

**NOIE
INFORMATION ECONOMY INDEX
2003**



Australian Government

National Office for the Information Economy

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Executive summary

Introduction

This is the 2nd edition of NOIE's Information Economy Index. Since April 2002, when NOIE produced the first report, the Information Economy in Australia and worldwide has continued to evolve, further establishing itself as a stable feature in the lifestyle of communities and in the strategies of an ever-increasing number of organisations. Online activities are having lasting impacts on government policies, posing new challenges with regard to harnessing the real and potential benefits of accessing enormous volumes of online content, and promoting equity of access between groups within communities.

As the global Information Economy grows in complexity and economic importance, many public and private organisations are beginning to feel the need for a more precise and reliable analysis of the size, performance and potential of the Internet economy to support future investment decisions. Several benchmarking reports on the Information Economy have been produced in the recent past, their focus ranging from Internet shopping to measuring the impact of the Internet on sector-specific productivity. The predicted increase in Internet activity across the world especially in the areas of e-commerce and e-government suggests that exercises of this nature will grow in number in the future.

This report measures Australia's and 11 other countries' progress in the Information Economy, presenting an Index of 23 indicators relating to **readiness** to participate in the Information Economy, and **intensity** of this participation. For the majority of indicators the reference period is the 3d Quarter (July to September) 2002. The Indicators for the Index were chosen and developed in accordance with the following parameters (in order of importance):

- ❖ relevance of the indicator as a measure of development and progress of the Information Economy for each one of the countries benchmarked;
- ❖ while the Index is an aggregation of heterogenous indicators, for each indicator the data used is to be homogenous in terms of methodology, reference period and clear units of measure;
- ❖ likelihood of future availability of compatible data for continued benchmarking.

Compared with the 2002 NOIE Index, the pool of countries benchmarked in the 2003 Index is different in number and composition. The number of targeted countries changed from 14 in 2002 to 12 in 2003. Canada, the Netherlands, Spain and Japan were added to the study, while Ireland, Norway, New Zealand, Singapore, South Korea and Taiwan were excluded on the basis of a number of considerations. These included availability of relevant and timely data over time, raising/diminishing significance of a country's performance within the global Information Economy, and the significance of a country's position with regard to NOIE's overall range of strategic benchmarking priorities.

Weighting and scores

Each indicator is given equal weighting in terms of its contribution to the final ranking of countries. Depending on the type of indicator, three different scoring methodologies have been adopted. Firstly, for the majority of indicators comprising the NOIE Index, individual country scores are derived by converting penetration levels (percentage take up) directly to points. For example, if a country is estimated to have 72% of its population 16 years and over with Internet access then that country receives 72 points for that specific indicator.

Secondly, in cases where the indicator presents comparative data on the cost of Internet access, the country with the cheapest Internet access receives the maximum number of points (in this case 100 points). All other countries receive a proportion of the maximum number of points available on the basis of their position relative to the country with the cheapest Internet access price. For example, in terms of the indicator *Price of 40 hours of Internet use at peak times* (p 34) the US was the cheapest country recording \$US23.2 per 40 hours of Internet use. The US therefore received the maximum score (100 points). The Netherlands was the most expensive country recording \$US72.1, approximately 3.1 times more expensive than the US. On this basis the Netherlands received 32 points ($100 / 3.1$).

Thirdly, in cases where the disparity in access between males and females and different age groups is measured, points have been allocated on the basis of the difference in access levels, eg. for Hong Kong, where 71% of males and 70% of females have Internet access, the score is $100 - (71 - 70) = 99$.

The data presented in the NOIE Index is summarised in the following table. For each country the table presents:

- individual scores for each indicator;
- a total score calculated across all indicators;
- an average score, which is used to produce the final country ranking, calculated by taking the total number of points each country received and dividing by the number of indicators for which data is available; and
- a final ranking from 1 to 12 (12 being the lowest rank).

Ref No.	INDICATOR
1	% of persons 16 years and over with use of a mobile phone
2	% of households which own / lease a PC
3	% of households online
4	Internet connection speeds
5	Households with broadband connection as a % of total households
6	% of persons 2 years and over with Internet access via a home PC
7	% of persons 16 years and over with Internet access from any location
8	% of persons 16 years and over with Internet access at home or work
9	% of persons 16 years and over with Internet access using the Internet
10	Wireless Internet access
11	% of persons 16 years and over with Internet access by gender
12	% of persons 16 years and over with Internet access by age group
13	Number of secure servers per million inhabitants
14	Price of 40 hours of Internet use at peak times
15	Charges for a basket of national leased lines of 2 megabits per second
16	Average number of Internet sessions and hours online per month
17	E-business readiness rankings
18	% of persons 16 years and over with Internet access banking online
19	% of persons 16 years and over with Internet access purchasing online
20	% businesses online
21	% online businesses purchasing online
22	Penetration of online government services
23	E-government rankings

Ref. No.	AUS	Can	Fra	Ger	HK	Ita	Jap	Ned	Spain	Swe	UK	US
1	65	61	52	56	69	67	42	58	51	72	70	54
2	65	65	37	47	66	47	40	65	45	68	55	67
3	54	59	27	43	61	41	36	56	30	63	52	60
4	9	48	25	20	77	9	26	30	19	24	13	28
5	4	29	6	8	38	4	16	11	8	17	5	16
6	57	57	26	44	64	50	49	63	27	69	50	64
7	72	73	56	58	71	55	32	72	47	85	68	78
8*	89	98	53	75	93	68	55	89	54	114	89	105
9	74	72	77	63	41	54	76	71	53	72	65	73
10	19	22	8	14	37	15	83		16	23	30	40
11	95	98	88	93	99	95	87	96	96	95	92	94
12	81	87	67	71	74	69		76	68	83	76	
13	66	66	11	28	21	7	14	23	9	45	44	100
14	71	75	44	61		37	50	32	34	34	68	100
15	12	14	25	30		17	12	22	14	100	23	28
16*	25	34	27	29	36	18	33	25	22	24	21	34
17	82	82	77	81	82	73	70	84	71	86	84	84
18	35	47	30	33	37	14		48	20	53	30	32
19	18	34	11	13	7	5	19	17	4	26	23	32
20	89	95	73	96	44	91	92	91	92	99	84	94
21	35	46	14	32		16	17	34	20	30	33	54
22	32	39	23	8	24	25	19	5	20	23	11	18
23	53.5	60.5	47	49	53	39	41.5	46.5	44	49	50.5	61
Total	1202.5	1361.5	904	1052	1094	916	909.5	1114.5	864	1354	1136.5	1316
# indicators	23	23	23	23	20	23	21	22	23	23	23	22
Score	52.28	59.2	39.3	45.74	54.7	39.83	43.31	50.66	37.57	58.87	49.41	59.82
Ranking	5	2	11	8	4	10	9	6	12	3	7	1

* Combined score

Leading score for each indicator in bold numbers.

SUMMARY RANKINGS

The 2003 NOIE Information Economy Index ranks Australia in 5th place behind what are traditionally considered some of the most connected and advanced Information Economies in the world. US, Canada and Sweden have always had a high profile in the global Information Economy, and their status was confirmed by the results of this benchmarking project. US, Canada and Sweden consistently scored highly throughout the Index, and they are ranked respectively 1st, 2nd and 3rd. Sweden performed extremely well in practically all aspects of this Index having been ranked 1st in 10 Indicators, and is ranked 3rd overall. US, Canada and Sweden are closely ranked within .95 of a point, and have a distinct lead over other countries such as Hong Kong (best performer in 4 Indicators), one of a number of countries in the Asia Pacific region benchmarked in 2003. Hong Kong is ranked 4th, 5.1 points behind the US.

Australia was in the top three countries in 7 Indicators, its performance relatively strong in most of the benchmarked areas. Modest performance in broadband-related Indicators 4 and 5, however, precluded access to higher rankings. The Netherlands led the rest of Europe (and Japan) in 6th position, its only below-average result being recorded in the area of online government services penetration. Japan's overall ranking reflects its middle-of-the-range performance in most respects, with the outstanding exception in wireless Internet access. The UK, Germany, Italy, France and Spain occupy the remaining rankings as shown below.

The countries ranked in top Index positions share a number of important characteristics which appear to be conducive to higher Internet use. These include higher than average levels of disposable income and education, a well developed telecommunication infrastructure and a favourable government and business environment. A person's decision to use the Internet may also be influenced by other factors such as age, gender, cultural background, language, and employment status to name a few. The mix of Indicators presented in this Index covers some of these factors in addition to others that are recognised as major drivers of participation to the Information Economy.

It should be noted that to compare the country rankings presented here with those in the 2002 Index could have limited utility, as the range of indicators and countries benchmarked in the two Indexes has changed. In the rapidly moving Internet world this Index represents a snapshot of a moment in time, and as such, it attempts to provide meaningful insight on how participation to the Information Economy in industrialised economies is progressing, rather than a quantitative stocktake.

Table: Summary of country rankings and scores.

Country	Rank	Score	Country	Rank	Score
US	1st	59.82	UK	7th	49.41
Canada	2nd	59.2	Germany	8th	45.74
Sweden	3rd	58.87	Japan	9th	43.31
Hong Kong	4th	54.7	Italy	10th	39.83
Australia	5th	52.28	France	11th	39.3
Netherlands	6th	50.66	Spain	12th	37.57

AUSTRALIA'S POSITION RELATIVE TO OTHER COUNTRIES

A short summary of Australia's standing against each of the indicators follows with more detailed analysis included in the main body of the report.

1. % of persons 16 years and over with use of a mobile phone

2002 Index Top Rankings

1	Hong Kong	(75%)
2	Norway ¹	(69%)
2	Taiwan ²	(69%)
7	Australia	(64%)

2003 Index Top Rankings

1	Sweden	(72%)
2	UK	(70%)
3	Hong Kong	(69%)
5	Australia	(65%)

2. % of households which own / lease a PC

2002 Index Top Rankings

1	South Korea ³	(70%)
2	Australia	(67%)
3	US	(65%)

2003 Index Top Rankings

1	Sweden	(68%)
2	US	(67%)
3	Hong Kong	(66%)
4	Australia	(65%)

3. % of households online

2002 Index Top Rankings

1	Sweden	(58%)
2	Hong Kong	(58%)
3	South Korea	(56%)
7	Australia	(52%)

2003 Index Top Rankings

1	Sweden	(63%)
2	Hong Kong	(61%)
3	US	(60%)
6	Australia	(54%)

4. Internet connection speeds

2002 Index Top Rankings

1	South Korea	(87 points)
2	Hong Kong	(52)
3	Taiwan	(38)
9	Australia	(5)

2003 Index Top Rankings

1	Hong Kong	(77)
2	Canada ⁴	(48)
3	Netherlands ⁵	(30)
11	Australia	(9)

¹ Not benchmarked in 2003

² Not benchmarked in 2003

³ Not benchmarked in 2003

⁴ Not benchmarked in 2002

⁵ Not benchmarked in 2002

5. Households with broadband connection as % of total households

New Indicator - Hong Kong leads with 38% of total households being connected to the Internet via broadband in 2003. Other countries performing well include Canada (29%), Sweden (17%), the US (16%), and Japan (16%). Australia was ranked equal 11th with Italy (4%).

6. % of persons 2 years and over with Internet access via a home PC
--

<i>2002 Index Top Rankings</i>			<i>2003 Index Top Rankings</i>		
1	Sweden	(65%)	1	Sweden	(69%)
2	US	(64%)	2	Hong Kong	(64%)
3	South Korea	(62%)	2	US	(64%)
8	Australia	(54%)	5	Australia	(57%)

7. % of persons 16 years and over with Internet access from any location

<i>2002 Index Top Rankings</i>			<i>2003 Index Top Rankings</i>		
1	Sweden	(82%)	1	Sweden	(85%)
2	Norway	(77%)	2	US	(78%)
3	US	(76%)	3	Canada	(73%)
5	Australia	(72%)	5	Australia	(72%)

8. % of persons 16 years and over with Internet access at home or work

<i>2002 Index Top Rankings</i>			<i>2003 Index Top Rankings</i>		
1	Sweden	(107 points)	1	Sweden	(114)
2	US	(101)	2	US	(105)
3	Norway	(100)	3	Canada	(98)
5	Australia	(92)	5	Australia	(89)

9. % of persons 16 years and over with Internet access actually using the Internet.
--

<i>2002 Index Top Rankings</i>			<i>2003 Index Top Rankings</i>		
1	Sweden	(78%)	1	France	(77%)
2	France	(73%)	2	Japan	(76%)
3	Singapore ⁶	(68%)	3	Australia	(74%)
6	Australia	(64%)			

⁶ Not benchmarked in 2003

10. Wireless Internet access

New Indicator - At June 2002, Japan had the highest percentage (83%) of persons with Internet-enabled mobile phones accessing the Internet. The US was a distant second (40%), followed by Hong Kong (37%). Australia was ranked 7th (19%).

11. % of persons 16 years and over with Internet access by gender

2002 Index Top Rankings

1	Australia	(99 points)
2	Taiwan	(98)
3	US, Hong Kong, Singapore	(97)

2003 Index Top Rankings

1	Hong Kong	(99)
2	Canada	(98)
3	Spain, Netherlands	(96)
5	Australia	(95)

12. % of persons 16 years and over with Internet access by age group

2002 Index Top Rankings

1	Australia	(88 points)
2	New Zealand ⁷	(82)
3	Sweden	(80)

2003 Index Top Rankings

1	Canada	(87)
2	Sweden	(83)
3	Australia	(81)

13. Number of secure servers per million inhabitants

In 2001, the 3 top countries for the Indicator "Number of Secure Servers per 100,000 Persons 16 years and over with Internet access" were the US (45 secure servers), Australia (36) and New Zealand (36). In 2002, the countries with the highest number of secure servers per million inhabitants were the US (330), Australia and Canada (218 each). Please note that while in both 2002 and 2003 the Index measured the number of secure servers, the indicator used for each year is slightly different.

14. Price of 40 hours of Internet use at peak times

2002 Index Top Rankings

1	US	(100 points)
2	New Zealand	(63)
3	Australia	(56)

2003 Index Top Rankings

1	US	(100)
2	Canada	(75)
3	Australia	(71)

⁷ Not benchmarked in 2003

15. Charges for a basket of national leased lines of 2 megabits per second

<i>2002 Index Top Rankings</i>			<i>2003 Index Top Rankings</i>		
1	Sweden	(100 points)	1	Sweden	(100)
2	Norway	(67)	2	Germany	(30)
3	Ireland ⁸	(46)	3	US	(28)
10	Australia	(20)	10	Australia	(12)

16. Average number of Internet sessions & hours online per month

<i>2002 Index Top Rankings</i>			<i>2003 Index Top Rankings</i>		
1	South Korea	(45)	1	Hong Kong	(36)
2	Hong Kong	(31)	2	US	(34)
3	US	(30)	2	Canada	(34)
9	Australia	(20)	7	Australia	(25)

17. E-business readiness rankings
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<i>2002 Index Top Rankings</i>			<i>2003 Index Top Rankings</i>		
1	US	(87 points)	1	Sweden	(86)
2	Australia	(83)	2	Netherlands, US, UK	(84)
3	UK, Norway	(81)	5	Australia	(82)

18. % persons 16 years and over with Internet access banking online
--

New Indicator - Sweden tops the ranks with 53% of adult persons with Internet access banking online in the 3rd Quarter 2002, followed by the Netherlands (48%) and Canada (47%). Australia is ranked 5th (35%).

19. % persons 16 years and over with Internet access purchasing online

The 2002 Index measured the combination of online buyers as a % of Internet browsers and online buyers as a % of persons with Internet access. The countries with the highest combined scores were the US (103), Sweden (90) and Germany (81). The 2003 Index measured only the % of persons with Internet access who purchased online in the 6 months to September 2002. The leading countries were Canada (34%), the US (32%), and Sweden (26%). Australia was ranked 5th (18%).

⁸ Not benchmarked in 2003

20. % businesses online

New Indicator – in 2001 Sweden had the highest percentage (99%) of businesses with 10 or more employees connected to the Internet, followed by Germany (96%) and Canada (95% of all businesses). In June 2002, in Australia 89% of businesses with 10 or more employees were connected to the Internet.

21. % online businesses purchasing online

New Indicator - In 2001, in the US and Canada respectively 54% and 46% of all businesses connected to the Internet purchased online, while 34% of online businesses with 10 or more employees in the Netherlands purchased goods and/or services on the Internet. The proportion of all businesses online purchasing on the Internet for Australia in 2001-2002 was 35%.

22. Penetration of online government services

2002 Index Top Rankings

1	Norway	(32%)
2	Germany	(30%)
3	Australia	(25%)

2003 Index Top Rankings

1	Canada	(39%)
2	Australia	(32%)
3	Italy	(25%)

23. E-government rankings

Scores for this Indicator were calculated by averaging data for each of the countries benchmarked. Data for this indicator was extracted from two e-government reports: the UN/American Society for Public Administration (ASPA) 2002 report "*Benchmarking E-government: A Global Perspective*", and Accenture's study "*eGovernment Leadership: Engaging the Customer*" published in 2003. The top three (after averaging) ranked countries were the US (61%), Canada (60.5%), and Australia (53.5%).

A. READINESS TO PARTICIPATE IN THE INFORMATION ECONOMY

Consumer use of technologies

The first set of statistical indicators measure the level of consumer adoption of information and communication technologies (ICT) such as mobile phones, PCs and the Internet. The level of adoption of key enabling technologies, in particular the Internet, is in-part reflective of a society's ability to ensure the equitable distribution of the benefits of electronic service delivery. This first part of the Index also seeks to specifically examine the characteristics of household connectivity, principally the level of broadband penetration in Australian homes. Broadband is seen as an essential foundation for the emergence of more sophisticated electronic service delivery models, characterised by "rich content" or more specifically the convergence of voice, video, data and text over the one carrier technology allowing for a more sophisticated online interaction with government, business and private individuals.

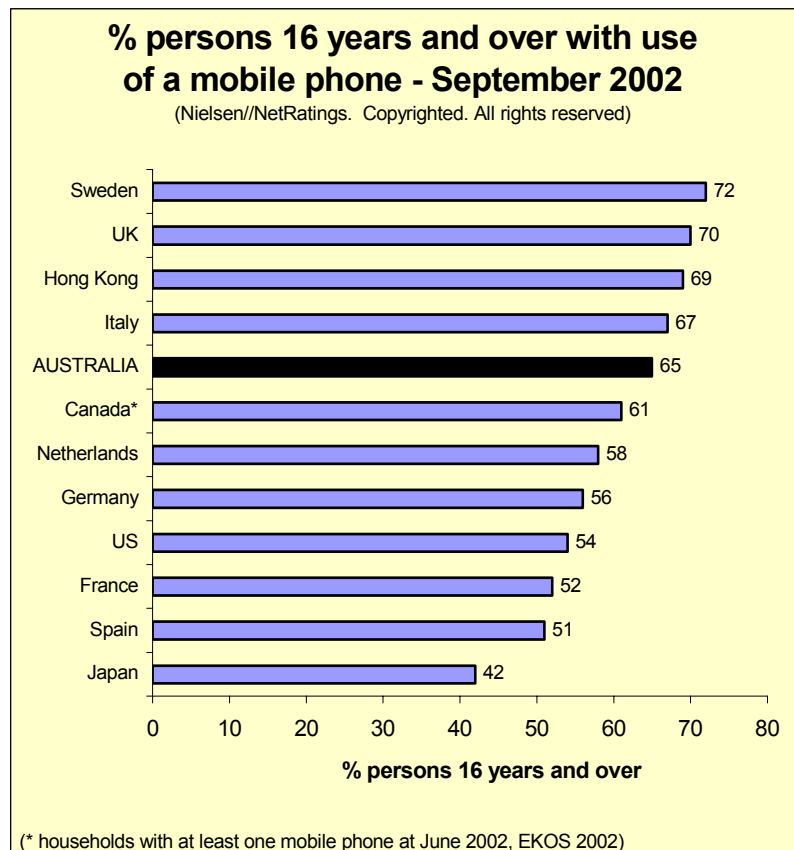
1. % of persons 16 years and over with use of a mobile phone

Score

	Points
Sweden	72
UK	70
Hong Kong	69
Italy	67
Australia	65
Canada	61
Netherlands	58
Germany	56
US	54
France	52
Spain	51
Japan	42

Since the early 1990s, many countries have experienced rapid growth in the adoption of mobile phone technology, with mobile telephony increasingly becoming the preferred mode of communication in relation to fixed line telephony.

Furthermore, the emergence of Internet enabled mobile phones has acted as a further stimulus to adoption levels.



During the 3rd Quarter of 2002, Sweden had the highest percentage of persons aged 16 years and over (72%) with access to a mobile phone. Sweden was followed by

the UK (70% with access to a mobile phone), Hong Kong (69%) and Italy (67%). Australia with 65% of persons aged 16 years and over with access to a mobile phone, was ranked 5th out of the twelve countries benchmarked.

September 2001 to September 2002: During the twelve months to September 2002, Sweden continued to demonstrate the highest consumer adoption of mobile telephones or in this case, the highest proportion of the adult population with access to a mobile phone. Australia did not experience any significant change in adoption levels compared to the growth recorded in some countries that have traditionally experienced lower mobile phone adoption levels. In the UK, for example, access to mobile telephony increased from 60% to 70%, an estimated increase of approximately 17%, compared to a 13% increase for France (46% to 52%) and 10% for Germany (51% to 56%).

2. % of households which own/lease a PC

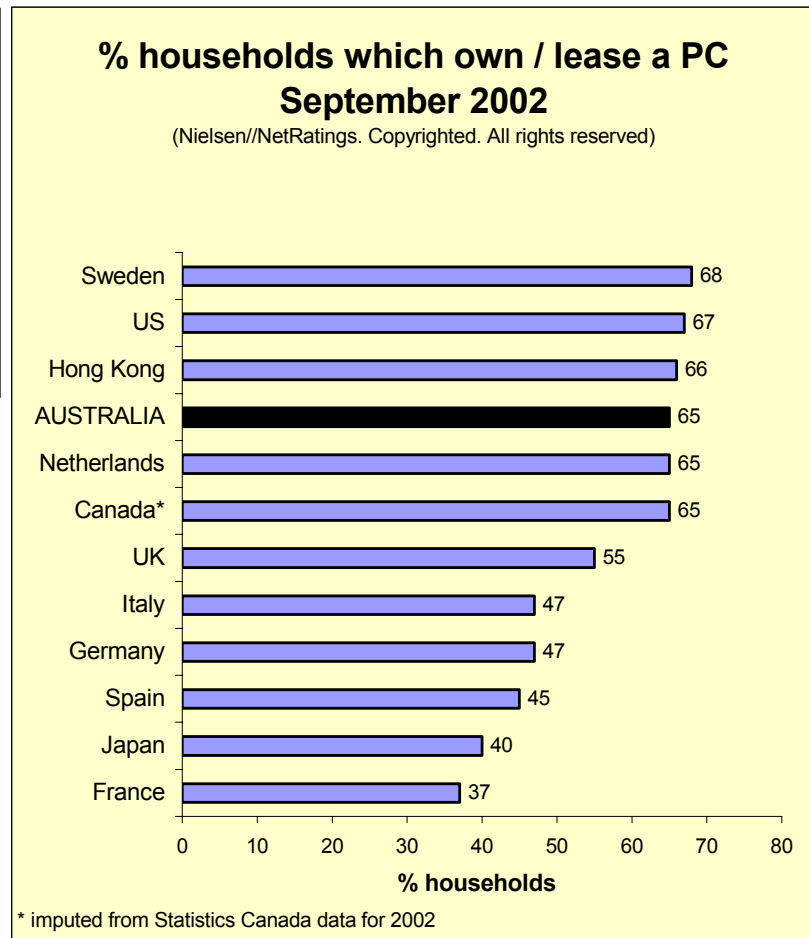
Score

	Points
Sweden	68
US	67
Hong Kong	66
Australia	65
Netherlands	65
Canada	65
UK	55
Italy	47
Germany	47
Spain	45
Japan	40
France	37

PCs are the main enabling technology through which the Internet is accessed across the world from home, with few technologies offering a cost-effective substitute. The majority of countries benchmarked reported PC adoption levels well in excess of 50% of households. In terms of household PC ownership during the 3rd Quarter of 2002, Sweden had the highest PC ownership with approximately 68% of Swedish households reporting owning or leasing a computer. Sweden was followed by the US with 67% of households owning or leasing a PC, Hong Kong (66%), and Australia, the Netherlands and Canada (65% respectively). The UK was the only other benchmarked country to report PC penetration levels about the 50% mark, with 55% of UK households estimated to own or lease a PC.

In terms of the remaining benchmarked countries, Italy (47%), Germany (47%) and Spain (45%) reported similar PC adoption levels just short of 50% of households. Japan (40%) and in particular France (37%) reported PC ownership well below other G7, Scandinavian or Asian-Pacific countries identified.

September 2001 to September 2002: While household PC ownership in Australia largely remained static in the 12 months to September 2002, the UK recorded the largest proportional increase in household PC ownership, an increase of approximately 17% (47% to 55%) since September 2001. However, levels of PC ownership in the UK are still significantly below estimates for Australia.

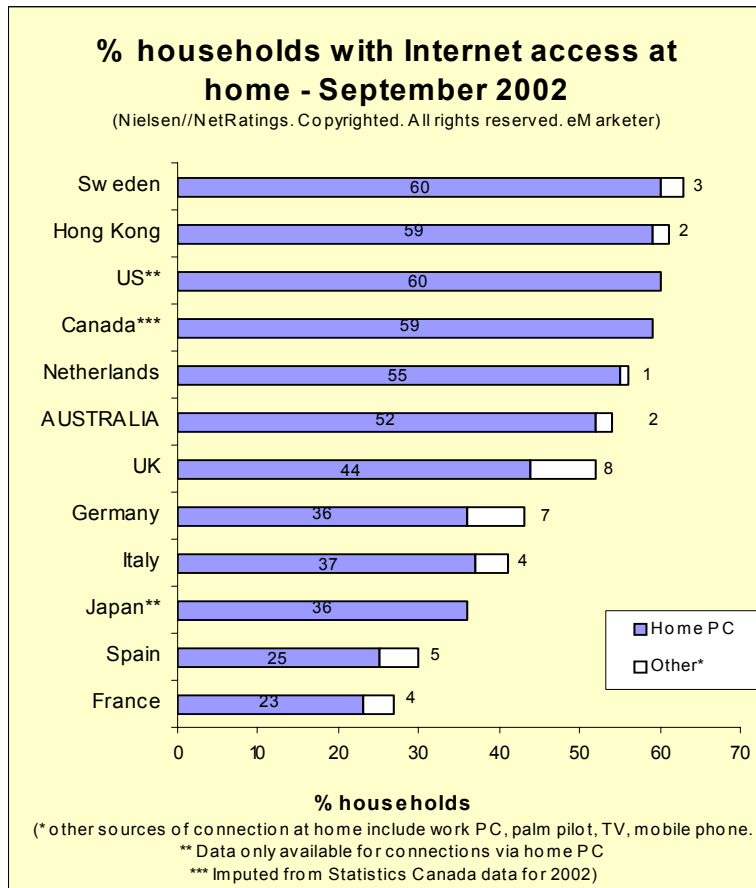


3. % of households online

Score

	Points
Sweden	63
Hong Kong	61
US	60
Canada	59
Netherlands	56
Australia	54
UK	52
Germany	43
Italy	41
Japan	36
Spain	30
France	27

In seven of the twelve countries benchmarked (what can be described as first tier countries) more than 50% of households were online. Sweden had the highest proportion of households online (63%) followed by Hong Kong (61%), the US (60%), Canada (59%), the Netherlands (56%), Australia (54%), and the UK (52%).



Second tier countries, mainly Germany (43%), Italy (41%), Japan (36%), Spain (30%) and France (27%) all reported household connectivity levels significantly below the 50% mark.

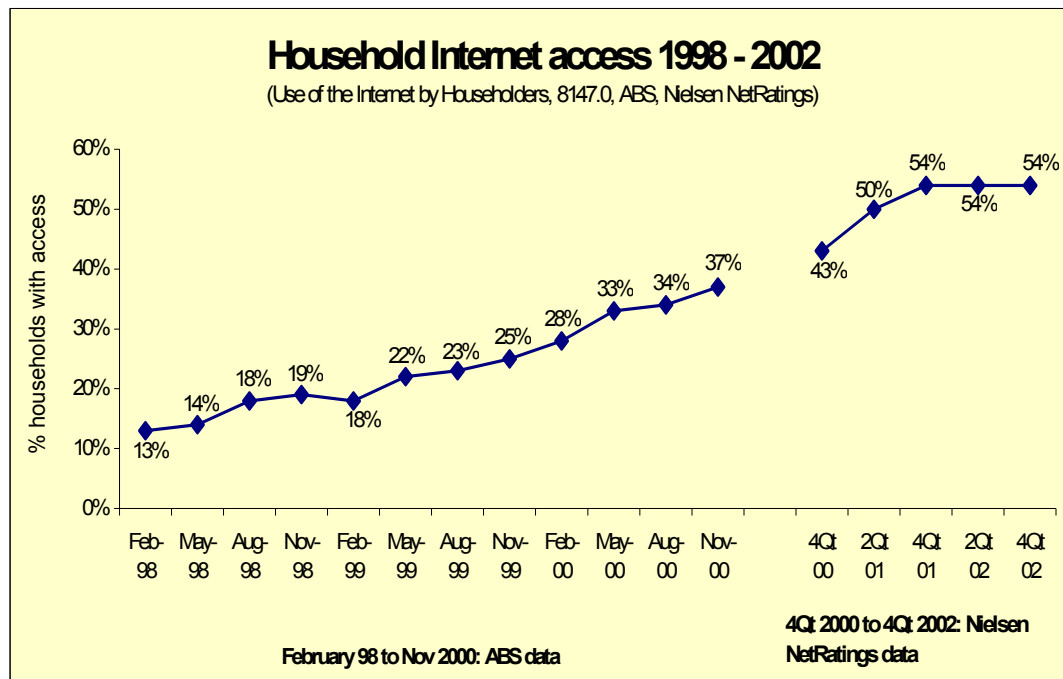
September 2001 to September 2002: During the 12 months to September 2002, levels of household connectivity in Australia remained fairly static, and this is also a characteristic of other mature information economy consumer markets such as Canada and the US. During this period the highest increases in household connectivity levels were recorded for countries with traditionally low levels of Internet adoption amongst their general populations. Of the countries benchmarked, Germany and Italy experienced the highest proportional increases in household connectivity, 17% for Germany and 21% for Italy. However, for both countries and in particular for Italy, connectivity levels remained the lowest of the benchmarked countries.

Trend over time for Australia

The following chart shows that the Internet adoption curve for households since February 1998, when the Australian Bureau of Statistics (ABS) first began monitoring Internet take up. The ABS series tracked Internet adoption levels from February 1998 to November 2000, when the ABS discontinued its regular household ICT survey program. From December 2000 to December 2002, household connectivity levels in Australia are tracked using data collected by AC Nielsen.

In summary, the chart shows that:

- Australia experienced phenomenal growth in household connectivity levels during the period covering February 1998 to June 2001. Specific points to note include:
 - At February 1998, 13% of Australian households were estimated to be online by the ABS.
 - In the thirty-three months to November 2000, household connectivity increased to approximately 37%, reaching 50% by the end of 2nd Quarter 2001. This represented an increase of nearly four hundred per cent (285%) during this period.
- A significant slow-down in growth in households online from the second half of 2001 typified by:
 - The Internet adoption curve for households in Australia showing a holding pattern since 2001, with levels of household Internet access stable on 54% from the end of 2001 and throughout 2002.
 - This pattern of stabilisation is also found in other benchmarked countries with household connectivity levels in excess of 50%.



4. Internet connection speeds

The ability to facilitate greater access and download speeds within an “always on” operating environment (<http://www.nap.edu/html/broadband/ch2.html>) is perhaps the most important difference between broadband and narrow band Internet services. This difference has allowed providers and users of online services the opportunity to build and participate in a far more dynamic interactive online experience.

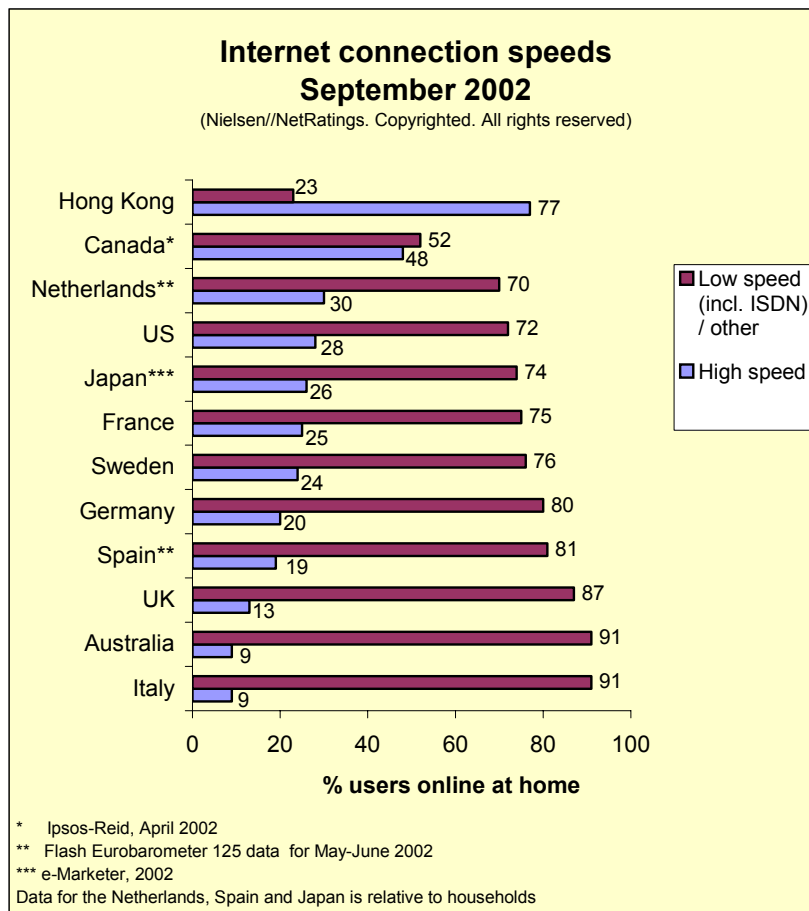
The emerging *family* of broadband technologies is enabling Internet users to access rich content media such as digital radio and TV, as well as a variety of interactive services from online games to education, while at the same time facilitating faster e-commerce transactions such as online shopping and banking. For public and private sector organisations, broadband technologies have enabled the development of more dynamic and innovative e-service delivery models previously unsustainable under narrow band technology regimes. Broadband is also increasingly an emerging aspect of a new generation of Information and Communication Technologies (ICTs), which will continue to underpin organisational transformation and productivity growth across all economic sectors.

Indicators 4 and 5 present metrics on broadband adoption levels in the household sector. While it can be argued that levels of broadband usage by organisations is perhaps a more important indicator (given the potential for transformation and productivity growth), comparable international benchmarking data is not available. However, ABS data for the Australian business sector is presented in this report.

Score

	Points
Hong Kong	77
Canada	48
Netherlands	30
US	28
Japan	26
France	25
Sweden	24
Germany	20
Spain	19
UK	13
Australia	9
Italy	9

While the majority of households in the countries benchmarked are online, most home Internet users access the Internet via dial-up or narrow band services. Only in Hong Kong did the majority of home Internet users (77%) access the Internet

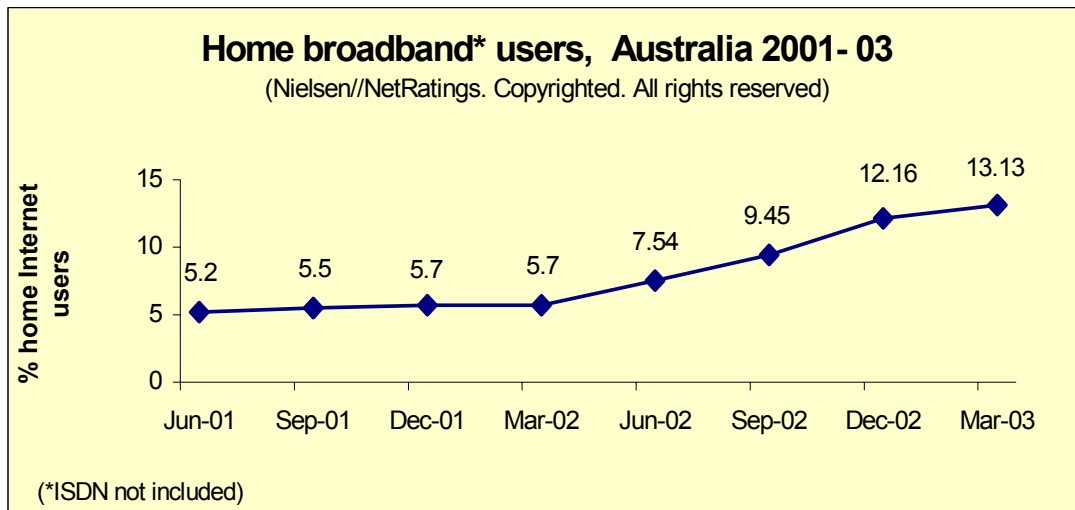


via broadband services during the three months to the end of September 2002 compared to:

- 48% in Canada;
- 30% in the Netherlands;
- 28% in the United States;
- 26% in Japan;
- 25% in France;
- 24% in Sweden;
- 20% in Germany;
- 19% in Spain;
- 13% in the United Kingdom; and
- 9% respectively in Australia and Italy.

September 2001 to September 2002: Broadband usage in Australian homes during this period increased by 80%, although from a relatively low base from 5% of home Internet users at September 2001 to 9% of home Internet users at September 2002.

Trend over time for Australia

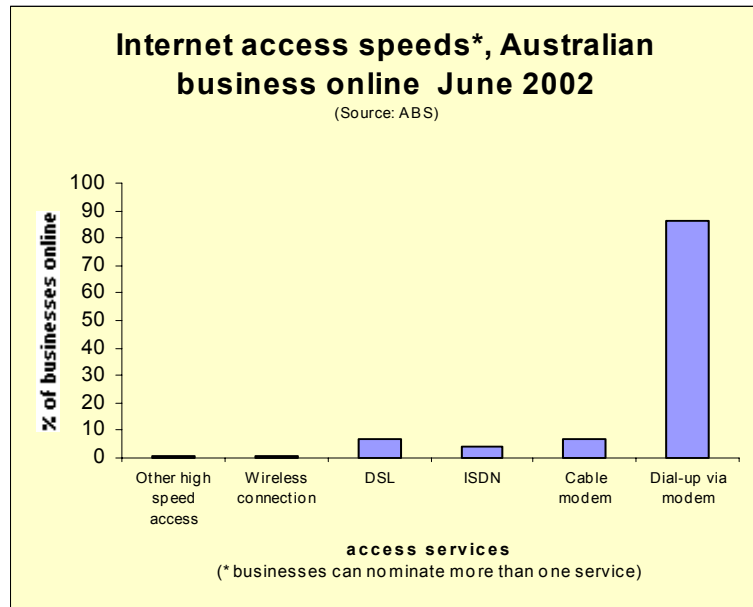


AC Nielsen research suggests that Australian homes are gradually shifting from narrowband to broadband services. In the period June 2001 to March 2003, the percentage of home Internet users accessing the Internet through broadband services in Australia increased from just 5% to just over 13%, an increase of more than 100%. A significant upward shift in the level of home broadband users in Australia has been particularly evident since June 2002. This trend reflects increased levels of connectivity for technologies such Digital Subscriber Line (DSL) and Asymmetric Digital Subscriber Line (ADSL) technology, and indicates an increasing level of awareness of the benefits of broadband services within the community.

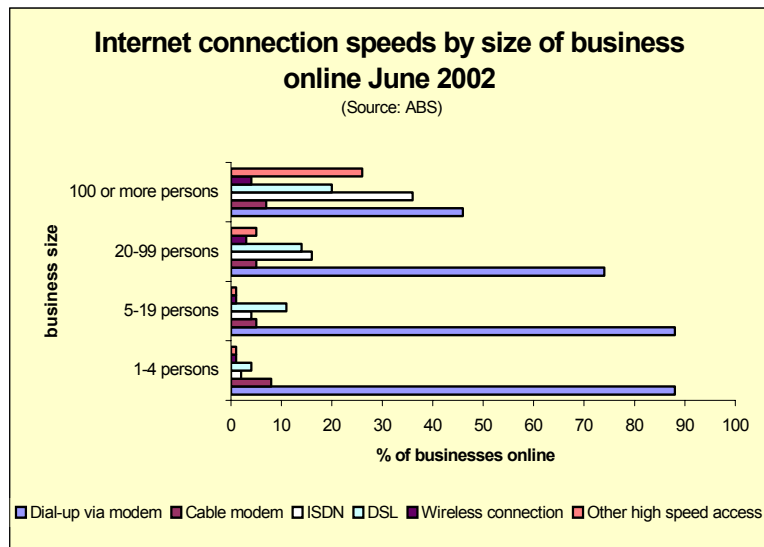
Broadband usage by Australian businesses online

At June 2002, an estimated 72% of Australian businesses with employees (some 474,000 businesses) were connected to the Internet. Of these 474,000 businesses:

- 86% accessed the Internet via dial-up services;
- 7% via DSL;
- 7% via cable modem;
- 4% via ISDN; and
- 2% via other high speed services.



As the graph beside shows, there is a direct relationship between the size of a business (in terms of number of employees) and the propensity to access the Internet via broadband services. Only 45% of online businesses with 100 or more persons accessed the Internet via dial-up services, compared to 88% respectively for micro businesses (1-4 persons), businesses employing 5-19 persons and 74% for online businesses employing 20-99 persons.



In Australia, higher levels of broadband connectivity amongst private and public sector organisations are being pursued through the promotion of broadband related innovation. In this respect, target areas identified as key drivers for future expansion of broadband include education, government services and health. Increased availability of supply and innovative content development will contribute to enhance the attractiveness of broadband, and will help in addressing the problem of differing regional availability of broadband services, a key impediment to broadband adoption.⁹

⁹ Productivity and Organisational Transformation: optimising investment in ICT, NOIE, 2003.

5. Broadband households as % of total households

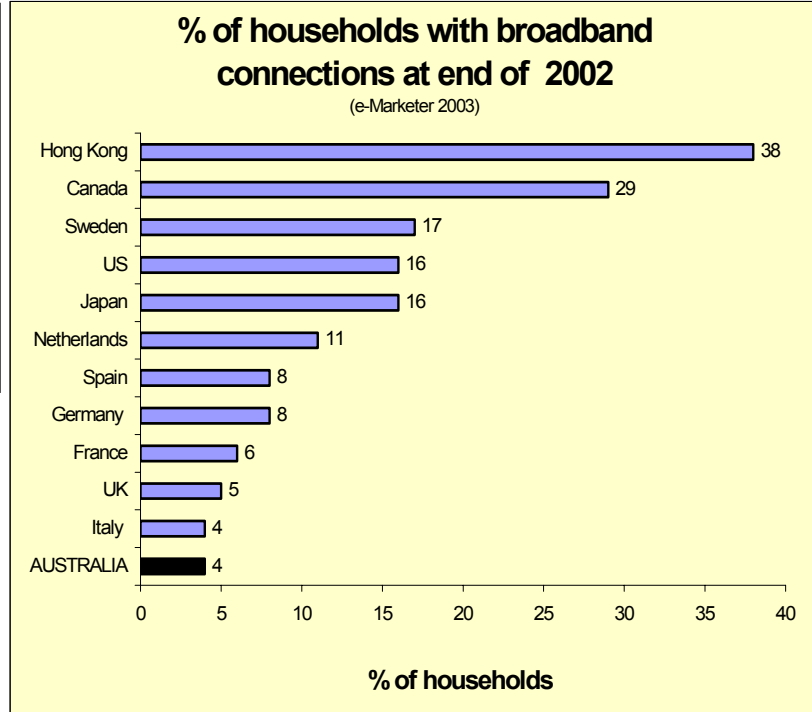
In terms of developing consumer broadband markets, existing data shows that huge potential exists in the consumer broadband market place with most countries typically being in the early stages of broadband adoption. This is a situation often associated with a market's limited understanding of the "broadband value proposition" (eg. the cost of implementing broadband vs the benefits to a home Internet user in terms of being able to access a broader range of activities and content around the clock).

While the benefits of broadband are perhaps more clearly demonstrable in the case of adoption by businesses (particularly in relation to the potential return on investment as a result of administrative and organisational efficiencies), this proposition may be premature for many home Internet users who find dial-up services adequate for their online needs.

The previous set of household metrics showed that for most countries, users of home Internet broadband services were a growing share, but still a minority of the total household Internet population. The graph below shows that compared to the total household sector, broadband households accounted for between 4% (Australia and Italy) to 38% (Hong Kong) of the total number of households. For 6 of the 12 benchmarked countries (Spain, Germany, France, the UK, Italy and Australia) less than 10% of all households were using broadband services, while Japan, the US and Sweden had 16-17% of total households connected to broadband services. Approximately 29% of Canadian household were estimated to be using broadband services at the end of 2002.

Score

	Points
Hong Kong	38
Canada	29
Sweden	17
US	16
Japan	16
Netherlands	11
Spain	8
Germany	8
France	6
UK	5
Italy	4
Australia	4



Internet access versus Internet use

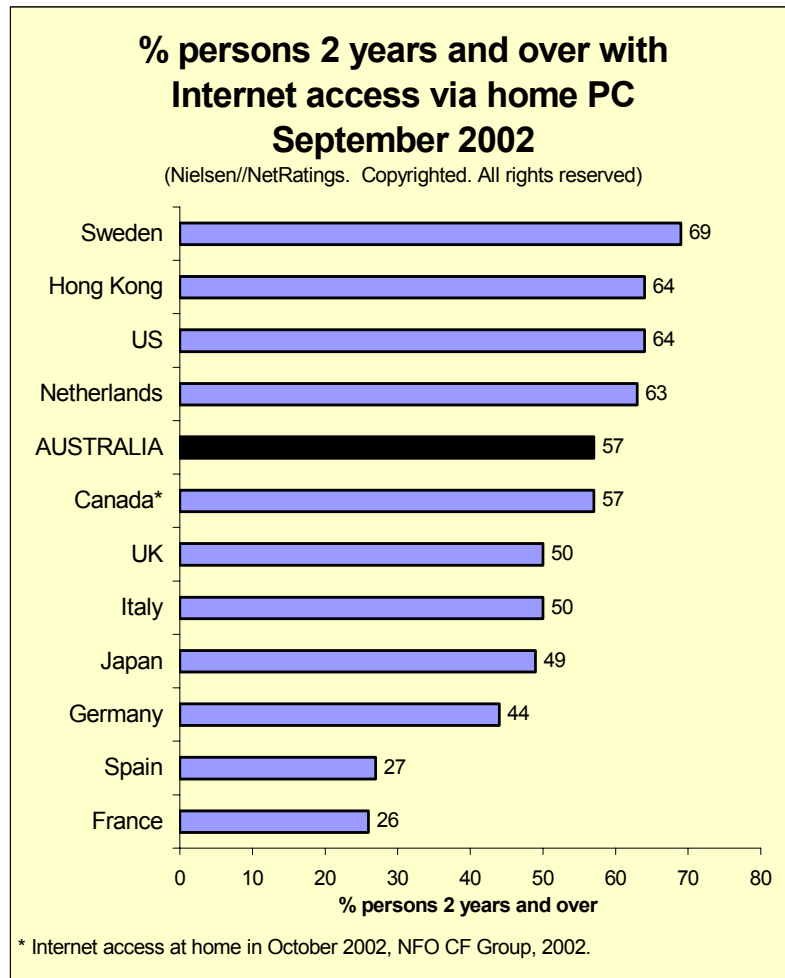
The following charts present data on the availability of Internet access amongst the general population. This data is also supplemented by statistics on “actualisation” of Internet access – that is the proportion of those persons with current Internet access who have taken the opportunity to use the Internet. The data presented shows that in the majority of the benchmarked countries, even though Internet access is not yet ubiquitous in nature, most citizens (50% or more) have readily available access to the Internet and are able to use the Internet should they wish to in their homes, place of work or other locations.

6. % of persons 2 years and over with Internet access via a home PC

Score

	Points
Sweden	69
Hong Kong	64
US	64
Netherlands	63
Australia	57
Canada	57
UK	50
Italy	50
Japan	49
Germany	44
Spain	27
France	26

In the 3rd Quarter 2002, Sweden had the highest percentage (69%) of persons aged 2 years or more with Internet access via a home PC. Sweden was followed by Hong Kong and the US (64% each), the Netherlands (63%), and Australia and Canada (57% respectively). Among the countries benchmarked, Spain (27%) and France (26%) recorded the lowest Internet penetration levels at home.



September 2001 to September 2002: The greatest improvements in Internet access levels occurred in countries with traditionally comparatively low levels of Internet penetration. For the period September 2001 to September 2002, Italy recorded the

highest proportional increase in persons reporting having access to the Internet, an estimated 47% increase (34% to 50%). The increase in access levels in Australia was considerably more modest, an estimated 6% over the 12 month period to September 2002. However, as with other metrics presented, countries coming from a low base in terms of Internet adoption have experienced the highest proportional increases relative to the more mature Information Economies.

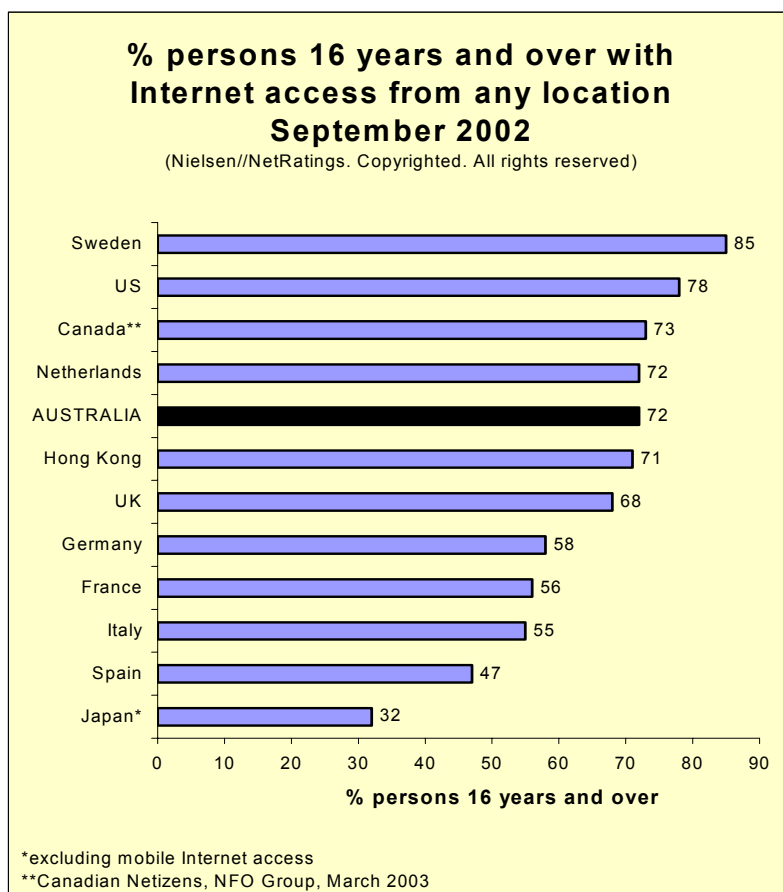
7. % of persons 16 years and over with Internet access from any location

Gaining access to the Internet is the initial step in becoming an active player in the Information Economy and realising the opportunities and benefits active participation holds for all Australians. Analysis of the level of Internet access in addition to where and how the Internet is accessed, provides a useful insight into a nation's ability to leverage off the Information Economy developments. Without ubiquitous use of the Internet the full benefits of the Information Economy will be difficult to realise with only certain sectors of economic and social society benefiting. Indicators 7 and 8 benchmark Internet access from any location and Internet access at home or work.

Score

	Points
Sweden	85
US	78
Canada	73
Netherlands	72
Australia	72
Hong Kong	71
UK	68
Germany	58
France	56
Italy	55
Spain	47
Japan	32

In the 3rd Quarter 2002, Sweden had the highest percentage (85%) of persons aged 16 years and over with Internet access from any location, followed by the US (78%), Canada (73%), Australia and the Netherlands (72% respectively), the UK (68%), Germany (58%), France (56%), Italy (55%) and Spain (47%). Japan had the lowest Internet access levels, with 32% of persons 16 years and over with Internet access from any site.



September 2001 to September 2002: In terms of historically available data, Italy, France and the UK recorded the highest proportional increases in levels of Internet access, 20%, 17% and 11% respectively, in the 12 months to September 2002. However, this was typically a result of the historically and comparatively low levels of Internet use in these countries. Given this situation all three countries have demonstrated the highest proportional increases for many of the indicators published in this Index.

8. % of persons 16 years and over with Internet access at home or work

Internet access levels at home and work are important measures of progress in the Information Economy, as they reflect the potential for:

1. the consumer market for online services, which is more likely to develop within the home environment due to the convenience of home Internet access; and
2. the scope for economy wide efficiencies to be delivered via the application of e-business models.

Accessing the Internet at home offers the advantage of being able to do so at any time of any day, to perform tasks (eg, banking, shopping, accessing work and educational resources, information retrieval and document downloading) that otherwise would have to be performed in person during the day.

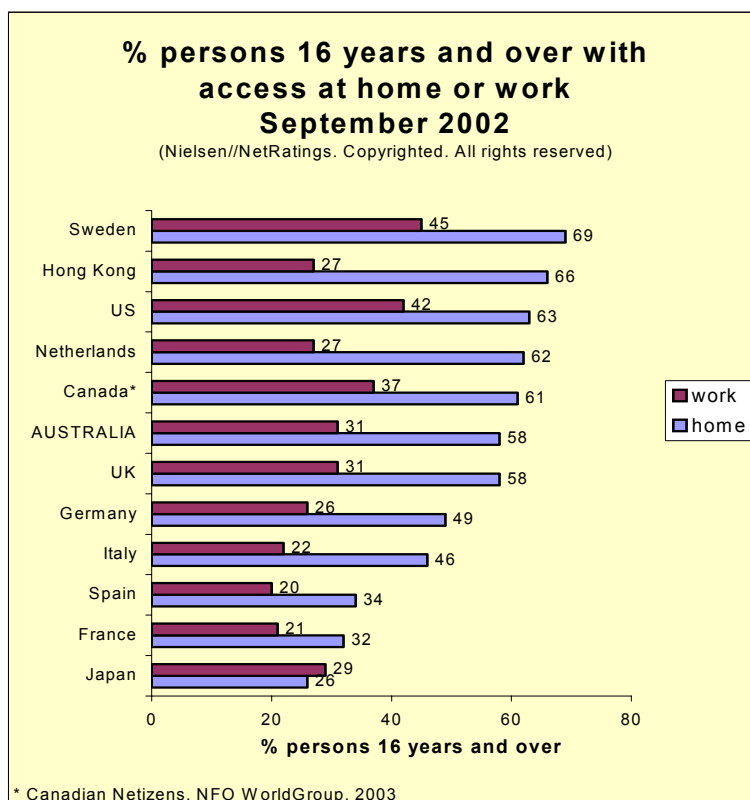
Internet access at work facilitates networking, communication and research, and investment in ICT in the workplace is in fact a major driver of efficiency and productivity. The Internet as a key enabling ICT has the potential to deliver significant organisational transformation through the application of e-business models to key areas such as customer relationship management (CRM), administrative operations, and knowledge and supply chain management. The Internet in the work place has facilitated the development of clusters, enabling flexibility in communication, while at the same time increasing enormously the information assets available to analysts and researchers in general.

Score: home or work combined

	Points
Sweden	114
US	105
Canada	98
Hong Kong	93
Netherlands	89
Australia	89
UK	89
Germany	75
Italy	68
Japan	55
Spain	54
France	53

Access @ home

In all countries benchmarked, the home was the most frequently reported point of Internet access. The percentage of persons accessing the Internet at work, however, was also significant.



Sweden had the highest percentage of persons aged 16 years and over with Internet access at home (69%). Sweden was followed by Hong Kong (66%), the US (63%), the Netherlands (62%), Canada (61%) and Australia and the UK (58 respectively). Access at home in Germany (49%) and Italy (46%) were just below 50% of the adult population, while Spain (34%), France (32%) and Japan (26%), were significantly below other benchmarked countries. Japan was the only country where access at work exceeded home access levels (29% compared to 26%).

Access @ work

Sweden also recorded the highest Internet access levels at work, with 45% of the adult Swedish population reporting having Internet access at work at September 2002. Sweden was followed by the US (42%), Canada (37%), Australia and the UK (31% respectively), Japan (29%), Hong Kong and the Netherlands (27% respectively), Germany (26%), Italy (22%), France (21%) and Spain (20%).

September 2001 to September 2002: During the 12 months to September 2002 Italy, France, Germany and the UK recorded the highest proportional increases in Internet access levels from home or work. However, it is important to note that these countries have historical low levels of Internet penetration. Therefore, the current growth in access levels is part of a “catch-up” phase in relation to the high penetration levels characteristic of more established information economies in Sweden, the US, Canada and Australia. In terms of growth in Internet access levels:

- *Access @ home:* during this period, France recorded the highest proportional increase in access levels at home (28%), followed by Germany (a 22% increase), Italy (18% increase) and the UK (14% increase).
- *Access @ work:* Italy recorded the highest proportional increase in access levels at work, a 47% increase over this period. Italy was followed by France (work access levels up by 40%), the UK (up by 19%) and Germany (up by 8%).

9. % of persons 16 years and over with Internet access using the Internet

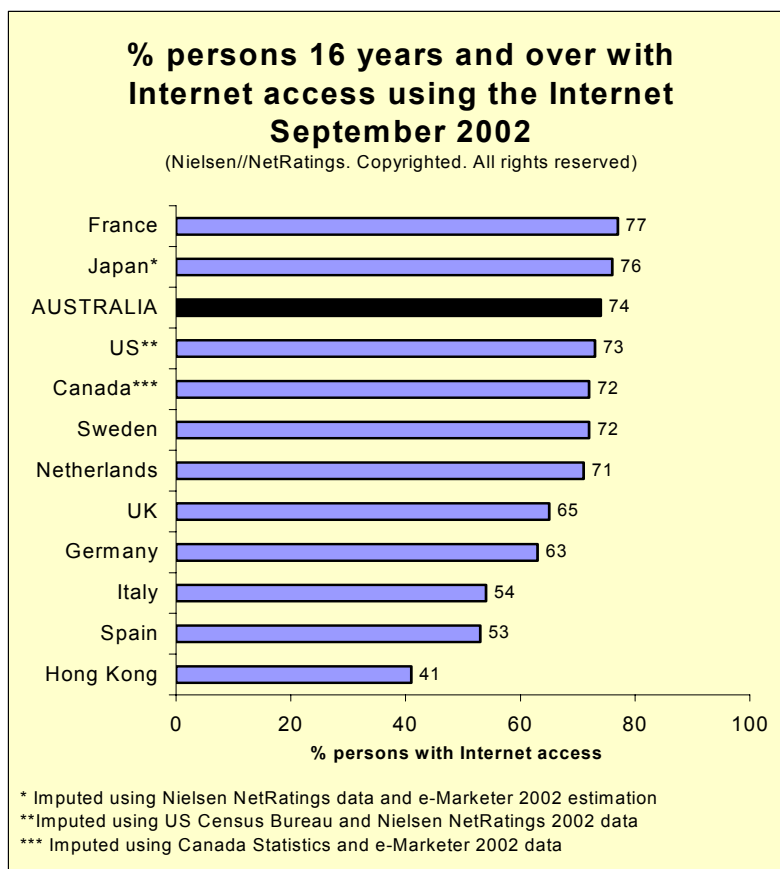
Score

	Points
France	77
Japan	76
Australia	74
US	73
Canada	72
Sweden	72
Netherlands	71
UK	65
Germany	63
Italy	54
Spain	53
Hong Kong	41

The overall percentage of persons with Internet access (estimated current Internet universe) who accessed the Internet (active Internet universe) during the 3rd Quarter of 2002 across the 12 countries benchmarked was

58%, with most countries recording usage levels above the benchmark average. The percentage of persons with Internet access who actually use the Internet provides one measure of the intensity of Internet use in a country and the potential demand for online services. It is interesting to note how countries that do not lead others in terms of persons with Internet access, for example, may perform very well in terms of actual Internet use, as proven in the case of France (here ranked first with 77%). A leading country in Internet access such as Hong Kong, on the other hand, lags behind in actual Internet use with only 41% of persons with Internet access using the Internet. In Australia, at September 2002, 74% of the current Internet universe was active, placing Australia 3rd behind France and Japan (76% realisation). Most countries benchmarked recorded actual Internet usage levels (expressed as a per cent of persons with Internet access) in excess of 70%.

September 2001 to September 2002: Overall across the benchmarked countries, there was a general shift to higher levels of Internet use in the 12 months to September 2002 with the UK recording the highest proportional increase, an estimated 51% during this period.



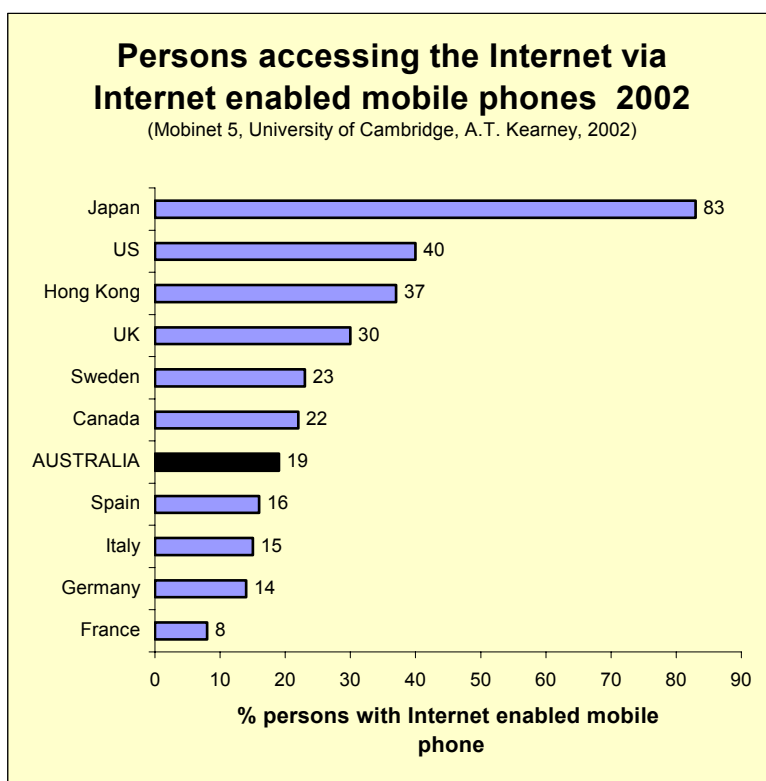
10. Wireless Internet access

Wireless Internet access (eg. via mobile phone) is becoming an increasingly attractive alternative to Internet access through “fixed” technologies (eg. desktop PCs) in several respects. Wireless access removes the need for a dedicated phone line, and allows high-speed broadband Internet access regardless of location, even in areas where “terrestrial” broadband access is not readily available. In theory, increased mobility, flexibility and speed of access, particularly in relation to online interactive services, are key characteristics of wireless services such as 3G. However, higher establishment and connectivity costs are less attractive features of emerging wireless technologies and the prohibitive cost associated with building advanced network infrastructure, particularly for 3G based services, is a major impediment to the adoption and utilisation of these next generation technologies.

Score

	Points
Japan	83
US	40
Hong Kong	37
UK	30
Sweden	23
Canada	22
Australia	19
Spain	16
Italy	15
Germany	14
France	8

At June 2002, 83% of persons with Internet-enabled mobile phones in Japan accessed the Internet via these devices. For this indicator, the US was ranked a distant second with 40% of adults with an Internet enabled mobile phone accessing the Internet, compared to 37% in Hong Kong, 30% in the UK, 23% in Sweden, 22% in Canada, 19% in Australia, 16% in Spain, 15% in Italy, 14% in Germany and 8% in France.



In the US¹⁰, which has the 2nd highest percentage for this indicator, of the 67.2 million Internet users who owned a cellular mobile phone, 5.8 million, or nearly 9%, used their mobile phone to access the Internet.

¹⁰ <http://cyberatlas.internet.com/markets/wireless>

Equity of access

The Information Economy presents many new opportunities, and access to online resources confers advantages valued by users. It is in view of this value that online access can then be regarded as an equity issue (of which the digital divide is a key facet). The digital divide is a term used to describe discrepancies in Internet use by certain social, economic and demographic groups as compared to other groups. Traditionally, two of the most scrutinised aspects of the digital divide have been Internet access by gender (female and male population), and by age (eg. younger age groups vs older age groups). Indicators 11 and 12 benchmark level of Internet access by gender and age group.

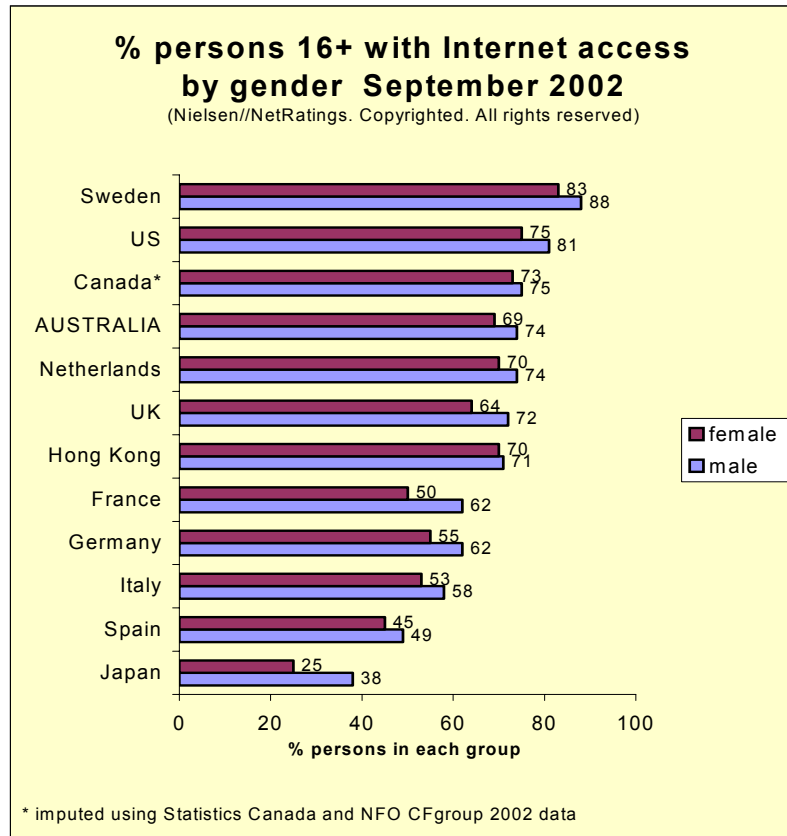
11. % of persons 16 years and over with Internet access by gender

Score

	Points
Hong Kong	99
Canada	98
Netherlands	96
Spain	96
Australia	95
Italy	95
Sweden	95
US	94
Germany	93
UK	92
France	88
Japan	87

For the majority of countries involved in this benchmarking exercise, there seems to be broad level equity of Internet access between males and females aged 16 years and over. For 7 out of the 12 countries, the difference in access between genders

was within a five-percentage point range. For the US, Germany and the UK the difference in access levels between males and females was 6, 7 and 8-percentage point. Japan and France recorded the highest divergence between males and females (12-13 percentage points). While Sweden had the highest percentages of Internet access by males and females, the country with the lowest difference (hence the lowest divide) in access between males and females was Hong Kong (1% difference = 99 points). Canada scored 98 points, the Netherlands and Spain 96, and Australia, Italy and Sweden 95, and the US 94. Japan was the lowest ranked country in terms of both rates of Internet access and difference in access between



genders, with 25% of Japanese women estimated to have Internet access compared to 38% for Japanese men.

The divergence between males and females across countries was more striking. Taking Sweden, the nation with the highest levels of Internet access for both males and females (83% and 88% respectively), access levels amongst Swedish men were more than twice the access levels for Japanese men, while access levels for Swedish women, were more than three times that of Japanese women.

September 2001 to September 2002: Australia lost its lead (99 points in 2001) to Hong Kong, and for this indicator has also been surpassed by Canada, the Netherlands and Spain. Japan, which recorded the largest gap in Internet access by genders, was not benchmarked for 2001.

12. % of persons 16 years and over with Internet access by age group

Score

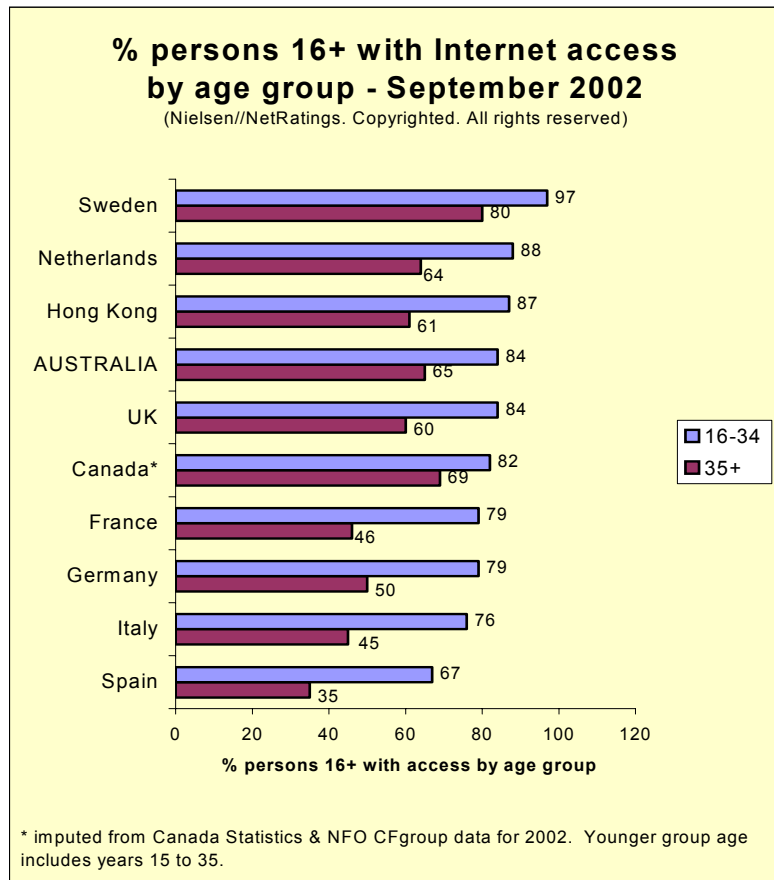
	Points
Canada	87
Sweden	83
Australia	81
Netherlands	76
UK	76
Hong Kong	74
Germany	71
Italy	69
Spain	68
France	67

Age is a strong determinant on Internet access outcomes across the countries examined and it is highly likely to be critical in shaping Internet access in other countries. The difference in participation between age groups across countries was much greater than the difference recorded in participation between genders (Indicator 11).

In all countries benchmarked, persons aged 16-34 years (the younger age group) recorded levels of Internet access which were considerably higher than those persons aged 35 years and over (the older age group). The divergence in Internet access levels between these two age groups ranged from a low of 13 percentage points for Canada to a high of 33 percentage points for France. Comparable data for the US and Japan was not available for this indicator.

It is interesting to note that countries with the lowest divide are also the countries with the highest percentage of overall Internet access. This suggests that in the initial stages of Internet penetration, persons in the younger age group are more willing to experience the new technology and carry this experience and interest in the Internet through consecutive life stages.

Canada was the country with the lowest difference (13%) in access between age groups, and thus received a score of 87, followed by Sweden (83) and Australia (81). Again the difference in Internet access levels between similar age groups across countries was more striking. Sweden was the leading nation in terms of Internet access for both age groups (97% for 16-34 year olds and 80% for persons aged 35 years and over). Spain recorded the lowest access levels for each age group (67% for 16-34 year olds and 35% for persons 35 years and over).



Younger Swedes had access levels 30 percentage points higher than their counterparts in Spain, while older Swedes had access levels more than twice that recorded for their counterparts in Spain.

September 2001 to September 2002: Sweden is ranked as the country with the lowest difference in Internet access between its male and female population after Canada. Australia follows with the third lowest difference and is awarded 81 points (down from 88 for 2001). No particular country stands out in terms of significantly different performances in the two benchmarking periods for 2001 and 2002.

Secure E-commerce Infrastructure

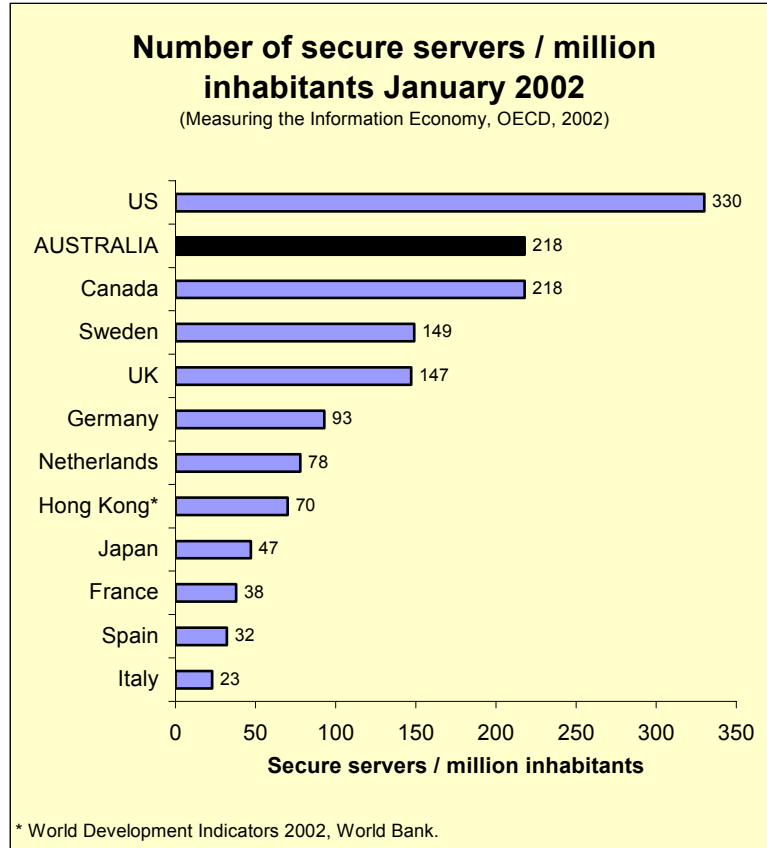
13. Number of secure servers per million inhabitants

Score

	Points
US	100
Australia	66
Canada	66
Sweden	45
UK	44
Germany	28
Netherlands	23
Hong Kong	21
Japan	14
France	11
Spain	9
Italy	7

For citizens to be comfortable in undertaking e-commerce transactions such as banking and shopping online, a secure e-commerce infrastructure is critical to guaranteeing the integrity of electronic transactions, protecting Internet

users from fraud and other computer based crime. A country's level of infrastructure development can be measured in a number of ways. In particular, the number of secure servers available in proportion to Internet users/population is a useful indicator of the level of security in place for e-commerce. For this indicator, the US had the highest ratio of secure servers per million inhabitants (330) at January 2002. The US was followed by Australia and Canada (each with 218 secure servers per million inhabitant respectively), Sweden (149), the UK (147), Germany (93), the Netherlands (78), Hong Kong (70), Japan (47), France (38), Spain (32) and Italy (23).



September 2001 to September 2002: in the period considered, there was very little change in the performance of top ranked countries for this indicator. The US and Australia maintained their ranking of 1st and 2nd, while Canada, making a first appearance in the 2003 Index, was ranked equal 2nd with Australia.

Cost of Internet Access

14. Price of 40 hours of Internet use at peak times

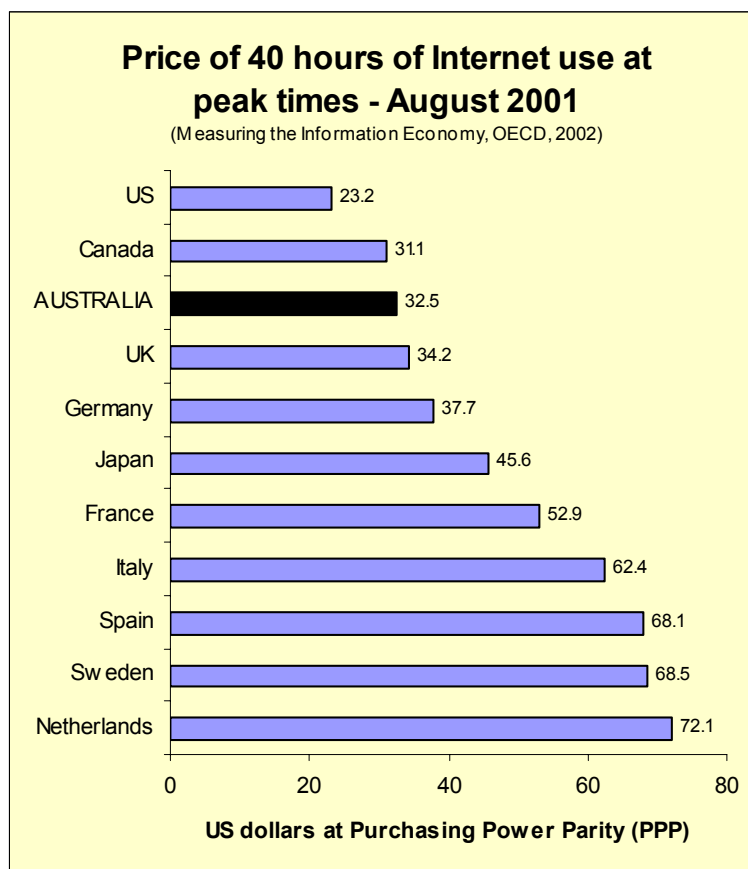
Score

	Points
US	100
Canada	75
Australia	71
UK	68
Germany	61
Japan	50
France	44
Italy	37
Spain	34
Sweden	34
Netherlands	32

Use of the Internet can be characterised by high elasticity of demand as a consequence of cost of access and levels of disposable income within the community. In August 2001, among the countries benchmarked the US had the lowest cost (US\$23.2) for 40 hours of Internet

use at peak times, followed by Canada (US\$31.1) and Australia (US\$32.5). Points were assigned accordingly. Countries with the highest cost were the Netherlands (US\$72.1), Sweden (US\$68.5), and Spain (US\$68.1). Data for Hong Kong was not available.

September 2000 to August 2001: the US retained its position as the country providing the cheapest access at peak times (cost down from US\$23.8 in 2000), while Canada was not benchmarked previously. Cost of access in Australia actually decreased from US\$42.9 in 2000 (US\$10.4 lower). The largest decrease and increase in cost were recorded respectively for the UK (down from US\$60.4 in 2000), and Italy (up from US\$45.7 in 2000).



15. Charges for a basket of national leased lines of 2 megabits / second

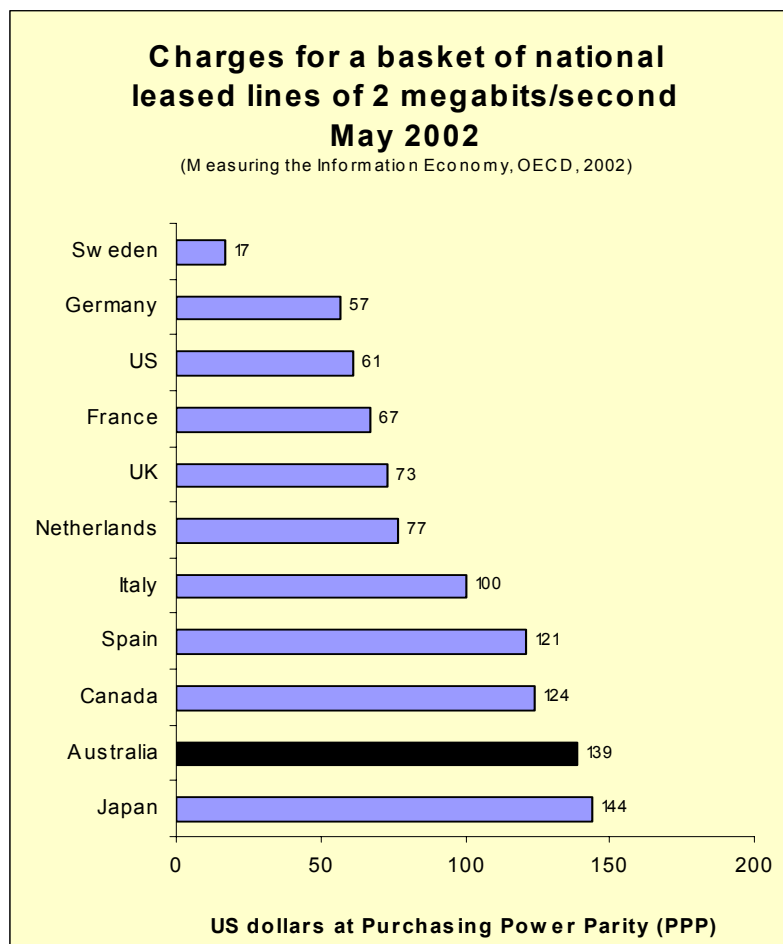
Score

	Points
Sweden	100
Germany	30
US	28
France	25
UK	23
Netherlands	22
Italy	17
Spain	14
Canada	14
Australia	12
Japan	12

“Leased lines (private lines in North America) provide the infrastructure for business-to-business electronic commerce. They give users that need to transport high volumes of traffic lower prices than the public switched telephone network (PSTN) and control over their telecommunication facilities and traffic.

The basket of national lease lines includes total charges (excluding taxes) for leased lines that can carry two megabits of information per second.”¹¹ Sweden (US\$17) is clearly the country where a basket of leased lines of 2 megabits per second is least expensive, and as such, its scores maximum points. Sweden is followed by Germany (US\$57) and the US (US\$61). Australia is ranked 10th (US\$139), followed by the country with the highest cost (US\$144), Japan. Data for Hong Kong was not available.

August 2000 to May 2002: the cost of a basket of leased lines for Australian business increased from US\$132 in 2000, as it did for France (up from US\$65), and the UK (up from US\$63). Sweden and Germany both recorded a decrease in cost of US\$9.



¹¹ P.82, STI Scoreboard, OECD, 2001.

B. INTENSITY OF INTERNET USE

The remaining indicators presented in this Index measure the level of participation in the Information Economy. A wide range of indicators have been selected which can be grouped accordingly:

- indicators measuring average amount of time spent online;
- indicators measuring participation in e-commerce or e-business activities, selected for the potential economy wide efficiencies these activities can generate;
- indicators relating to business and government preparedness to promote the growth of the Information Economy, particularly government as a major provider of online services; and
- citizen adoption of online services as a measure of demand for e-government and e-business.

Other indicators can and should be added to this list, however, data limitations, in terms of lack of international comparable data, prevents their inclusion.

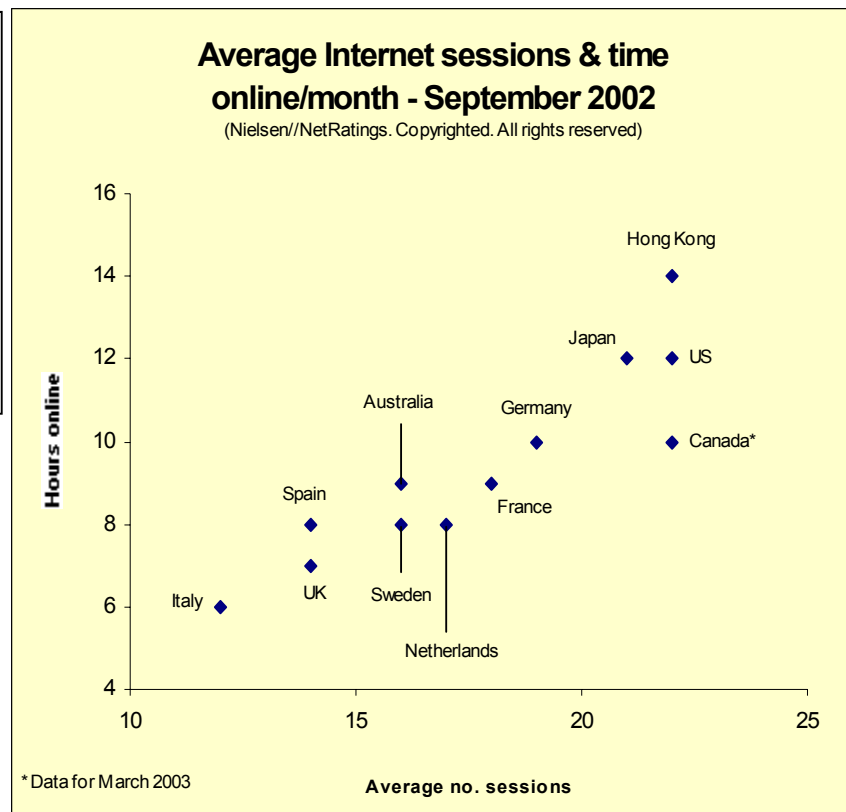
16. Average number of Internet sessions and hours online per month

Score: Number of sessions/month & time online/month combined

	Points
Hong Kong	36
US	34
Canada	34
Japan	33
Germany	29
France	27
Netherlands	25
Australia	25
Sweden	24
Spain	22
UK	21
Italy	18

During September 2002, Internet users in Hong Kong recorded the highest average number of hours online and the highest average number of Internet sessions among users in the 12 countries benchmarked. Italy recorded the lowest

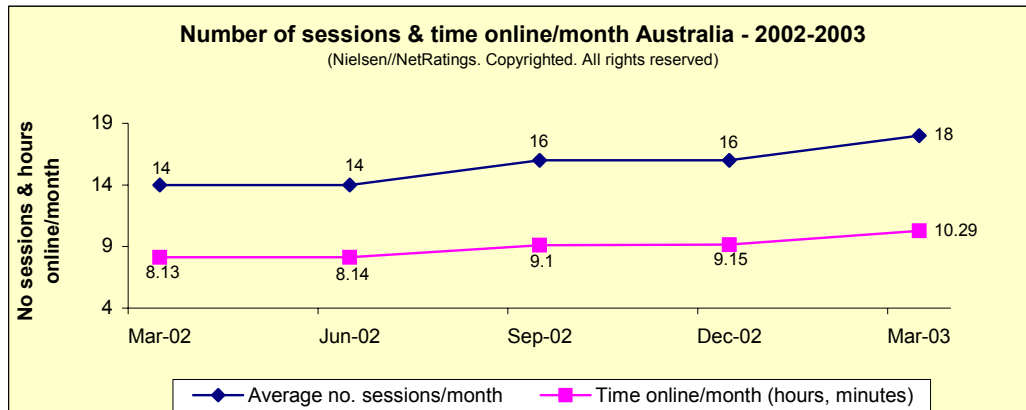
average usage levels, considerably lower than other countries examined. Internet users in Hong Kong recorded an average 22 Internet sessions and spent 14 hours online during September 2002. While Internet users in Italy recorded 12 sessions per month and spent only an average of 6 hours online.



Accordingly, Hong Kong received the highest number of points, 36 (22 + 14). Internet users in the US also had a high frequency/length of Internet use (22 sessions & 12 hours on average online), followed by Canada, Japan, Germany, France, the Netherlands and Australia.

July 2001 to September 2002: Hong Kong replaced the US as the best overall performing country (its combined score increased from 31.1 in 2001 to 36 in 2002), even though the score for the US increased from 30.3 to 34. As the following chart shows, Australia has improved its performance steadily, with levels of Internet use in terms of average time online and number of Internet sessions increasing by 27% and 29% respectively during the period from March 2002 to March 2003.

Trend over time for Australia

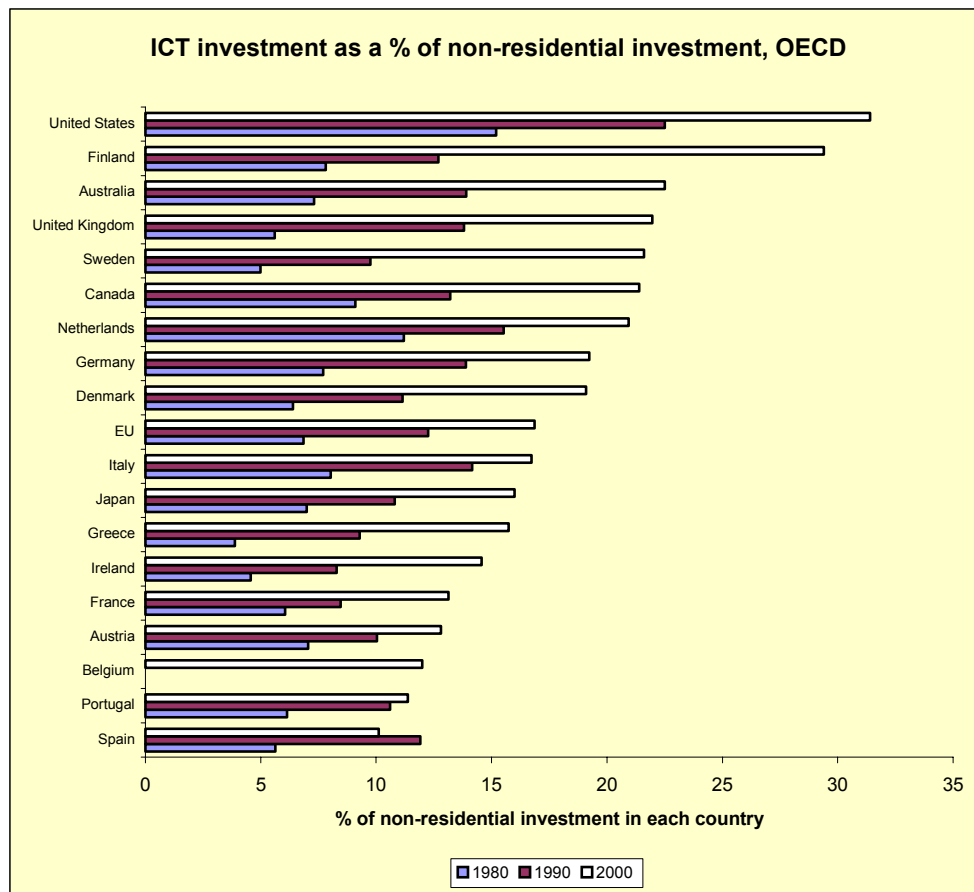


E-business

This section of the Index focuses on the prevalence and significance of business-to-consumer (B2C) and business-to-business (B2B) activities within national economies. The B2C activities benchmarked are banking and shopping online, while the B2B aspects evaluated are businesses online and online businesses purchasing online. It is in the area of e-business that the real benefits of the Information Economy are demonstrated in terms of savings to individuals transacting online and in terms of savings to business by way of online procurement.

Introducing the e-businesses data is a discussion on the E-business Readiness Rankings produced by the Economist Intelligence Unit (EIU) in 2002 and 2003. Overall, Australia has been assessed as offering a highly conducive environment to the development of e-business opportunities. Some manifestations of this include:

- a high level of investment in the necessary ICT infrastructure to support the Information Economy, Australia having one of the highest levels of ICT investment in the OECD. On the basis of OECD estimates (see chart following), ICT investment now accounts for around 23% of non-residential fixed capital formation in Australia, the 3rd highest in the OECD;
- a technological “savvy population”. The overwhelming majority of individual Australians and Australian business are now online and use the Internet for an increasingly broad range of activities; and
- a growing and sophisticated secure e-commerce infrastructure.



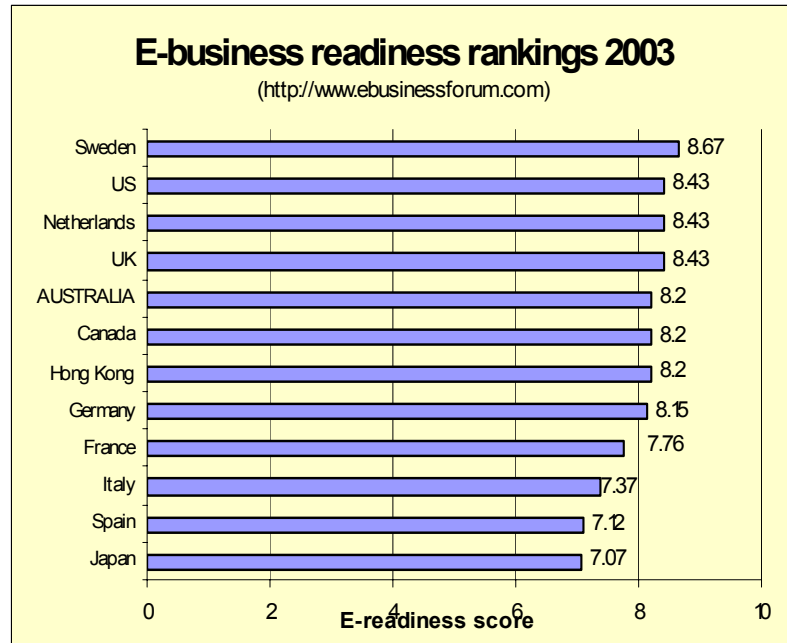
17. E-business readiness rankings

Score

	Points
Sweden	86
Netherlands	84
US	84
UK	84
Australia	82
Canada	82
Hong Kong	82
Germany	81
France	77
Italy	73
Spain	71
Japan	70

The Business Readiness Rankings published by the EIU in 2003 ranked Australia 9th (Australia is in 5th position in the graph above because

countries not benchmarked here but ranked ahead of Australia by the EIU were not included in the graph). Sweden was ranked with the highest score of 8.67, ahead of the US (8.43), the Netherlands (8.43), the UK (8.43) and Australia (8.2).



“E-readiness is shorthand for the extent to which a country’s business environment is conducive to Internet-based commercial opportunities” (EIU, 2002).

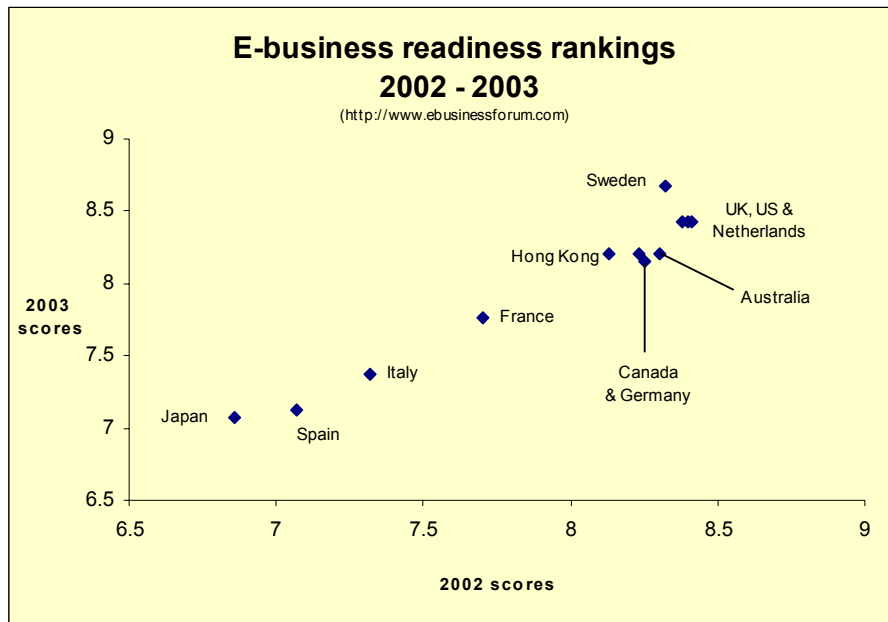
E-readiness includes factors that range from telephone line penetration to online security, to intellectual property protection. 60 countries are ranked on the basis of a composite score based on 100 quantitative and qualitative indicators measuring performance across six broad categories including

- connectivity and technology infrastructure;
- business environment;
- consumer and business adoption;
- social and cultural infrastructure;
- legal and policy environment, and
- supporting e-services.

Trends over time: 2002 and 2003

The 2003 set of E-readiness rankings was the third produced by the EIU. The previous two were published in May 2001 and May 2002. The 2003 report states that the 2003 and 2002 E-readiness methodologies are consistent therefore allowing a comparison of countries scores for 2003 and 2002. No comparison is possible with the 2001 rankings due to differences in methodologies attributable to changes in weighting of indicators.

The countries of Scandinavia dominate the 2003 rankings, with Sweden replacing the US as the most “e-ready” economy with a score of 8.67 in 2003 (up from 8.32, 4th place, in 2002). Denmark (*Not as yet benchmarked in the NOIE Index*) has also moved ahead of the US into 2nd place with a score of 8.45 (up from 8.29, 7th place, in 2002). The Netherlands has moved into equal 3rd place with the US with a score of 8.43 (up from 8.41, 2nd place, in 2002). The EIU attribute the improvement in performance of many countries to developments such as the continued roll out of broadband services, the increasing uptake of mobile telephony and the introduction of a broad range of “Internet-related” legislation.



A closer look at Australia's e-readiness performance

In the 2003 E-readiness rankings, Australia is ranked 9th compared to the 2002 ranking of 6th. Australia's overall score fell to 8.25 in 2003 from 8.30 in 2002; a fall of only 0.05 points. There is little difference between the scores among the top-ranked countries and it is difficult to make stark comparisons. Furthermore, Scandinavian countries are making very rapid progress, and that explains why some other countries' scores have fallen relative to them. Overall, there is an emerging cluster of strongly performing Information Economies (including Australia), and Australia is clearly facing increased pressure to maintain its place as are other countries in the top ten.

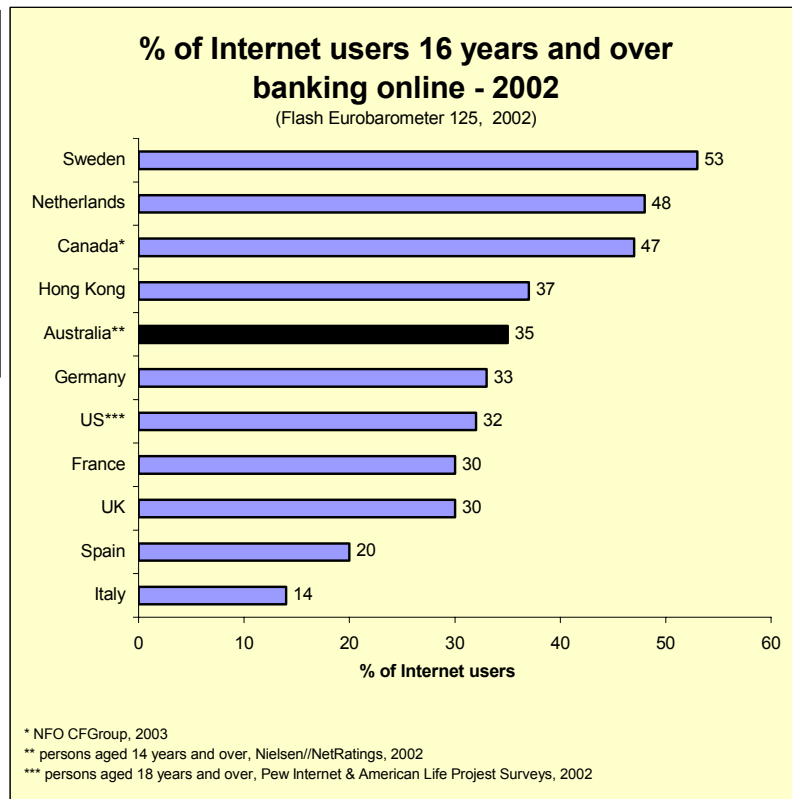
18. % of persons using the Internet banking online

Online banking offers to customers 24 hours, 7-day-a-week access to their banking accounts from Internet access points in any location in the world. Banking online eliminates the need to travel to the bank and stand in queues to perform transactions, and it has lower or no fees for transactions or statements. Bills can be paid with a keystroke, and account data can be downloaded into other compatible financial management software products a client may want to use. However, there is a downside as online banking requires familiarity with the Internet, it lacks personal touch and cannot be used if a banking network is down. Consumer perceptions of security concerns and a lack of familiarity or confidence in using the Internet are ongoing impediments to much higher adoption levels of online banking services.

Score

	Points
Sweden	53
Netherlands	48
Canada	47
Hong Kong	37
Australia	35
Germany	33
US	32
France	30
UK	30
Spain	20
Italy	14

In 2002, the highest levels of online banking were recorded in Sweden. During this period an estimated 53% of Internet users banked online in Sweden. However, substantial levels of online banking were also recorded for the Netherlands (48%), Canada (47%), Hong Kong (37%), and Australia (35%), Germany (33%), the US (32%), France and the UK (30% respectively). Only in Italy was online banking estimated to be less than 20% of the active Internet population.



The growing adoption of online banking over the 12 months considered indicates that Internet users across all benchmarked countries are learning to appreciate the advantages of accessing online services and avoiding the inconvenience of long lines.

19. % of Internet users 16 years and over purchasing online

Just as with online banking, shopping online is convenient, removing the need to travel to shops, delivering to consumers savings both in terms of travel time and costs of travel, and savings on goods and services purchased at wholesale prices. In addition to time and dollars savings, online shopping allows users to access a greater variety of products and services not normally within the domain of their local shopping precincts. However, as with banking over the Internet, shopping online also demands familiarity with the Internet, it does lack a personal touch with shoppers unable to touch or try-on merchandise before buying. The service demands a high degree of trust between buyers and sellers and as with banking, consumer perceptions or concerns relating to online security are all factors impeding higher levels of adoption.

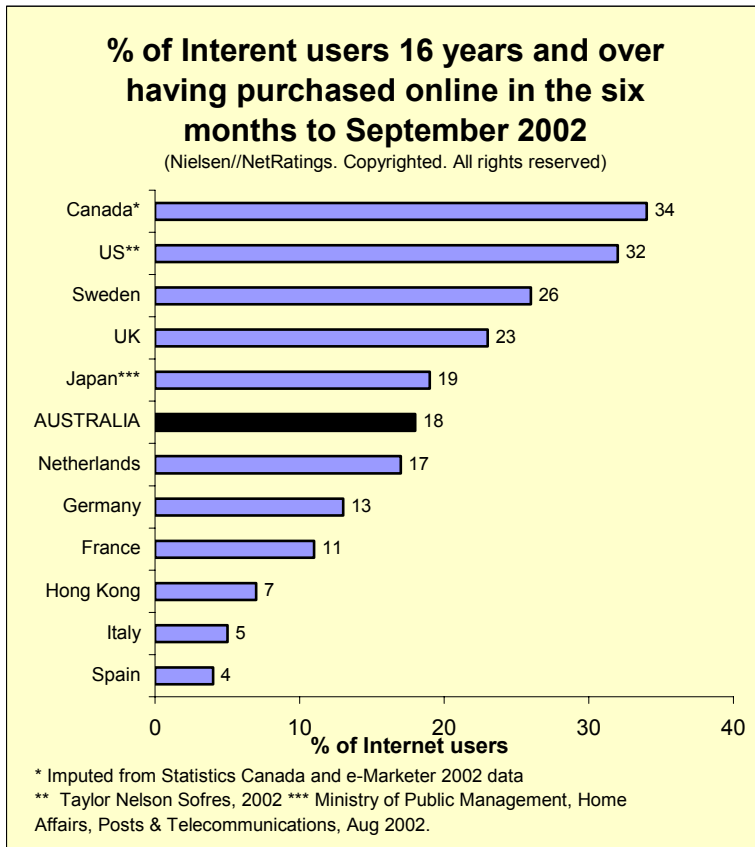
Score

	Points
Canada	34
US	32
Sweden	26
UK	23
Japan	19
Australia	18
Netherlands	17
Germany	13
France	11
Hong Kong	7
Italy	5
Spain	4

Canada recorded the highest levels of online shopping of the countries benchmarked.

Approximately 34% of Canadian adult Internet users shopped online. The US was marginally behind Canada with 32% of Internet users having shopped online. Canada and the US were followed by

Sweden (26%), the UK (23%), Japan, Australia and the Netherlands (19%, 18% and 17% respectively) and Germany (13%). Much lower levels of online shopping were recorded for France (11%), Hong Kong (7%), Italy (5%) and Spain, which recorded the lowest levels of online shopping (4%).



September 2001 to September 2002: During the 12 months to September 2002, the UK recorded the highest proportional increase in the level of consumer shopping online. The proportion of persons having used the Internet to purchase a good or services increased by 52%, while levels of online shopping in other countries remained fairly static.

20. % of businesses online

The OECD estimates that 23% of non-residential investment in Australia is ICT related and many emerging ICTs have Internet connectivity, or more specifically broadband Internet connectivity, as a primary function, e.g. Internet enabled mobile phones, PDAs, PCs, etc. The role of ICTs in underpinning productivity growth in Australia over the past two decades has been much debated. However, new and emerging research is demonstrating the relationship between ICT and firm and economy-wide productivity growth. The recently released NOIE commissioned study *Productivity and Organisational Transformation: optimising investment in ICT* states:

“ICT is responsible for fueling an increase in Australia in productivity at firm, sectoral and whole of economy levels. Across the economy, ICT has contributed to up to 1.26% growth in labour productivity... Modeling results from this study indicate that it is currently responsible for 1.66% growth in Australian GDP”¹².

The Internet as a major ICT is an emerging platform for the transformation of key business and agency functions, including:

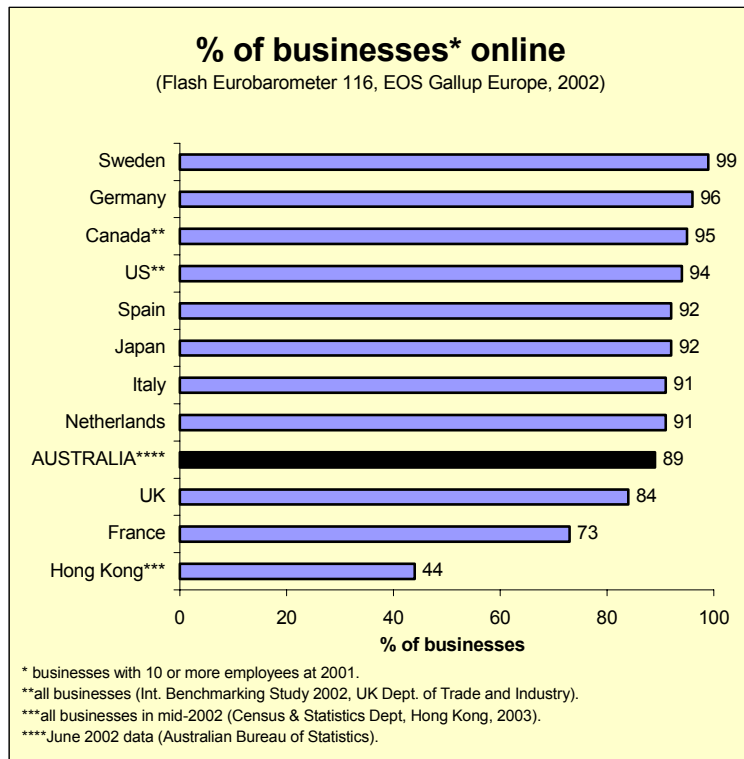
- service delivery;
- customer relationship management;
- organisational administration;
- supply chain management; and
- knowledge or data management.

The positioning of businesses to participate in the benefits of this transformation is measured here through two key indicators: % of businesses connected to the Internet, and % of online businesses purchasing or procuring online.

Score

	Points
Sweden	99
Germany	96
Canada	95
US	94
Spain	92
Japan	92
Italy	91
Netherlands	91
Australia	89
UK	84
France	73
Hong Kong	44

With the exception of Hong Kong, with only 44% of businesses online, all other benchmarked countries recorded near ubiquitous Internet adoption amongst businesses with 10 or more employees (for Canada, the



¹² P.6, Productivity and Organisational Transformation: optimising investment in ICT, Ovum, 2003.

US and Hong Kong the base population was all businesses). Sweden, as with most other indicators relating to Internet adoption, recorded the highest level of business connectivity (99%), followed by Germany (96%), Canada (95%), the US (94%), Spain and Japan (92% respectively), Italy and the Netherlands (91%), Australia (89%), the UK (84%) and France (73%).

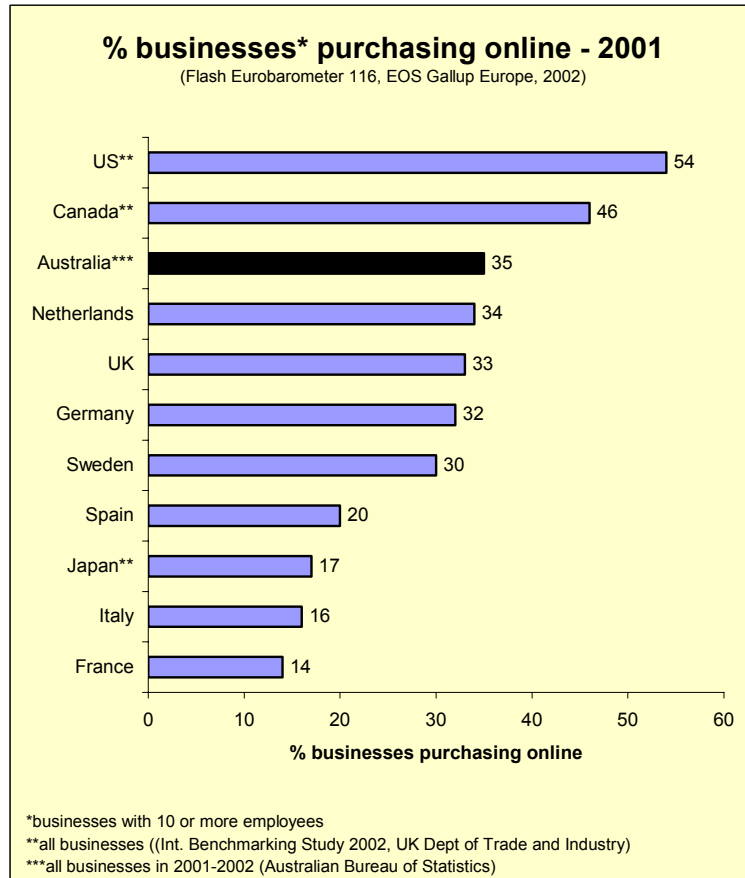
21. % of online businesses purchasing online

Score

	Points
US	54
Canada	46
Australia	35
Netherlands	34
UK	33
Germany	32
Sweden	30
Spain	20
Japan	17
Italy	16
France	14

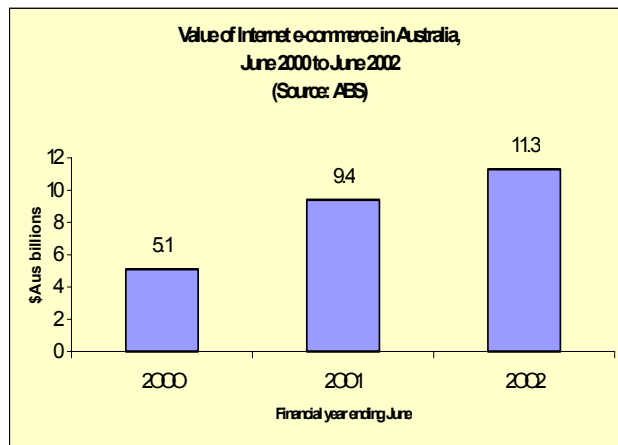
The US and Canada recorded the highest percentages of online businesses purchasing online, 54% and 46% respectively. Other countries' percentages were:

- Australia 35%;
- Netherlands 34%;
- UK 33%;
- Germany 32%;
- Sweden 30%;
- Spain 20%;
- Japan 17%;
- Italy 16%; and
- France 14%, with French businesses connected to the Internet recording the lowest levels of online procurement. No data was available for Hong Kong.



The value of Internet e-commerce in Australia

The ABS estimated the value of Internet e-commerce in Australia at June 2002 to be \$Aus11.3 billion, compared to \$9.4 billion at June 2001 and \$5.1 billion at June 2000. The June 2002 estimate represented an increase of 20% over the June 2001 figure and a 121% increase over June 2000. The bulk of this was a result of B2B transactions or e-procurement.



E-government

Government online can be a catalyst for the development of the Information Economy by delivering critical services online. E-government facilitates access to information resources, programs and services with an emphasis on the added efficiency dividend derived by consumers from being able to access online services without restrictions of time or place and public sector agencies able to deliver services more efficiently and cheaply.

In Australia, e-government *“has the potential to provide better customer focus and access, greater availability of information, improved business processes, and efficiencies. It will improve the lives of Australians by delivering better government and better services to citizens and businesses, and streamlining the internal work of government”*¹³.

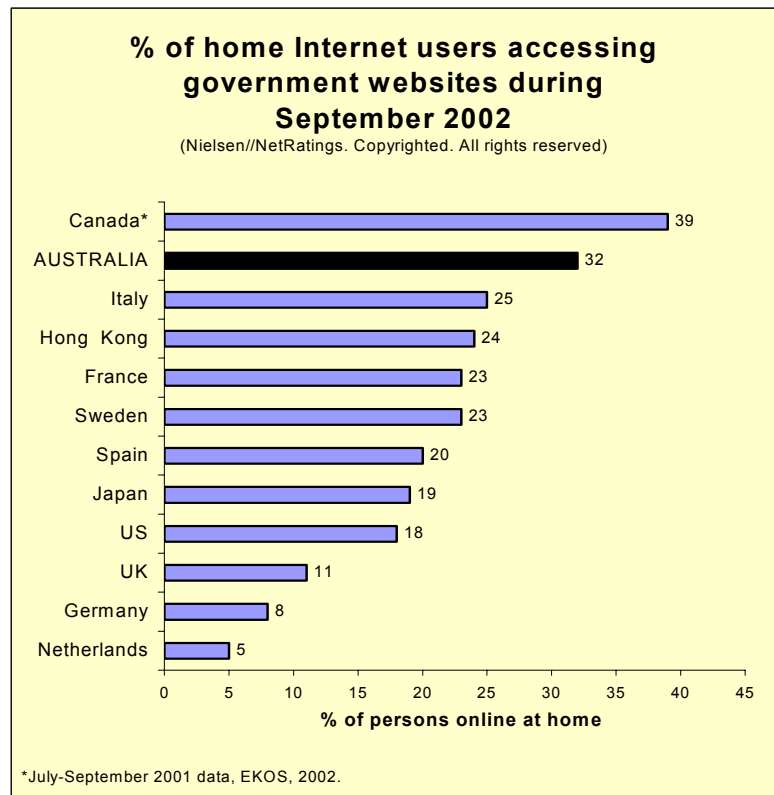
The E-government metrics presented in the NOIE Index focus on measuring readiness to access online services (Indicator 22), i.e. take up of e-government services, and on government preparedness to supply services online (Indicator 23). Indicator 23 presents an analysis of two recent e-government studies: *Benchmarking E-government: A Global Perspective*, by the UN/American Society for Public Administration, 2002, and *eGovernment Leadership: Engaging the Customer*, by Accenture, 2003).

22. Penetration of online government services

Score

	Points
Canada	39
Australia	32
Italy	25
Hong Kong	24
France	23
Sweden	23
Spain	20
Japan	19
US	18
UK	11
Germany	8
Netherlands	5

Canada recorded the highest level of penetration of e-government services among the countries benchmarked. Approximately 39% of home Internet users were estimated to have accessed government services online. Canada

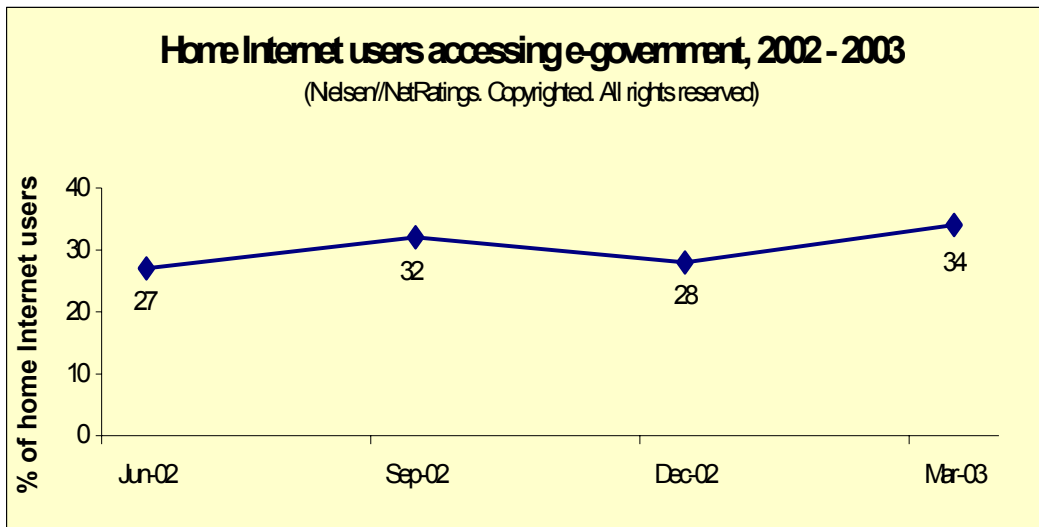


¹³ Supporting The Government's Use of New Technologies, NOIE, 2002.

was followed by Australia (32%), Italy (25%), Hong Kong (24%), France (23%), Sweden (23%), Spain (20%), Japan (19%), the US (18%), the UK (11%), Germany and the Netherlands (8% and 5% respectively), who recorded the lowest levels of e-government penetration.

September 2001 to September 2002: Australia continues to experience strong growth in the demand for e-government. During the twelve months to September 2002, the level of e-government penetration in Australia increased by 28% (from 25% in 2001 to 32% in 2002). With the exception of Canada and the Netherlands, which were not included in the 2001 NOIE Index, other countries benchmarked recorded marginal changes in the level of demand for e-government.

Trend for Australia overtime



The percentage of home Internet users in Australia accessing government websites in March 2003 was the highest ever recorded for Australia. As the government expands the range of services and programs it delivers online in a number of key areas, the general population is gradually realising that the Internet represents a convenient and cost effective way to access resources and carry out their personal and business interactions with the government. Businesses in particular are electing to link with the government through the Internet in increasing numbers, 57% of businesses with Internet access having done so during 2001-2002. In this period, online businesses also accessed government websites to seek information on taxation matters (36%), regulations (30%), employment (24%), and to carry out payments (15%)¹⁴.

¹⁴ Business Use of Information Technology, 8129.0, ABS 2001-02

23. E-government rankings

The data used for the compilation of this indicator was extracted from two sources: the UN/American Society for Public Administration (ASPA) 2002 report *“Benchmarking E-government: A Global Perspective”*, and Accenture’s study *“eGovernment Leadership: Engaging the Customer”* published in 2003.

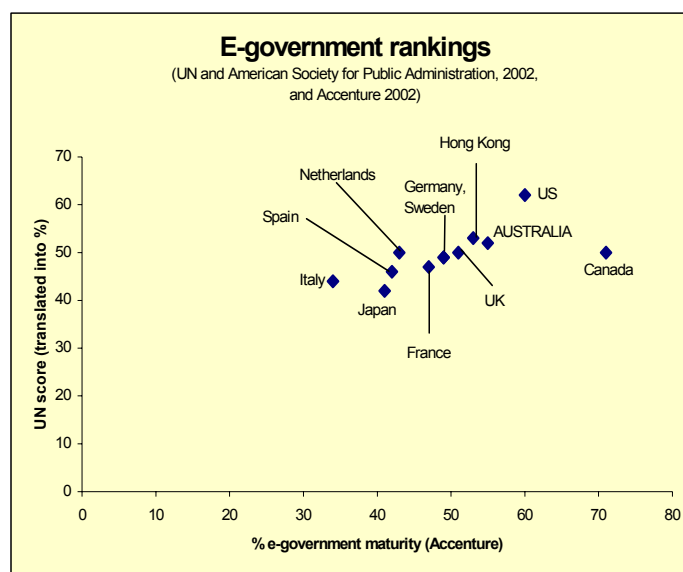
The table below lists the percentages given to the countries benchmarked in each of the two studies¹⁵. The average in the third column is also the score used for the purposes of the NOIE Index.

	UN & ASPA Study	Accenture	Score (Average)
US	62%	60%	61.0%
Canada	50%	71%	60.5%
Australia	52%	55%	53.5%
Hong Kong	n.a.	53%	53.0%
UK	50%	51%	50.5%
Germany	49%	49%	49.0%
Sweden	49%	n.a.	49.0%
France	47%	47%	47.0%
Netherlands	50%	43%	46.5%
Spain	46%	42%	44.0%
Japan	42%	41%	41.5%
Italy	44%	34%	39.0%

Score

	Points
US	61
Canada	60.5
Australia	53.5
Hong Kong	53
UK	50.5
Germany	49
Sweden	49
France	47
Netherlands	46.5
Spain	44
Japan	41.5
Italy	39

The graph beside represents the Accenture data on the horizontal axis, and the UN/ASPA data on the vertical axis. The countries that stand out in the right upper corner of the graph in terms of e-government preparedness (thus reflecting the highest scores recorded) are the US, Canada and Australia. Also performing well are Hong Kong and the UK, while Germany and Sweden had the same score. Sweden and Hong Kong, having been benchmarked in only one report out of the two (Sweden by UN/ASPA and Hong Kong by Accenture), are ranked according to that unique score. Further details of the two studies are provided below.



¹⁵ For the UN/ASPA report, for each country an e-government index score was translated into a percentage of the maximum available score. The translation into a percentage was carried out by NOIE

On the basis of both sets of e-government metrics (indicators 22 and 23), Australia and Canada stand out as the best performing nations. Both nations having a high level of demand for e-government amongst their population and a high level of preparedness on the part of government agencies in terms of providing relevant services online and the necessary supporting e-government infrastructure and regulatory regimes.

Benchmarking E-government: A Global Perspective

Two methodologies are used in the compilation of the report: *“First, national government websites were analysed for the content and services available that the average citizen would most likely use. The presence, or absence of specific features contributed to determining a country’s level of progress. The stages present a straightforward benchmark which objectively assesses a country’s online sophistication. Second, a statistical analysis was done comparing the information and communication technology infrastructure and human capital capacity for 144 UN Member States. The final measure or **E-Government Index** could be useful tool for policy planners as an annual benchmark.”* (p.1)

A copy of the report can be accessed online at <http://www.unpan.org/e-government/Benchmarking%20E-gov%202001.pdf>

e-Government Leadership: Engaging the Customer

Accenture’s research is based on *“a quantitative assessment of the quality and maturity of (201) services for both citizens and businesses available through national government agencies’ websites.”* (eGovernment Leadership: Engaging the customer, p. 88). Accenture’s study targeted 22 countries Australia, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Hong Kong-SAR, Ireland, Italy, Japan, Malaysia, Mexico, the Netherlands, Norway, Portugal, Singapore, South Africa, Spain, the UK and the US.

With a view to research the overall maturity of services offered by governments, Accenture divided services in three categories: Publish, Interact and Transact. Within each category, maturity was assessed on three levels to reflect the degree of maturity achieved. A country’s e-government overall maturity was then determined by applying and combining two measurements: Service Maturity – SM (eg. level of online presence) and Customer Relationship Management – CRM (eg. extent of management of customer interactions & service delivery integration).

By combining SM and CRM, Accenture *“was able to allocate a ranking to each country within the 22 countries sampled (Overall Maturity). We (Accenture) allocated a 70 percent weighting to Service Maturity and a 30 percent weighting to CRM to reflect our focus on the evolution of electronic service delivery within the overall approach to managing interactions with citizens and businesses”* (p.90).

A copy of the *eGovernment Leadership: Engaging the Customer* report providing further details on the methodology used can be accessed online at www.accenture.com

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