZSIC 2006 subdivision 89, heritage activities
- ANZSIC 2006 subdivision 90, creative and performing arts activities
- ANZSIC 2006 subdivision 95, personal and other services
- ANZSIC 2006 subdivision 96, private household employing staff and undifferentiated goods and service producing activities of households for own use.

The final estimated population size for the 2008 Business Operations Survey was 36,075 enterprises.

Australia

The scope of the estimates consists of all business entities in the Australian economy, except for:

- Standard Institutional Sector Classification of Australia (SISCA) 3000, general government
- Standard Institutional Sector Classification of Australia (SISCA) 6000, rest of the world
- ANZSIC 2006 division A, agriculture, forestry, and fishing
- ANZSIC 2006 division O, public administration and safety
- ANZSIC 2006 division P, education and training
- ANZSIC 2006 groups 624 (financial asset investing) and 633 (superannuation funds)
- ANZSIC 2006 groups 854 (religious services) and 955 (civic, professional, and other interest group services)

- ANZSIC 2006 subdivision 96, private households employing staff.

The final estimated population for the 2007–08 Business Characteristics Survey was 711,000 enterprises.

Adjustments

To compare the ICT activities of businesses in both countries the following adjustments were made to the data:

- exclude businesses with less than five employees from the Australian data
- exclude businesses from the agriculture, forestry, and fishing industry; and the education and training industry from the New Zealand data.

Response rates

The response rate for New Zealand was 81 percent and 96 percent for Australia.

Internet connections

Data was sourced from the New Zealand Internet Service Provider Survey: June 2009 and the Australian Internet Activity Survey (IAS) June 2009. Detailed technical notes for each survey are available (see ABS, 2009; Statistics NZ, 2009) and a summary is provided below.

Reference periods

The reference period for both New Zealand and Australia was at 30 June 2009.

Target populations

New Zealand

The target population is all resident New Zealand Internet service providers (ISPs), where ISPs were defined as economically significant businesses that supply permanent or regular Internet connectivity services to individuals, households, businesses, and other organisations in New Zealand.

Australia

The survey covers ISPs that operated in Australia and reported more than 1,000 active subscribers. ISPs are defined as businesses that supply Internet connectivity and access services to individuals, households, businesses, government, and other organisations.

Adjustments

The ABS estimated that the overall contribution of ISPs with less than 1,000 subscribers to the December 2008 IAS was less than 1 percent of all subscribers, with no impact on any other data released. Therefore, we have made no adjustments to the data in this analysis.

Response rates

The response rate for New Zealand was 86 percent and 93 percent for Australia.

Definitions

Active subscribers

Active subscribers are defined as subscribers having accounts with ISPs who have accessed the internet or paid for access to the internet during the 90 days ending 30 June 2009. It should be noted that counts of subscribers are not the same as counts of people or businesses, because subscribers may have accounts with more than one ISP and a single ISP subscriber account may provide Internet access to multiple people.

ANZSIC

Australian and New Zealand Standard Industrial Classification (ANZSIC).

Business Frame

A register of all economically significant businesses operating in New Zealand, maintained by Statistics NZ from which the survey population is drawn.

Mobile wireless (cellular) subscribers

Subscribers that connect to the Internet using a data card, but excludes Internet connections through mobile phones.

Enterprise

A single business entity operating in New Zealand either as a legally constituted body, such as a company, trust, local or central government trading organisation, incorporated society, or self-employed individual.

Gross domestic product

The total market value of goods and services produced within a given period after deducting the cost of goods and services used in the process of production.

OECD definition of ICT goods and services

ICT goods and services fulfil or enable the function of information processing and communication by electronic means. Alternatively, ICT goods may also use electronic processing to detect, measure, and/or record physical phenomena or control a physical process.

Rolling mean employment

A 12-month moving average of the monthly employment count figure. This number comes from the Statistics NZ Business Frame which is updated on a monthly basis by employers.

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For copyright information of the ABS, go to its website www.abs.gov.au.

References and further reading

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Here are the references cited in the text.

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Further reading

Here are suggestions for further reading.

Organisation for Economic Co-operation and Development (2009). *Guide to measuring the information society, 2009*. Available from www.oecd.org

Statistics Netherlands (2009). *The digital economy 2008*. The Hague: Author