

International e-Economy Benchmarking

The World's Most Effective Policies For The e-Economy

London
19 November 2002

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Foreword

David Jordan **Chairman, Information Age Partnership Executive** **Chairman and Managing Director, Philips Electronics UK Ltd.**



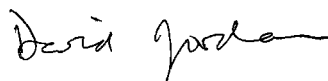
The publication of this report marks a significant achievement for both the development of e-business and e-commerce in the UK, and for the Information Age Partnership which conceived it.

The IAP is a partnership between the Government and private sector in the UK. Chaired by the Secretary of State for Trade and Industry, Patricia Hewitt, the IAP brings together government ministers, senior officials and the heads of UK companies from across the information, technology, electronics and communications supply chains. Meeting twice a year (with an Executive that meets more often), the Partnership aims to create an agenda for where government and industry can work together to advance the UK's capabilities in the Information Age. It is a partnership for action, and works mainly through task groups focusing on specific issues, and also through wide ranging but vigorous strategic debates at the full Partnership level.

Following the UK Prime Minister's declaration three years ago that he wanted to make the UK the "world's best environment for electronic commerce" by 2002, the IAP established a task group to measure the success of the country in meeting this goal. Chaired first by Shanker Trivedi and then Greg Stroud of Sun Microsystems - and with invaluable support from IBM, Cable & Wireless, Random House, the DTI, the Office of the e-Envoy and the Office for National Statistics - the group presented its initial methodology and findings to a full IAP meeting in May 2002. Following this, it was agreed that Booz Allen Hamilton, in cooperation with the Office of the e-Envoy and INSEAD business school, would benchmark the UK against its top eight international competitors. This report is the fruit of that exercise. It has benefited from the generous input of policymakers across the G7, as well as from Australia and Sweden.

The report represents a refreshingly open and honest attempt to assess performance against the Prime Minister's goal and to identify both the strengths and weaknesses of the UK. The report's primary aim, in identifying strengths and weaknesses, is to determine policies which have been successful in each country. This approach has some key advantages. It supports continued international co-operation in sharing experiences about what has worked well in each country - to the benefit of all participating nations. It also allows for a more informed debate to take place between government and industry partners over where challenges lie, how they can be tackled, and where strengths can be reinforced.

The UK clearly is, though, doing well in a number of areas, notably related to its e-commerce environment - factors which affect business, government and citizen alike. For example; the enhancement of ICT in our education system, the scale and importance of our ICT sector, the reduction of internet and broadband access costs and, more recently improvements in the broadband market. In other areas major challenges remain, particularly in raising uptake and use of the Internet by citizens and government to world leading levels. But a solid foundation has been built and the original vision and commitment provided by the Prime Minister remain strong. As Chair of the IAP Executive, I believe that we can use this rich combination of commitment and determination in the public and private sectors, together with the powerful benchmarking that this report provides, to move forward the agenda as to how we in the UK can further improve our e-business environment and performance. I commend this report as a useful tool to all those interested in achieving this goal.

A handwritten signature in black ink that reads "David Jordan". The signature is written in a cursive, flowing style.

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Introduction

Describing the e-Economies of Nations

Describing the e-Economies of Nations

- Objectives** ➤ In March 2002, Booz Allen Hamilton were retained by the British Government's Office of the E- Envoy and the Department of Trade and Industry to develop an international benchmarking framework and benchmark the e-economy of the UK against those of the G7 countries plus Australia and Sweden.
 - The project has three primary objectives:
 1. To provide an assessment of the UK's level of progress towards its target of becoming 'the best environment in the world for e-commerce'.
 2. To explain why some countries have achieved superior performance in particular areas of their broader e-economy; either through high impact policy initiatives, or through environmental factors.
 3. To identify and share best practice policies with collaborating countries.
 - A key deliverable of the work has been the identification of best practices, which may be applicable across countries to address weaknesses.

- Defining the e-economy** ➤ We define the e-economy as the dynamic system of interactions between a nation's citizens, the businesses and government that capitalise upon online technology to achieve a social or economic good.
 - We assess the e-economy in terms of 4 layers or sub-indices (*Environment, Readiness, Uptake and Use, and Impact*). We assess three major stakeholder groups: citizens, businesses and government (see following Diagram)

- Environment** ➤ "*Environment*" describes the fertility of the environment for e-commerce and e-government. This encompasses the level of political leadership, regulatory openness, innovation, capability, IT skills in the population, and the cost and availability of access.

- Readiness** ➤ "*Readiness*" describes the ability of a country's economic actors - citizens, businesses and governments - to capitalise on the opportunities that a strong environment brings, Readiness requires an appropriate access device, be it PC, DTV or even a mobile device, plus the *skill* and the *will* to use it for e-commerce.

- Uptake and use** ➤ "*Uptake and use*" describes the uptake of online services, and the volume and sophistication of use. For citizens, the sophistication of use ranges from surfing and emailing through transactions like online banking and shopping, through to publication of their own web pages. For businesses and government, basic use is the publication of a website; more sophisticated use is characterised by transactional e-commerce applications and the integration of other processes online, e.g. Customer Relationship Management or supply chain management for businesses, or processing of driving license application for governments.

- Impact** ➤ "*Impact*" describes the degree to which adoption of online services has changed the behaviours of citizens or transformed businesses. For citizens, such *Impact* may be evidenced by a shift in spending patterns towards spending a greater portion of income online, or even in work habits, such as teleworking. For businesses, *Impact* is measured in terms of transformed business processes: businesses using online technology to market, recruit, order, sell, or provide customer care. And for governments and the wider public sector, *Impact* is evidenced in fundamental processes going online, such as procuring, tendering, teaching, or even the process of democracy itself – gauging voter opinion and capturing votes.

- e-Maturity** ➤ "*e-Maturity*" describes the sophistication of a nation's e-economy or of any of these four component layers. It is holistic concept, which captures not just commercial development and competitiveness, but also notions of fairness and the degree of social inclusion in the e-economy.

The e-Economy Framework

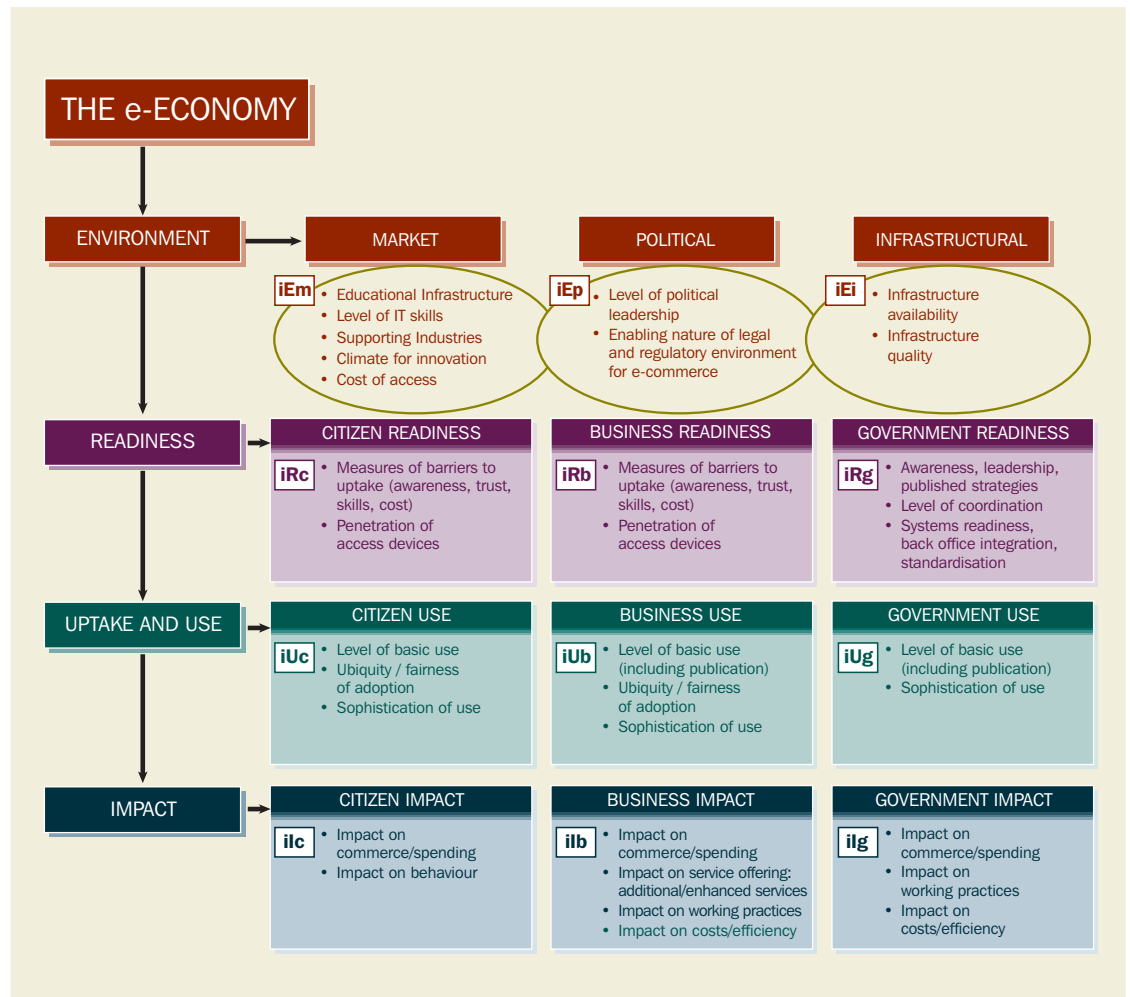


Fig. 0.1

The e-economy 'fingerprint'

- Taken together, these 'layers' allow measurement of fairly detailed e-economy 'fingerprints' for each country under study. There is a sequence or flow from top to bottom in the framework. The ultimate test of a country's progress is in the *Impact* it can demonstrate in the lives or processes of its businesses, citizens or government. However, *Impact* cannot be achieved without strong and sophisticated Uptake and Use. Citizens, businesses and governments will not be able to demonstrate strong Uptake if they do not have the basic skills and will (i.e. Readiness). And a country where the basic environment for the e-economy is not favourable is unlikely to foster high Readiness among its economic participants.
- Our general finding is that as 'constraints' are removed further up the framework, so new ones are revealed lower down. Every country studied has strengths and weaknesses at different points.

Development of Framework

- In designing the e-economy measurement framework, we have maintained the essence of the IAP (Information Age Partnership), framework, while incorporating the best elements of 10 other international measurement frameworks. IAP themselves built on early work by De Montfort University. The Office of National Statistics (ONS) provided key input to the framework design.

Approach and Contributions

- Analytic Approach**
- Booz Allen Hamilton conducted the main body of research between March and July 2002, focusing on a benchmark set of nine leading ‘e-economies’: the G7 countries plus Australia and Sweden.
 - To measure the detailed e-economy ‘fingerprint’ of each country, we have taken a snapshot of each country’s progress across 112 indicators, grouped according to the framework above.
 - All Figures quoted represent the most recently available data *which is comparable across all nine countries (as at 1 Sept 2002)*.
 - In addition we have mapped key policies and government initiatives against the same framework.
 - Desk research and overall programme coordination was conducted from Booz Allen’s London Office.
 - Policy interviews and in-country research were conducted by Booz Allen local teams in each of the nine benchmark countries. Over 100 interviews were conducted.
- INSEAD**
- INSEAD - the international business school, based in Fontainebleau in France - has provided essential input to the design of the framework for measurement, and to ensuring the statistical robustness of the calculation algorithms.
- Sources**
- In the UK, we are grateful in particular for the cooperation and input of the OeE, DTI, ONS, the OGC, OfTel and the IAP.
 - In other countries, we are grateful for the input of each respective e-Envoy counterpart, the assistance of UK embassy staff and policy makers in over 30 public and private sector organisations.

| COUNTRY | 'E-ENVOY' COUNTERPART | |
|-----------|-----------------------|--|
| AUSTRALIA | John Rimmer | CEO, National Office for the Information Economy |
| CANADA | Richard Simpson | DG, Electronic Commerce Taskforce, Industry Canada |
| FRANCE | Henri Guillaume | President, Mission pour l'économie numérique |
| GERMANY | Dr. Alfred Tackle | Secretary of State, Federal Economics Ministry |
| | Dr. Brigitte Zypries | Secretary of State, Federal Ministry for Internal Affairs |
| | Eike Roehling | Ministerialdirektor; DG-VI: Technology & Innovation Policy, Federal Ministry of Economics and Technology |
| ITALY | Cons. Paolo Vigevano | Capo Segretaria Tecnica, Ministero per l'innovazione |
| | Paolo Donzelli | Ministerio per l'innovazione |
| JAPAN | Tatsuya Itoh | Secretary General, e-Japan |
| | Kozo Takahara | Director General, Information & Communications Policy Bureau |
| SWEDEN | Gun Ericson | State Secretary, Ministry of Industry, Employment and Communications |
| | Hans-Eric Holmqvist | State Secretary, Ministry of Justice |
| USA | Mark Forman | CIO/Assoc Director OMB |
| | Mark Uncapher | VP, Information Technology Association of America (ITAA) |
| | Robert Pepper | Chief Policy and Plans, Federal Communications Commission |
| | Joiwind Ronen | Director, Technology Leadership Council, Council for Excellence in Government |

Fig. 0.2

Published Sources Used

- Desk research sources include:
 - OECD (Communications Outlook, Education at a Glance,
 - ITCS Database, MTSI Database, STI Scoreboard, Colecchia & Schreyer)
 - International Telecommunications Union (ITU)
 - Bank for International Settlements (BIS)
 - World Intellectual Property Organisation (WIPO)
 - International Telework Association (ITA)
 - Eurobarometer
 - National Statistics Institutions (for each country)
 - National Information Centres (for domain name registrations)
 - Australia Reserve Bank
 - SIKA
 - Venture Capital Association of Sweden
 - Australian Venture Capital Association
 - Innovation Canada
 - Nordicom
 - National Office of the Information Economy (NOIE)
 - DTI International Benchmarking Study
 - Oftel
 - Dante
 - Netcraft
 - Keynote
 - IDC
 - Forrester
 - Gartner DataQuest
 - Nielsen NetRatings
 - Ovum
 - Strategy Analytics
 - Research Machines IT Education report
 - Taylor Nelson Sofres
 - World Markets Research Centre and Brown University
 - Dell and Compaq websites
 - Baker MacKenzie
 - Office of the e-Envoy / Analysys primary research
 - Information Science
 - Accenture
 - CapGeminiErnst&Young

All Figures quoted represent the most recently available data which is comparable across all nine countries (as at 1 Sept 2002)

Executive Summary

The World's Most Effective Policies for the E-economy

- UK Summary**
- The UK has the second best environment for e-commerce among the benchmark group of nine countries.
 - Assessed against the quantitative multi-indicator benchmarking framework designed by the Information Age Partnership, Booz Allen Hamilton and INSEAD, the UK has not yet reached its target of being the best environment for e-commerce, but has made substantial progress since 1998 when the target was set.
 - The UK has many environmental strengths, although these have yet to be translated into high levels of uptake and use of the Internet.
 - The UK's relative strengths are in its *Market and Political Environments*, *Business* and *Government Readiness* for e-commerce. Its relative weaknesses are in *Citizen Uptake*, *Government Uptake*, and to a lesser extent in *Infrastructure*
 - In all its principal areas of relative weakness, there may be lessons to learn from policies which have been successful in other nations.
- Worldwide**
- The US, the UK and Canada exhibit the strongest combination of the many factors contributing to a fertile **Environment** for e-commerce. Inherent environmental factors and sustained policy focus have been key.
 - *Market Environment* – Three key policy themes emerge across the benchmark group: ICT in education, stimulating investment, and internet access price regulation.
 - *Political and Regulatory Environment* – The US, Australia, the UK and Canada have put in place strong political institutions and regulation to support e-commerce.
 - *Infrastructure Environment* – All benchmark countries are concerned with how to extend and accelerate broadband roll-out while simultaneously creating a competitive market. Japan has recently seen world leading levels of deployment and take-up of broadband.
 - The **Citizens** of the US, Sweden and Canada are the most involved in the e-economy, combining high levels of readiness with high uptake.
 - *Citizen Readiness* – Governments have successfully boosted the readiness of citizens through initiatives to raise PC penetration and through targeted training.
 - *Citizen Uptake* – Governments have focused their efforts on encouraging uptake among specific groups of citizens, rather than on helping those already online to advance up the 'adoption ladder' of usage sophistication.
 - *Citizen Impact* – Impact is driven more by the other elements of the e-economy framework - strong environment, readiness, and uptake - than by government policy. For this reason, few policies target impact specifically.
 - **Business** e-maturity, that is, business' adoption and use of on-line technologies to change the way they work, is most developed in the US and Sweden.
 - *Business Readiness* – Government policy has tended to focus on delivering skilled workers through the education system, though some more direct programmes are now emerging.
 - *Business Uptake* – The components of business uptake (level of basic use, fairness of adoption, level of interaction and level of transaction activity) follow the same pattern across countries with Sweden, Germany and the US seeing the highest levels of uptake.
 - *Business Impact* – as evidenced by changes in spending behaviour, and in working processes such as ordering, logistics, and even design, is greatest in the US, with Sweden, Canada and the UK following.
 - Sweden, the US, Canada and Australia have the strongest **e-Government** development, driven by their early programme starts and sustained commitment.
 - *Government Readiness* – The US combines a clear, specific, comprehensive and actionable strategy with high levels of systems readiness to lead in this area.
 - *Government Uptake* – High levels of uptake, as characterized by the proportion of staff and services online, are seen particularly in Sweden, with Australia, the US and Canada following.
 - *Government Impact* – Examples of impact are only now beginning to emerge, and few governments have particularly effective approaches to measure the impact of their policies. France, Italy, Australia and Sweden all at least have impressive examples of e-government's transformation potential.



The US, the UK and Canada have the most fertile environments for e-commerce. Inherent environmental factors, and sustained policy focus have been key

Market Environment

- "Environment" describes the fertility of the environment for e-commerce. This encompasses the level of political leadership, regulatory openness, innovation, capability, IT skills in the population, and the cost and availability of access.
- The US, UK and Canada have the most fertile environments, combining strong performance on the many factors outlined below.
- Inherent factors that play a role include the high levels of existing cable infrastructure in the US and Canada.
- Three key policy themes emerge across the benchmark group: ICT in education, stimulating investment, and internet access price regulation.
- The leading countries combine low cost of access and a strong brainpool of potential users. They also perform moderately well on financing (supporting industries) and innovation.
- The nations with the most fertile market environments for e-commerce are Sweden and the US and the UK.
 - The strongest 'brainpools' are the UK, and Canada driven by their deeply embedded use of ICT in education.
 - The US, UK, Japan and Sweden lead in terms of financing and innovation.

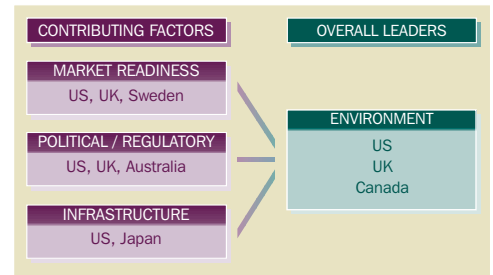


Fig. 0.3

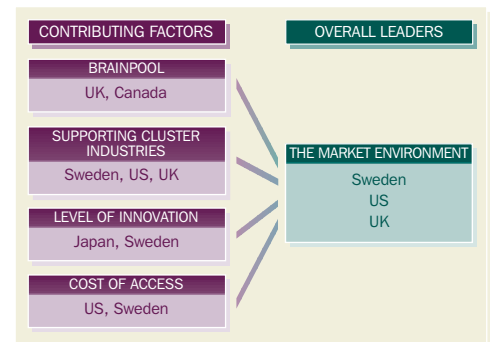


Fig. 0.4

Political and Regulatory Environment

- Dial-up and broadband internet access prices have been falling across all of the benchmark countries, with the US and Sweden the cheapest thanks to intense competition.
- Successful policies include Canada's 'Connecting Canadians' programme and the UK's "National Grid for Learning"
- The US, Australia, the UK have particularly favourable political / regulatory environments. Canada is also strong. All have put in place strong institutions and regulation to support e-commerce.
- E-commerce regulation is fairly similar across all the benchmark countries, with the only significant difference the US's unique position on e-commerce sales tax.
- Three different organisational models for driving the e-agenda are deployed effectively among the benchmark countries:
 - Setting up a dedicated, cross-governmental organisation, usually within the Cabinet Office or equivalent.
 - Setting up a dedicated organisation within the Treasury / Ministry of Finance, therefore with some budgetary influence.
 - Dividing responsibility across several departments, usually giving the e-commerce policy portfolio to the Ministry for Industry and the e-government portion to the Ministry of the Interior, although there are some variations on this.

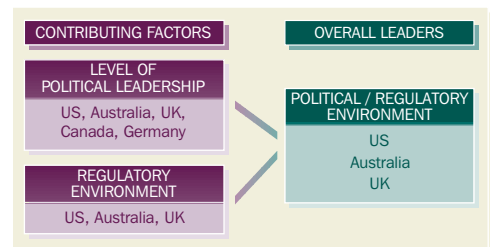


Fig. 0.5

Infrastructure Environment

- All benchmark countries are concerned with how to extend and accelerate broadband roll-out, whilst simultaneously creating a competitive market.
- The nations with the best infrastructure environment, in terms of availability and quality, are Japan and the US.
 - Availability of broadband and of multiple infrastructures (cable, DSL, other) varies significantly across the benchmark countries, primarily for historic reasons.
 - The US is the only country to score highly on the quality and security of infrastructure.
- Governments have tended to prioritise either 'extensiveness' or competitiveness, recognising that trade-off exists for countries with significant rural areas.
 - Germany, for example, has achieved high extensiveness (> 90% broadband availability), yet with a DSL-heavy mix, in which incumbent Deutsche Telekom has a 91% market share.
 - The UK, in contrast, has much lower extensiveness to date, (around 67%) with a more even balance between cable and DSL technologies, and an incumbent market share of under 30% of all retail broadband connections.

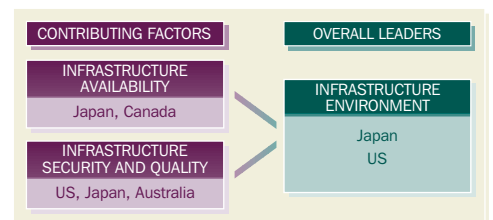
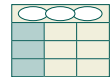


Fig. 0.6

Note (1) 'Brainpool': pool of skilled workers or graduates in disciplines relevant to e-commerce

Summary **The citizens of the US, Sweden and Canada are the most involved in the e-economy, combining high levels of readiness with high uptake and emerging impact**



- Overall, the nations with the most 'e-mature' citizens are the US, Canada and Sweden. 'E-mature' citizens understand and embrace on-line services (*Readiness*), use them in numbers and with sophistication (*Uptake*) and demonstrate changed behaviour or spending patterns (*Impact*).

Citizen Readiness

- Governments have successfully boosted the readiness of citizens through initiatives to raise PC penetration and through targeted training. Measures aimed at boosting consumer confidence have had mixed results so far.
- The nations with the best citizen readiness are Canada and the US, with Italy and the UK just behind.
 - Italian and US citizens have the most positive attitudes towards the Internet.
 - Canada, US and Japan lead in terms of penetration of access devices, with Sweden also advanced.
- Successful policies include Sweden's PC Tax reform and Italy's prominent support for the European Computer Driving Licence.

Citizen Uptake

- Governments have focused their efforts on encouraging uptake among specific groups of citizens, rather than on helping those already online up the 'adoption ladder' of usage sophistication. Targeted groups have been the elderly, the poor, rural communities and the female population. Canada, the US and Sweden have the highest levels of citizen uptake.
 - Basic uptake is highest in Canada and the US.
 - Fairness of adoption (i.e. absence of digital divide) is greatest in Canada, Sweden, Germany and the UK.
 - Germany and the US have the highest levels of more advanced use – interaction and transaction.
- Each of these leaders, however, exhibits some notable weakness – for Sweden and Canada it is the relatively low level of online transacting, while for the US it is the inequitable uptake, particularly between different income groups.
- A number of successful initiatives have emerged: Germany's 'Frauen ans Netz' campaign, ("Women to the Web"), and the Canadian 'VolNet' programme for the Voluntary Sector.

Citizen Impact

- Government policy cannot influence *Impact* as much as the foregoing elements of the e-economy framework: *Environment*, *Readiness* and *Uptake & Usage*. Impact is, rather, the result of strength in all these. For this reason, few policies target impact specifically.
- Citizen Impact has been by far the greatest in the US, with Sweden also showing strong signs of impact.
 - Online spending by consumers is by far the greatest in the US. Swedish citizens have taken next most strongly to buying on-line, but at little over half the US level.
 - The US, Sweden, Australia and the UK have seen impact in terms of working practices, such as 'teleworking.'

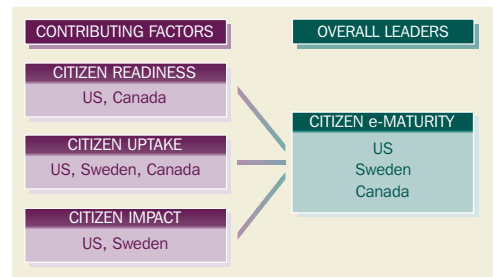


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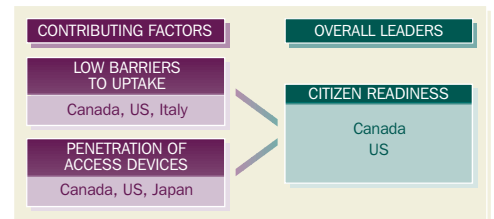


Fig. 0.8

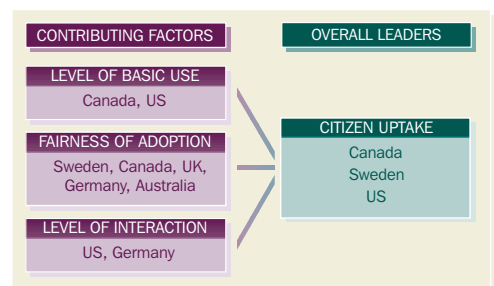


Fig. 0.9

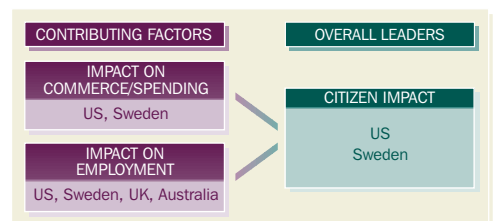
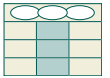


Fig. 0.10



Business Readiness

- Overall, the most advanced business e-economies are those of the US and Sweden. All three components, readiness, uptake and impact follow a similar pattern among the benchmark group.
- Government policy has tended to focus on delivering skilled workers through the education system, though some shorter term measures have also been successful. These include adult education and 'green card' schemes for skilled migrants.
- Business Readiness is strongest in Sweden, followed closely by Germany and the UK.
 - Sweden and Japan lead in terms of access device penetration – though businesses in these countries are quite sober in their assessments of the potential of the internet.
 - Italy and the US have the most positive business attitudes; combining optimism about the potential upside of ICT with relatively low levels of concern about the potential barriers to further uptake.
- It is noticeable that enthusiasm for the internet among small businesses in particular is dropping, as early pilots have failed to deliver the impact expected.
- Successful policies include the UK Online for Business programme and Germany's "Innovation and Jobs for the Information Society", backed by 1 billion Euros of training investment.

Business Uptake

- Policy emphasis around uptake has generally been on ensuring smaller businesses are supported in establishing a web presence, and in trading online. Information, advice and training are the typical means of support rather than financial incentives. Governments have also acted to lighten the regulatory burden, and to help firms find staff with the right skills.
- Sweden, Germany and the US have the highest levels of business uptake. The components of business uptake follow broadly the same pattern between countries:
 - Basic uptake is highest in Sweden and the US.
 - Fairness of uptake (i.e. SME uptake) is highest in Australia, Germany and Sweden.
 - Canadian businesses have the highest level of interactive use; while German and American businesses are the most involved in transactions.
- Policies which have had significant impact include the US' "Internet Tax Freedom Act" of 2001, and Australia's "ITOL" grants scheme, which has helped bring whole sectors on-line through collaborative projects.

Business Impact

- Impact on business' spending, and on key processes has been dramatically higher in the US than in any other country, with Sweden, Canada and the UK following.
 - Online spending by businesses is much the greatest in the US, as it is for consumers.
 - US workers also show the greatest evidence of significantly changing the very pattern of work, for example, through working on-line from home – 'teleworking'.
 - Japanese businesses have made some of the most significant changes to their service offerings by applying on-line technology, although little change in internal working practices.

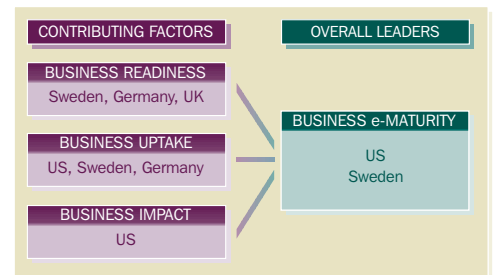


Fig. 0.11

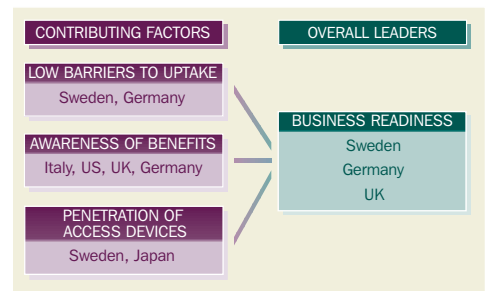


Fig. 0.12

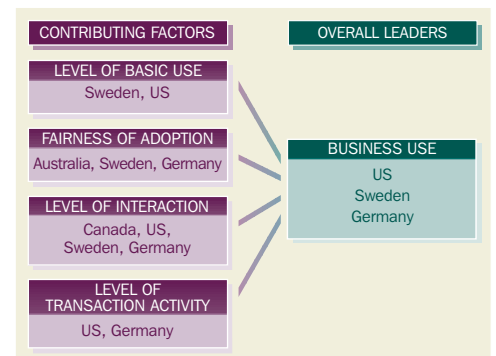


Fig. 0.13

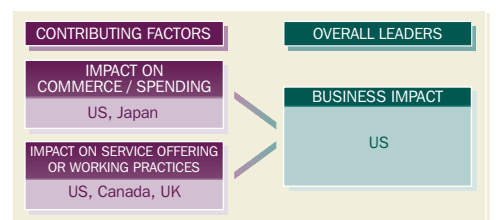
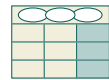


Fig. 0.14

Sweden, the US, Canada and Australia have the strongest Government e-Maturity, driven by early programme starts, and sustained commitment



- The most advanced 'e-governments' are those of the US, Canada, Sweden, and Australia. All were early to take up the challenge, though the approach of each is quite different.
- There is a noticeable time dynamic here, as some of the early leaders have run into implementation hurdles, and some of the nations who started later, such as Germany, Italy and Japan, have been able to make rapid progress as a result of energetic programmes which build on the lessons learned by the early adopters.

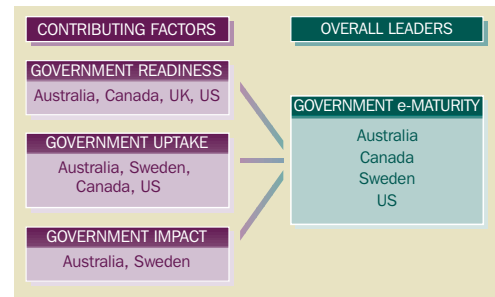


Fig. 0.15

Government Readiness

- The most successful approaches are characterised by strong government leadership and a dual focus on back office integration and front office service delivery. The leading nation is the US, with Canada, Australia and the UK following.
- The US combines a clear, specific, comprehensive and actionable strategy with a high degree of systems readiness, particularly the prevalence of networked PCs in government and the supporting ICT infrastructure.
- Notable initiatives in this area include the UK's 'Government Gateway' – a secure interface between businesses, citizens and all government departments that choose to use it.

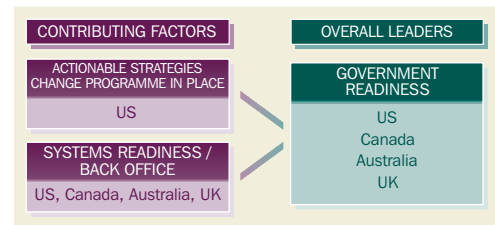


Fig. 0.16

Government Usage

- There is also much dynamism in this area. German e-government policy 'BundOnline', is a good example. It has enabled Germany to make up some ground on the leaders in terms of government usage. It has a heavy focus on putting in place robust, scalable back office systems, over which services can be delivered.
- The leading country is Sweden, with Australia, the US and Canada closest behind:
 - These leading countries have a high level of basic use, as characterised by the number of staff and services online.
 - They also have a high level of interaction with their citizens and businesses, with high levels of payments from businesses and use of services by citizens and businesses.
- High levels of use are not always driven by high availability of online services; for example Sweden, has a relatively limited e-government offering, yet a high level of use by its citizens.

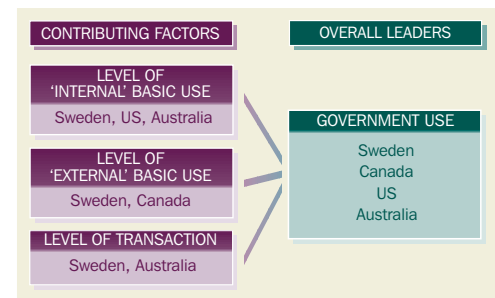


Fig. 0.17

Government Impact

- Government impact is defined as the impact of on-line technology on government itself, rather than impact of government policy on third parties.
- Examples of impact are only now beginning to emerge. It is noticeable that few governments have particularly effective approaches to measure the impact of their policies. Australia is one of the few making significant progress to measure the impact of its initiatives.
- Sweden is again the leading nation with Australia closest behind.
 - The UK and Sweden are world-leading in e-participation, e.g. permitting online consultations or local authorities that allow public participation via the internet in council meetings.
 - The UK has progressed among the furthest towards e-voting.
 - Italy's e-procurement platform, Consip, is a leading example.

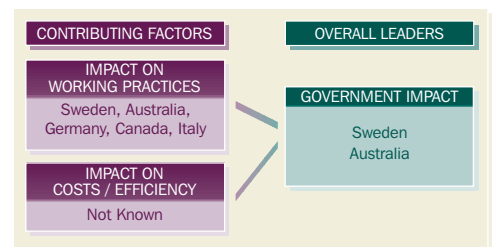


Fig. 0.18

UK Summary

The e-Maturity of the UK

Summary Findings: The e-Maturity of the UK

- The UK has the second best environment for e-commerce among the benchmark group of nine countries.
- Assessed against the quantitative multi-indicator benchmarking framework designed by the Information Age Partnership, Booz Allen Hamilton and INSEAD, the UK has not yet reached its target of being the 'best environment in the world for e-commerce' but has made good progress since 1998 when the target was set.
- Our analysis indicates that the UK has many environmental strengths although these have yet to be translated into world leading levels of uptake and use of the internet.
- In some areas the UK is converging with the leaders and building on existing strengths...
- ... but in other areas, the UK remains behind the best in the world.
- The UK's relative strengths are in its *Market* and *Political Environments*, *Business* and *Government Readiness*...
- ...the UK's relative weaknesses are in its *Citizen Uptake*, *Government Uptake* and to a lesser extent, in *infrastructure*.
- In all its principal areas of weakness, there may be lessons to learn from policies which have been successful in other nations.

The UK has the second 'best' environment for e-commerce among the benchmark group of nine countries studied

The UK's Position 2002

- ▶ The UK has the second best environment for e-commerce among the benchmark group of nine countries, based on the quantitative multi-indicator benchmarking framework designed by the Information Age Partnership, Booz Allen Hamilton and INSEAD. The UK is behind the US and narrowly ahead of Canada.
- ▶ The UK's environment is, none the less, strong, and in many areas, among the world leaders. Substantial progress has been made since 1998 since the target was set, although the UK's infrastructure is only recently catching up with leading countries.
- ▶ In other areas of the benchmarking framework the UK does not perform as strongly. The UK performs moderately on *Citizen e-Maturity* and *Business e-Maturity*, with *Government e-Maturity* the UK's weakest area.

UK e-Economy Dashboard 2002
(UK position against nine benchmark nations¹)



Fig. 0.19

- ▶ The chart above shows the UK's detailed 'e-economy' dashboard across the four major categories and 12 sub-categories that make up the overall e-economy framework. The UK's relative position is highlighted against the positions of the other benchmark countries.

Progress The UK has made strong progress since the target was set...

Environment

- ▶ The UK has made strong progress since the target was set and some important indicators have shown considerable improvement:
 - The Information Communication Technology (ICT) sector has continued to grow at world-leading rates despite already being among the largest in the benchmark group.
 - The UK has nurtured the rapid development of the world's second largest and sophisticated private equity and venture capital sector (behind the US), providing a significant financing resource to innovative businesses.
 - Broadband coverage has increased from 0% in early 2000, before services were launched, to around 67% of the population in June 2002.
 - Broadband prices have fallen considerably, particularly for DSL. The UK has moved from being the most expensive in the benchmark group to being competitive in price terms, following cuts in BT's wholesale DSL price in April 2002.
 - Narrowband dial-up costs are now among the cheapest in the benchmark group, and around 50% of users are now on unmetered packages since the introduction of FRIACO in 2000.
 - The UK has the highest DTV penetration in the world, and is one of the few countries to have an extensive interactive service (UK: 39% of households against US 31% and Germany 11%).
 - Pupils per PC rates have improved greatly with the advent of the National Grid for Learning.

Note (1): Benchmark nations: Australia, Canada, France, Germany, Italy, Japan, Sweden, US.

The UK has the second best environment for e-commerce, of the countries studied

- Citizens**
- Household internet penetration has increased strongly over the last 5 years, growing around 5-fold from the start of 1999 to the end of 2001.
 - Broadband penetration is now showing signs of rapid increase with BT reporting a threefold increase in new connections per week following the April price cut. During 2002, broadband uptake more than doubled to around 2.5% of the population in September.

- Business**
- Business uptake in the UK has been strong – in 2001 the UK had the highest proportion of businesses with a website (UK: 80% against 77% in US and 73% in Canada).
 - Growth in SME (Small / Medium sized Enterprises) online presence has been strong, with government hitting its target of getting 1.5m online around 18 months early.

- Government**
- The UK government have launched its first transactional services through a single user interface *The Government Gateway*.
 - Around half of small value items are now procured electronically by central government.

- Further improvements can be expected in some areas following either policy changes or the impact of continued policies. For example, the new R&D tax credit from the 2002 budget is expected to raise UK R&D spend. Further impetus is expected as a result of the recent comprehensive spending review (although details are still to be announced). Meanwhile, the April 2002 price reductions for DSL should continue to fuel strong broadband uptake. The Curriculum On-line programme is expected to develop further the application of on-line technology in education.

The UK relative to world best

- The UK is generally among the chasing group on all 4 performance measures, and in each case needs to make progress on key indicators to improve its position overall:
 - On **Environment** for e-commerce, the UK scores well, being in 2nd place, though with a gap to the US, which leads. We define 'Environment for e-commerce' as the combination of three interrelated elements:
 - The Market Environment: which describes the 'fertility of the soil' for e-commerce: the existence of the right people/skills, education, innovation, and ancillary businesses to support an e-Economy
 - The Political Environment: the presence (or absence) of senior and committed political leadership on e-economy topics, and the supportiveness of the national regulatory regime to e-commerce
 - Infrastructural Environment: the availability, quality and level of competition of the access infrastructure, to enable e-commerce (cable, Digital Subscriber Lines etc).
 - The UK scores well on both its market and political/regulatory environment:
 - It has a strong educational infrastructure, (a high proportion of graduates in relevant disciplines such as maths and computer science), and a relatively warm climate for innovation
 - It has a regulatory environment that is relatively supportive to e-commerce: (digital signatures recognised, consumer protection/privacy issues addressed etc)
 - The gap between the UK and the US is largely driven by an infrastructural environment, which, while improving rapidly, is significantly behind the world leaders.
 - Broadband *availability* remains behind world-leading levels (UK: 67% for all technologies in July 2002, against 90% in Germany and Sweden, and 80% in Canada) - although the UK has relatively high levels of *competition* in the broadband infrastructure and retail market.
 - *R&D spending* by government and business is low by international levels (Combined UK: 1.56% of GDP against 2.63% in Germany and 2.25% in the US).
 - *Access devices* are expensive (around 10-15% above average for the group).
- On **Citizen e-Maturity** the UK scores moderately well, being in 4th place. The UK is definitely one of the chasing group, but the gap to the leader is quite large. Major drivers of this gap are:
 - *Household PC penetration* is fairly low (last comparable data - UK: 43% versus Sweden with 64% and Canada with 55%).
 - Population with *access to household internet* connection is still relatively low (UK: 49% versus 67% in Sweden and 61% in the US).
 - *Frequency and duration* of use are low among household users (UK: 14 sessions per month of an average 6.5 hours versus US with 22 sessions and average 11.5 hours, and Canada with 22 sessions and an average of 10.2 hours).
- On **Business e-Maturity** the UK scores moderately well, being in 4th place. The UK's position is driven by strong performance across the range of indicators measured, without generally leading in any of them. The relatively small gap between the UK and the leaders is because compared to them:
 - Business attitudes on the cost and security of transacting on-line are fairly conservative.
 - The proportion of businesses buying and selling online is lower than the proportion in leading countries (Buying online: UK 33% of businesses, US 54%, Canada 46%).

Outlook In some areas the UK is converging with the leaders and building on existing strengths

The UK relative to world best (cont.)

- On **Government e-Maturity** the UK is in the middle of the pack, in 5th position. The gap behind the leaders is relatively large, mostly because:
 - While *government readiness* is strong in terms of actionable strategies, and common architecture frameworks...
 - ...overall service maturity ranks behind Canada, the US and Australia. The UK comes 4th in one study by Accenture, 5th according to the World Markets Research Centre.
 - Relatively few *citizens* are using these services (UK: 11% versus 34% in US, 46% in Canada).

Outlook

- In some areas the UK is closing the gap with the e-economy leaders. Two examples below illustrate the strengthening of the UK position in previously weak areas:
 - Household internet penetration has grown strongly since 1999, with the UK extending its lead over several continental European countries and closing the gap on world-leader Sweden.
 - DSL pricing has been on a gradual downward trend since late 1999, but recent cuts in the price of wholesale and retail DSL products have substantially improved the UK position. Combined with competitive cable prices, these lower DSL prices have begun to drive increased uptake of broadband. International experience (e.g. Japan) suggests this trend will continue.
 - Further, a vibrant range of product / pricing options now exists as players take advantage of Oftel's rather modest definition of what speed constitutes 'broadband' to offer cheaper, slower variants to the benchmark BT Openworld / Freeserve £28 / 29 per month for a 512Kbps connection.
 - NTL offers a 128Kbps service for £14.99 per month.
 - Tiscali's 256Kbps product is £19.99 per month.

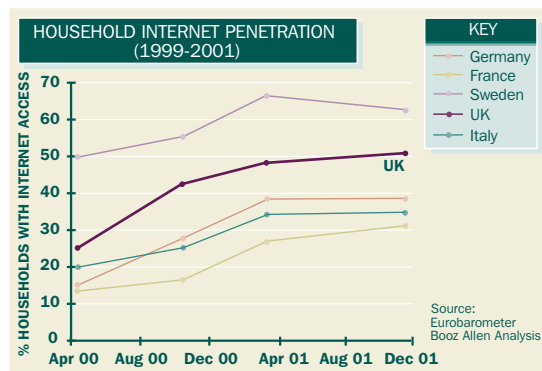


Fig. 0.20

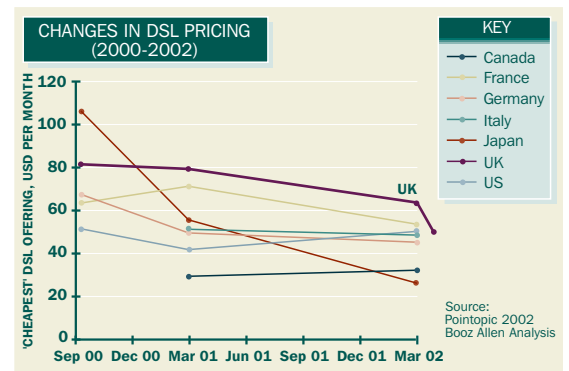


Fig. 0.21

- In other areas, the UK has consolidated leading positions with strong growth in recent years. For example, in its strong areas of *Market Environment* and *Business Uptake*:
 - Despite having already proportionately the largest ICT sector among the benchmark group, the UK has also seen the strongest employment growth. IT expenditure has also grown strongly, though in this case others have grown more strongly.
 - In 2001, the UK overtook the US to be the country with the highest proportion of businesses with a website.

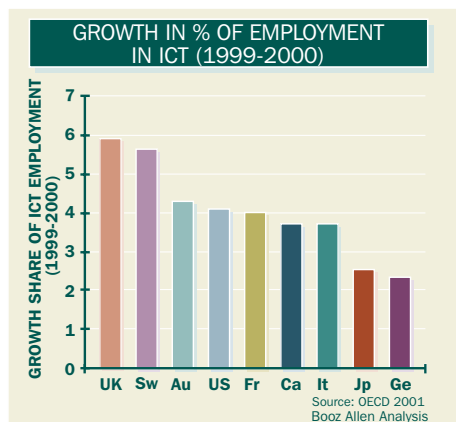


Fig. 0.22

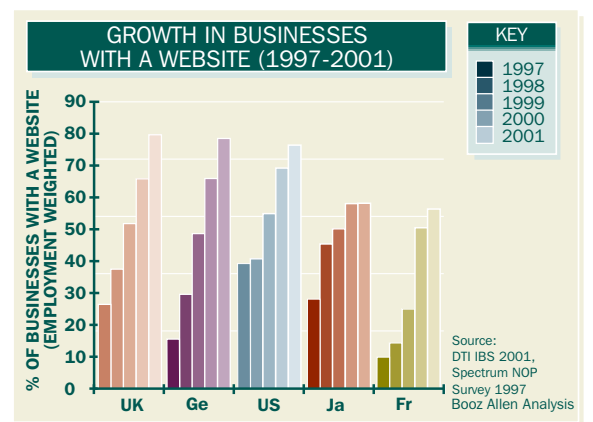


Fig. 0.23

- Despite this progress, the gap between the UK and the world leaders remains large on some other key metrics, and in the case of PC uptake, for example, is actually widening. It is noticeable that the current overall leaders perform strongly across the whole set of indicators with strong performance in one area enabling strong performance in others.
- Two examples to indicate the scale of the gap between the UK and the world leaders:
 - PC uptake; the UK is falling further behind Sweden, Australia and the US.
 - E-government, while the UK is making clear progress, Canada and the US remain ahead of the UK, and Germany is closing from a position further back.

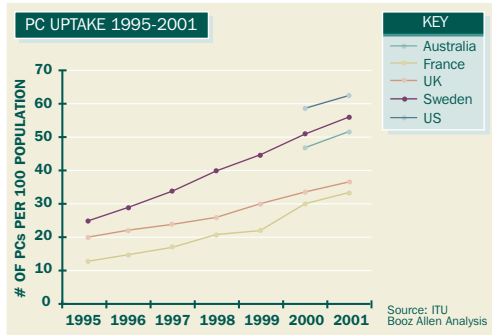


Fig. 0.24

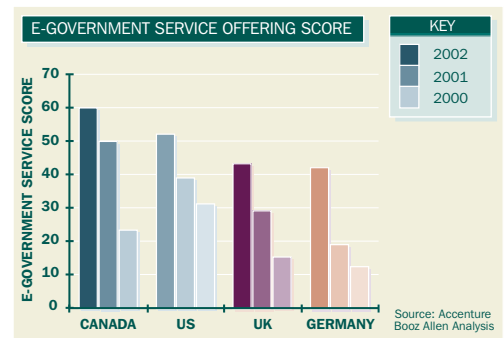


Fig. 0.25

- Of course, other nations are also making rapid progress, so the UK's target is a moving one. Even in areas where it leads, the challenge will be for the UK to maintain its lead.

- The charts above give some indication of this, for example, Germany making stronger progress in developing its e-government offering, but a number of other key indicators (shown right) indicate potential challenges.

- The proportion of businesses buying online has declined in the UK (and other leaders such as the US), while it has remained steady in Germany, and grown in Japan. This trend is confirmed by the latest 2002 figures from the DTI.
- The UK has had one of the most consistently high levels of Information and Communications Technology (ICT) expenditure as a % of GDP among the benchmark group, ahead of the US, and behind only Sweden. However many benchmark nations have been growing faster, with Sweden extending its lead and France, Germany and Italy catching up (from a lower base). We may see this picture change as more recent comparable figures are released, incorporating the full impact of the recent ICT downturn. (The US and Japan have already seen declines on this metric).

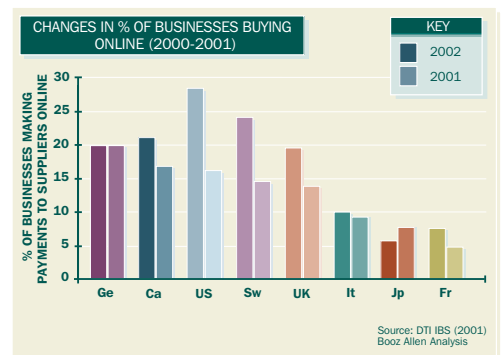


Fig. 0.26

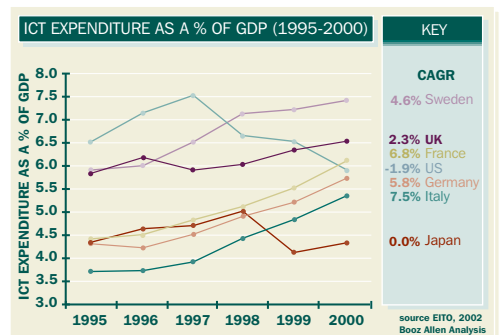


Fig. 0.27

The UK's strengths are in its Market and Political Environment and in Business and Government Readiness, its relative weaknesses are in its Citizen Uptake, Government Uptake and Infrastructure.

The UK e-economy 'fingerprint'

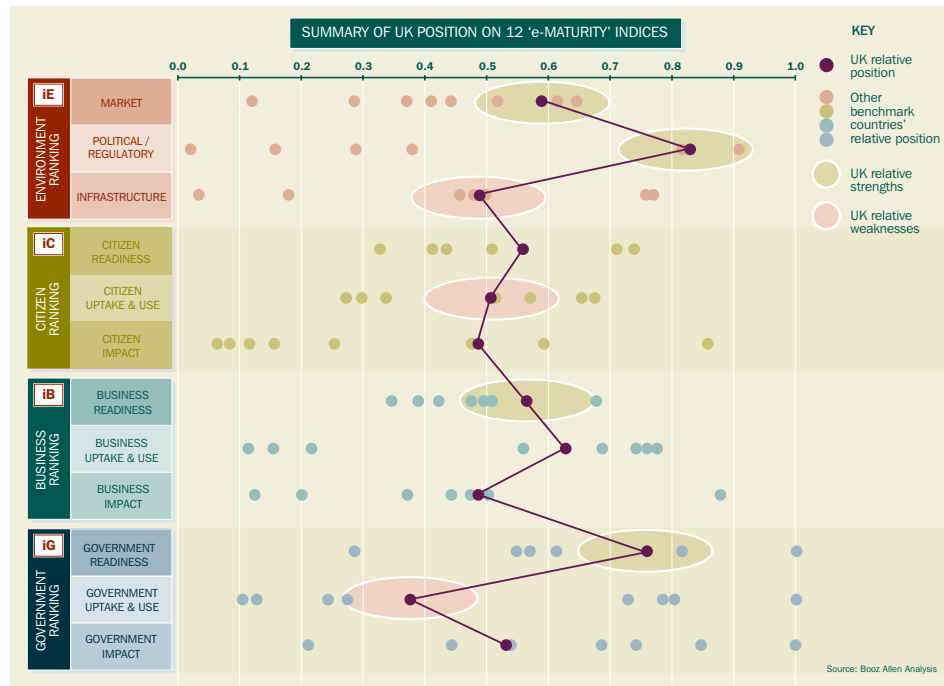


Fig. 0.28

- The exhibit above shows the summary UK 'e-fingerprint' across all indices. The UK's index scores are highlighted against those of other benchmark countries.
- Relative strengths can be defined as where the UK performs strongly compared to the peer group and is close to a leading position.
- Relative weaknesses can be defined as either where the UK ranks down the order, as in Government impact, where the UK is 6th, but also where the UK, despite a good ranking, is still a significant distance behind the leader. Infrastructural environment is one such of these.
- Overall the UK's strength and weakness profile is consistent with a nation making steady progress towards e-Maturity:
 - The strengths in the *Environment* level are a positive, as a fertile environment is the key foundation for progress at all other levels of the e-economy framework.
 - The strengths in *Readiness*, similarly, bode well for the future, as progress in *Uptake and Use* is crucially dependent on high *Readiness*.
 - Much of the recent policy focus of the UK government has been in these areas. The identified weaknesses now in *Uptake and Use* illustrate that the *e-Maturity* of the UK has progressed to the point that these subsequent levels of the e-economy have become the key constraints to further the e-economy development.
 - The real benefits of the e-economy, of course, accrue to countries who have achieved real *Impact*. Few have so far done this, the UK included.

Strengths and Weaknesses

UK Relative Strengths

- **MARKET ENVIRONMENT**
 - Strong educational Infrastructure (ICT in education, PCs per pupil, ICT graduates)
 - Strong venture capital centre
 - Large and fast growing ICT sector
- **POLITICAL/REGULATORY LEADERSHIP**
 - Dedicated cross-departmental organisation
 - Legal foundations for e-economy largely built (e.g. consumer protection, digital signatures legally recognised)
- **BUSINESS READINESS**
 - High IT spending / GDP
 - High % of businesses with a PC
- **GOVERNMENT READINESS**
 - Strong IT core: Government Gateway
 - Comprehensive e-gov programme with explicit high service delivery target

UK Relative Weaknesses

- **CITIZEN UPTAKE AND USE**
 - Low household broadband penetration
 - Low frequency and duration of internet use
- **GOVERNMENT UPTAKE AND USE**
 - Low % of services available online
 - Low % of citizens using e-government
 - Low % of healthcare workers with access to internet

and to a lesser degree
- **INFRASTRUCTURAL ENVIRONMENT**
 - Low availability of broadband (both DSL and Cable Modem)
 - (Note: DSL broadband availability is now improving)

Market Environment

"The presence of the right people/skills and ancillary businesses to support a knowledge-based society. Also the right conditions in key markets to deliver the means of internet access at attractive prices to both businesses and consumers."

- **Status:** The UK currently has one of the most supportive *Market Environments* for e-commerce. Particular strengths are the resources set aside for ICT in education, which have provided a strong 'brainpool' of ICT literate citizens. The UK has also developed, over the last five years, a welcoming environment for start-ups and venture funding, driven by the status of London as a major financial centre, low corporate taxes, favourable tax treatment of stock options, and other factors.
- Given these world-class 'innovation assets', the UK's innovation performance - its ability to commercialise technology - remains below its full potential.
- For some time the UK has been very competitive on cost of dial-up access. Yet until very recently broadband prices were high, representing a constraint to the e-economy.
- This began changing this year, with more competitive cable broadband offers, and changed dramatically in February when BT slashed the prices of wholesale broadband. Many ISPs responded by immediately cutting prices. The consequent spur in demand has seen more than 20,000 new connections a week (source: Ofcom) and we would expect the UK's position to improve on cost of access.
- **Outlook:** We expect some improvement in innovation given the level of investment (both venture capital and R&D) and the changes in the tax schedule in the last budget to provide relief on R&D. The continuing emphasis on ICT in education should also reinforce the UK's strength in this area.

Political Environment

"The presence of the right people/skills and ancillary businesses to support a knowledge-based society. Also the right conditions in key markets to deliver the means of internet access at attractive prices to both businesses and consumers."

- **Status:** The UK has relatively strong and committed political leadership of the e-agenda, the organisational structure and resources to back this up, and the legal framework support e-commerce.
- Some other nations look to the UK as a benchmark, and those that were slower to act have now taken vigorous action, in some cases echoing the UK's.
- The UK has a regulatory environment which is now delivering lower prices.
- **Outlook:** The UK will need to focus on maintaining the momentum and leadership position it has established if it is not to be overtaken by other nations. The 'e-agenda' will need to remain a high profile topic, particularly the delivery of e-government.

Business Readiness

“The skill and the will of a nation’s businesses to engage in e-commerce given that they have the basic means. Businesses are most ready when they have a appropriate access devices, and confidence about staff capabilities and more generally about the value of using online channels”

- **Status:** The *Business Readiness* of the UK is strong, 3rd place behind Sweden and Germany. Business PC penetration is fairly high. UK business attitudes to the internet, like those of UK citizens, remain somewhat conservative.
- Huge progress was made throughout the 1980s as ICT investment as a % of investment grew from being the lowest among the benchmark group, to being the fourth highest by 1995. However ICT investment is increasingly under pressure in all countries as companies, many of whom spent heavily during the recent boom, scale back their investment plans.
- **Outlook:** Business readiness in the UK is strong and should remain so. The UK’s *relative position* will be challenged by other benchmark countries. PC penetration is growing faster in some other benchmark countries, as is ICT expenditure overall.

Government Readiness

“The preparedness of a government to engage and drive the e-agenda, and particularly to deliver e-government. The availability of clear strategies, open standards and IT platforms enabling governmental bodies potentially wanting to a service online”

- **Status:** The UK has set out one of the most comprehensive e-government programmes - with a target to have all services online by 2005. In addition, each department has a strategy for e-government service delivery.
- The UK has been in the vanguard of developing common IT architectures, and was ahead of most of the benchmark group in developing the IT core to enable secure transactions with citizens; the *Government Gateway*.
- However, not all the current incentives are optimised. Government targets are aimed more at service delivery than usage, and the pressure to have *all* services on line by 2005 has led to something of a rush mentality, with insufficient emphasis on redesigning services around the user. The 2002 Spending Review has gone some way to addressing this by introducing an explicit requirement for ‘high levels of use’ of ‘key services’.
- Service delivery and information sharing across departments remains some way off due to incompatible legacy systems and some civil rights constraints. Central government does not offer open platforms to local government as some governments do, for example, for e-procurement.
- **Outlook:** The UK outlook is moderately positive, since some of the foundations have been built – especially the *Government Gateway*. If the UK government is to achieve targets around online service delivery and e-procurement then significant progress will need to be made in standardising systems between departments. This investment need is particularly acute at the level of local government.

Weaknesses **The UK's relative weaknesses are in its Citizen Uptake, Government Uptake...**

Government Uptake

"The level of purposeful use of ICT by a government. The degree to which they use e-commerce to offer services online, and the degree to which those services are sophisticated - such as transacting with citizens and businesses"

- **Status:** Over the last two years the UK Government has reported strong progress in terms of migrating its services online. However, the UK remains relatively weak in terms of *Government Uptake*, quite away behind the leaders: Sweden, Australia, Canada and the US. Achieving the target of getting *all* government services online by 2005 represents a significant challenge, though the UK is making progress. Other benchmark countries have addressed this challenge through being more specific about which services will and will not be delivered online.
- In the rush to migrate services on-line, not enough consideration has been given to redesigning genuinely innovative services around the user. The resulting issue is that for those services which are already online, use remains disappointingly low - particularly amongst citizens.
- **Outlook:** Potentially good. If progress is to continue then government should seek to mirror the successful policies of the other benchmark countries:
 - Adopting truly user-centric service design.
 - Setting explicit targets for use, not just availability.
 - Clarifying which services will be put online by the 2005 deadline, and prioritising by feasibility and usefulness to citizens and businesses.
 - Encouraging greater flexibility in delivery of local e-Government services following the success of self-direction and competition between local authorities in other benchmark countries, and spreading best practice among them.

Citizen Uptake

"The level of purposeful use by a nation's citizens. The degree to which they use e-commerce in a 'broad' and 'sophisticated' way; from basic informational searching through interaction such as e-mailing and finally to engaging in online purchasing"

- **Status:** The UK is among a mid-ranking group of the nations studied in terms of *Citizen Uptake*. Despite moderate levels of household penetration and propensity to buy online, the UK still has low levels of residential broadband uptake, and relatively low frequency and duration of use. Citizens have so far barely used the government's own on-line service offerings. At the time of writing, around one in ten of the UK population has interacted with government on-line, compared to almost five in ten Canadians.
- Here again though, there are some positives: UK performance on basic internet penetration has been strong over the past 3 years. At the start of 1999 the UK was at a level comparable with Germany and around one third of Sweden's level. By November 2001, the UK was at two thirds of Sweden's level, having extended its lead over France, Italy and Germany.
- The UK also has among the highest proportion of users who have bought online, potentially a major ingredient in becoming a more mature e-economy.
- **Outlook:** Medium-term positive. Household internet penetration is unlikely to rise considerably unless the quality of content enabled by broadband can convert non adopters, or unless iDTV takes off. Broadband penetration will show strong growth in the short term, however, as long as the current price offerings are sustained.
- As internet users become more experienced, their propensity to engage in online purchasing will rise, so we can expect continued growth in the proportion of the population who are sometime internet buyers.

Infrastructural Environment

"The availability of high speed, high quality, secure infrastructure for e-commerce. Also the degree of choice consumers have between infrastructures and between service providers"

- **Status:** The UK has been well behind world leaders in terms of its network infrastructure, although some recent improvement in broadband availability places it in the middle of the benchmark group, some distance behind the US and Japan.
- Although the UK's infrastructure is relatively less extensive and network quality average, its main strength is the level of competition between infrastructures with DSL, cable modem and occasionally Fixed Wireless Access overlapping in some areas.
- The UK's modest level of infrastructure 'extensiveness' is driven partly by incumbent BT's past slowness to upgrade its exchanges and partly by cable operators' focus on urban areas.
- A recent government initiative to provide Regional Development Authorities with £30m to stimulate broadband deployment and uptake may have some effect, but this amounts to a set of pilot initiatives, and the investment amount is small compared to financial commitments made in other countries.
- Measures to encourage private sector build out by aggregating public sector demand are in preparation but not yet rolled out .
- **Outlook:** The UK has, in effect, started the acceleration of its broadband infrastructure, 12-18 months later than the leading nations. We expect the extensiveness of the UK's infrastructure to improve over the next 12 months buoyed by growing consumer awareness, and BT's positive stance.
- We do not expect the UK to reach the levels of nations such as Sweden and Canada during the current phase of expansion, as rural parts of the country are likely to remain uneconomic for service provision.
 - there is scope for existing public sector mechanisms to address these areas: significant EU Objective 1 finance is available, and has already been committed in Wales. Strategic and aggregated bandwidth buying across the public sector may also play a role in future by improving the economics for infrastructure builders.
 - BT have refocused their programme of local exchange upgrades, so that local demand now has to be demonstrated by pre-registration before an exchange will be considered for upgrading. Furthermore, additional cable build out is unlikely given the financial crisis of the main cable players.
- This problem of broadband provision in non-urban areas is common to most of the benchmarking nations.
- The UK Government recently committed to *not* provide extensive financing for broadband roll-out for now, preferring to allow the private sector to lead, (although it has invested £30million in a set of pilots). For now regional governments/development agencies seem to be taking the lead. The Welsh Assembly has allocated £100m of EU funding to develop broadband in Wales. The government have recently set up the Regional Broadband Unit with the goal of co-ordinating this regional activity.

Chapter 1:

The Environment for the e-Economy

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- 1.13 Financing and Innovation
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1.0 The Environment for the e-Economy

Framework Summary

All findings in this chapter are based on international comparative analysis of the environments in the nine benchmark countries according to the framework and indicators below

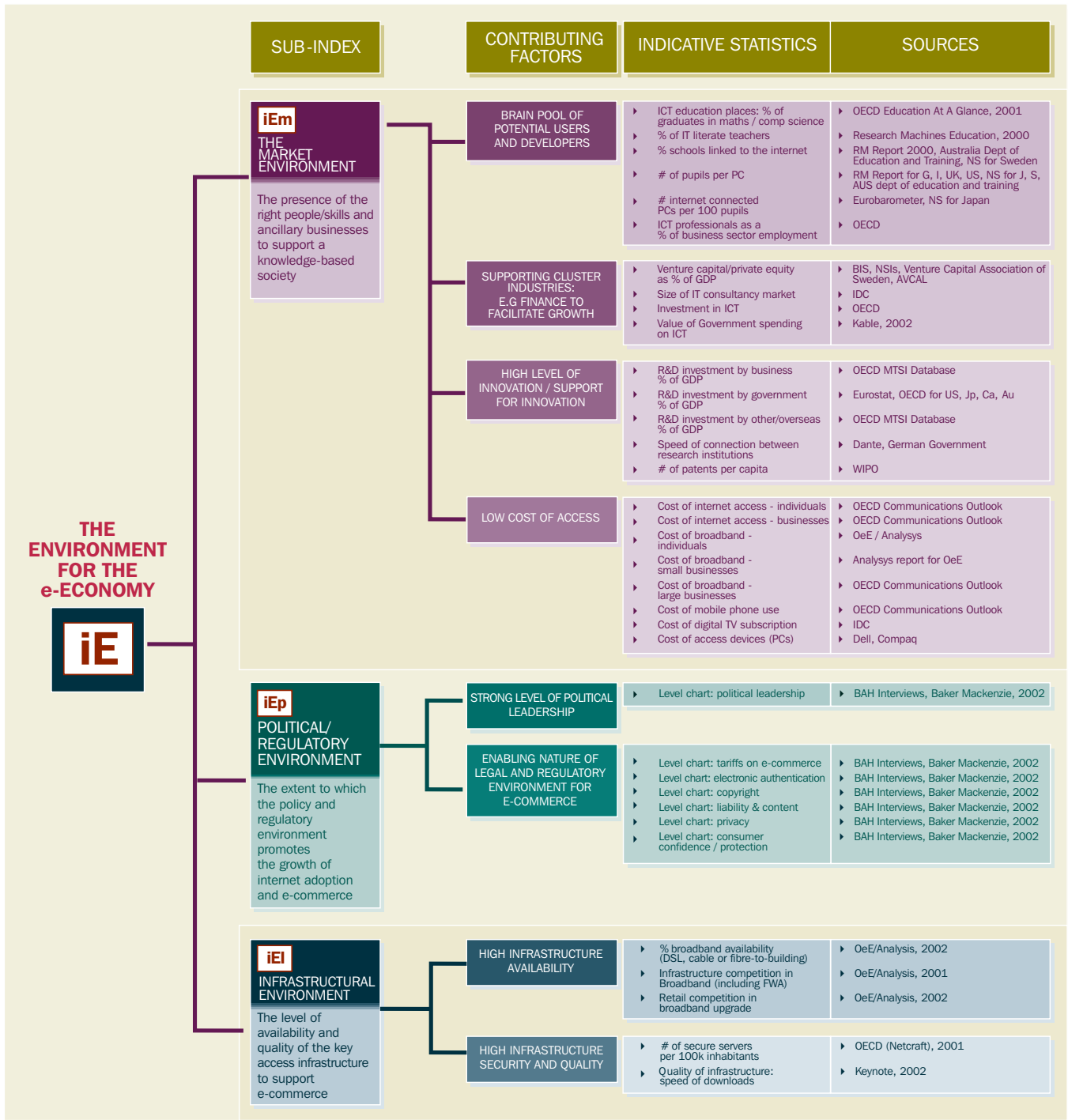
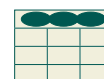


Fig. 1



Summary The US, the UK and Canada have the most fertile environments for e-commerce. Inherent environmental factors, and sustained policy focus have been key

- "Environment" describes the fertility of the environment for e-commerce. This encompasses the level of political leadership, regulatory openness, innovation, capability, IT skills in the population, and the cost and availability of access.
- The US, UK and Canada have the most fertile environments, combining strong performance on the many factors outlined below.
- Inherent factors that play a role include the high levels of existing cable infrastructure in both US and Canada.

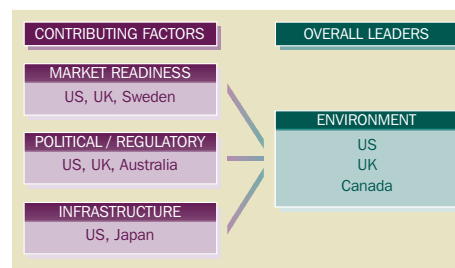


Fig. 2

Market Environment

- Three key policy themes emerge across the benchmark group: ICT in education, stimulating investment, and internet access price regulation.
- The leading countries combine low cost of access and a strong brainpool of potential users. They also perform moderately well on financing (supporting industries) and innovation.
- The nations with the most fertile market environments for e-commerce are Sweden and the US and the UK.
 - The strongest brainpools are the UK, and Canada driven by their deeply embedded use of ICT in education.
 - The US, UK, Japan and Sweden lead in terms of financing and innovation.
 - Dial-up and broadband internet access prices have been falling across all of the benchmark countries, with the US and Sweden the cheapest thanks to intense competition.

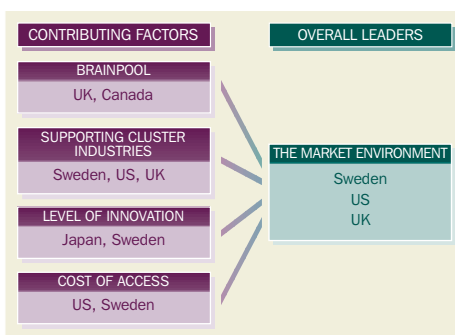


Fig. 3

Political and Regulatory Environment

- The US, Australia, the UK have particularly favourable political/regulatory environments. Canada is also strong. All have put in place strong institutions and regulation to support e-commerce.
- E-commerce regulation is fairly similar across all the benchmark countries, with the only significant difference the US's unique position on sales tax.
- Three different organisational models for driving the e-agenda are deployed effectively among the benchmark countries:
 - Setting up a dedicated, cross-governmental organisation, usually within the Cabinet Office or equivalent.
 - Setting up a dedicated organisation within the Treasury/Ministry of Finance, therefore with some budgetary influence.
 - Dividing responsibility across several departments, usually giving the e-commerce policy portfolio to the Ministry for Industry and the e-government portion to the Ministry of the Interior, although there are some variations on this.

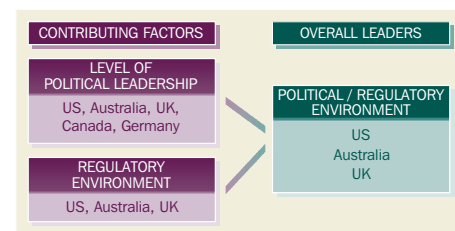


Fig. 4

Infrastructure Environment

- All benchmark countries are concerned with how to extend and accelerate broadband roll-out, whilst simultaneously creating a competitive market.
- The nations with the best infrastructure environment, in terms of availability and quality, are Japan and the US.
 - Availability of broadband and of multiple infrastructures (cable, DSL, other) varies significantly across the benchmark countries, primarily for environmental reasons.
 - The US is the only country to score highly on the quality and security of infrastructure.
- Governments have tended to prioritise either extensiveness or competitiveness, recognising that something of a trade-off exists for countries with significant rural areas.

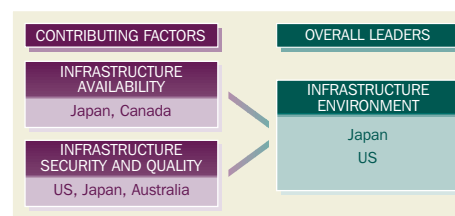


Fig. 5

The Environment for the e-Economy

1.1 The Market Environment

- 1.11 Overall Findings and Outlook
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- 1.16 Case Study: The National Grid for Learning

1.2 The Political Environment

1.3 The Infrastructural Environment

1.1 The Market Environment

Definition The Market Environment describes the ‘fertility of the soil’ for e-commerce

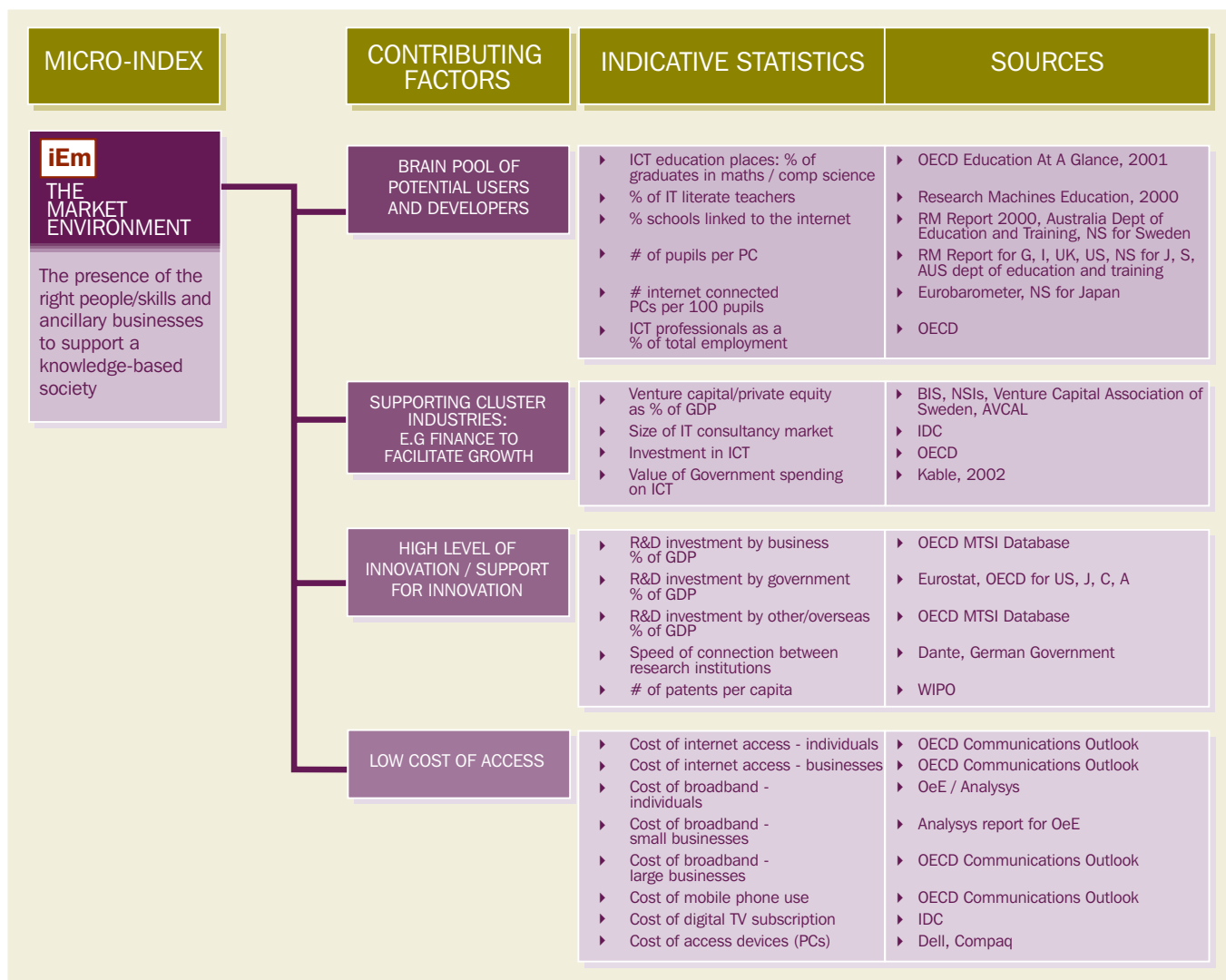
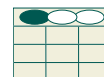


Fig. 6

- Definition** ➤ The Market Environment describes the ‘fertility of the soil’ for e-commerce; the presence of the right people/skills and ancillary businesses to support a knowledge-based society. A mature e-economy requires a supportive market environment.
- A strong Market Environment is characterised in part by the embedding of ICT throughout **education**, which provides a ‘brain pool’ of potential users and developers to drive innovative ideas into the local e-economy. Skills shortages amongst the general population and also in specific IT jobs are common in all countries.
 - Supporting **cluster industries**, in particular finance, are also necessary. Whilst approaches to financing vary between countries, with more or less equity vs debt financing, the lack of venture capital or private equity makes it harder for small, innovative companies to get funding.
 - The Market Environment requires a strong culture and capability for **innovation**. This is typically supported by high levels of private and public R&D spend, and evidenced by measures such as the number of patents per capita.
 - Finally, the availability of **cheap internet access** can accelerate the uptake of the internet. This applies to both dial-up and broadband access. The cost of access devices (primarily PCs) also affects their penetration, which is a prerequisite to getting online.



1.1 Overall Findings The nations with the most fertile market environments are Sweden, the US, the UK

Overall Findings

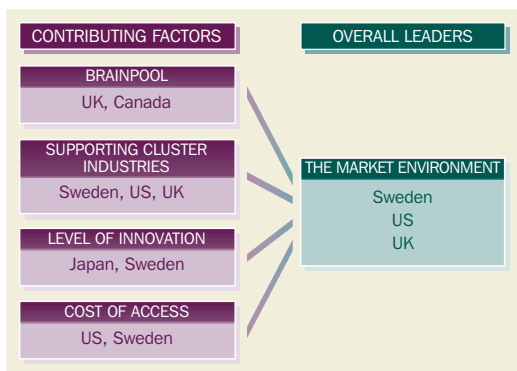


Fig. 7

- The leading countries combine low cost of access and a strong brainpool of potential users. They also perform moderately well on financing (supporting industries) and innovation.
- **Explanation of strengths:** The strength in brainpool is primarily due to governments embedding ICT in schools and the curriculum. This has been over a number of years - even decades - in the US, Sweden and Canada. Competitive access prices have been the result of infrastructure based competition in some countries (e.g. US, Canada, Japan) or of regulatory action / threat (e.g. France).

- Certain governments, notably the US and the UK, have implemented legal, fiscal and financial measures to support venture capital and R&D.
- **Environmental factors:** A number of inherent environmental factors are also at play. Sweden and Japan's reputation as technology hotspots helps them to attract considerable investment in ICT. The level of innovation is high in Japan for cultural reasons – there is a strong tradition of innovation in business.
- **Successful policies:** The US is world-leading in measures to encourage the financing that is so key for innovation, providing incentives for (but by and large not directly funding) investment.
- The UK's National Grid for Learning is typical of ICT initiatives in the benchmark countries, but is successful because of the profile and momentum behind it, the breadth of the measures, and the degree of co-ordination.
- Some regulation of broadband prices is necessary in countries where there is little competition, particularly infrastructure-based competition (i.e. countries with little cable), but the leading nations, Sweden, the US and the UK, have left prices largely to the market.

Outlook

- **ICT in education:** Governments have begun investing even more heavily in ICT in education in the hope of at least partly addressing two politically sensitive hot topics: the IT skills shortage, particularly in specialist IT jobs, and the growing digital divide. As a result we would expect the rise in internet-connected PCs per 100 pupils, IT trained teachers and graduates in ICT subjects to accelerate in all countries.
- Financing and innovation: Without bold fiscal or legal measures, though, continental Europe and Japan will remain behind the US and the UK on venture capital financing. We expect France and Germany to make up for this through heavy government spending. Japan should continue to perform well because of the culture of innovation that surrounds businesses. The recent changes in Australia's tax code should help them attract more investment and also help to increase R&D.
- **Cost of access:** The downward trend in dial-up prices is set to continue, especially as the differential versus broadband shrinks. However, recently there have been rises in broadband prices in a number of countries, e.g. the US and Canada. In some cases this has been the result of weaker competition and economic pressures (the US), whereas in others it has come from regulatory pressure or action on an incumbent to increase prices that were considered predatory – this happened in Germany some time ago (the latest price moves in Germany have actually been down, as shown in the chart).

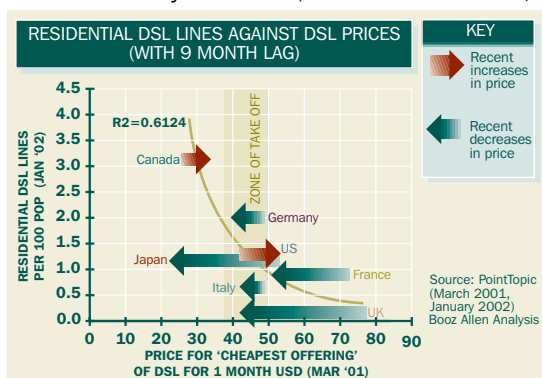


Fig. 8

- It is also notable that growth in broadband subscribers has tended to be triggered at a certain price point, e.g. C\$40 in Canada. Most countries seem to be converging on a sweet spot or "zone of take off" for broadband prices around this mark (\$35 - \$50). The upward correction in prices in the US and Canada will keep/move them towards this zone, whereas Japan has overshot. We would expect prices in Japan to rise a little, and prices in France to drop such that they reach the zone of take off.
- This year's significant price drops in the UK have led to a great acceleration of take-up, with broadband penetration doubling since January 2002.

1.1 The Market Environment - Findings

1.12 Brainpool for e-commerce

The strongest brainpools are the UK, Canada and the US, driven by their deeply embedded use of ICT in education

- The Leaders**
- The strongest brainpools are the UK, Canada and the US. The US and Canada's use of ICT in education over decades has been a major contributing factor to the strength of their brainpools and the e-economy today. In contrast, the UK has only recently invested heavily in ICT in schools. Its efforts to train teachers and extend the number of math/computing graduate courses, is nonetheless showing signs of success.
 - Whilst most countries report having nearly all schools online, this only requires that every school have one PC with a 56k modem. A more telling statistic is the number of PCs per 100 pupils (see chart) and those which are internet-connected, which is indicative of the level of ICT infrastructure in schools. On this metric there is considerable variation across the benchmark countries, from just over 3 in Japan to 20 in Sweden.
 - Most of the benchmark countries have an increasing number of IT trained teachers, ranging from 23% in France to 86% in the UK (source: Research Machines, 2000).
 - The number of graduates in ICT-related subjects gives an indication of the level of highly skilled ICT professionals entering the workforce. This is particularly sensitive given the well-documented IT skills shortages. On this metric the UK is the world's leader, followed by Germany and France, with the US and Sweden bottom of the benchmark group.

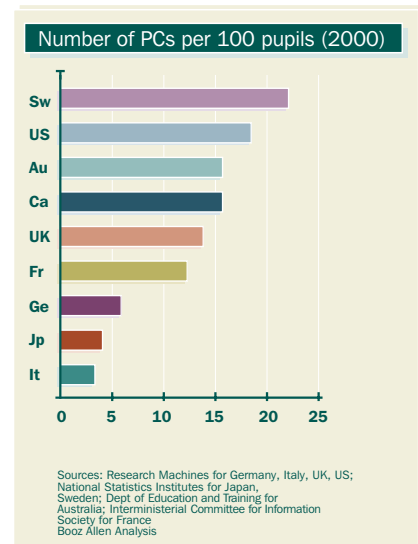


Fig. 9

- Discussion of drivers**
- **Government policy:** ICT investment in education is almost exclusively in the domain of government policy. Typically investment breaks down into three main areas:
 - ICT equipment for schools, colleges, libraries, etc.
 - IT training for teachers and librarians
 - Putting educational content online
 - All countries have put considerable resources behind this, typically investing 200-400m Euro annually in multi-year projects. Most have also publicly laid out targets for wiring up all schools/libraries and for a specific ratio of pupils to PCs.
 - The number of ICT graduates is primarily driven by government policy in most countries, although in the US private funding may account for a significant portion of graduate courses. Thus a high proportion of graduates on ICT courses reflects positive action from government, as it does in the UK where the number has grown significantly in recent years.
 - It is hard to gauge the scale of the initiative in federal governments however as a lot happens at a state level. For example, in the US local authorities have significant tax raising powers and control of the public schools, thus there is considerable variation in ICT spend between towns.
 - **Environmental:** A history of ICT in education, like in Canada and the US where PCs have been used extensively in schools since the 1980s gives countries a base of machines and skills to build off. This provides a considerable advantage.
 - A second environmental factor is the level of decentralisation in government. Countries, such as the US, which push not only decision making, but also fund raising down to a very local level can do less to drive change or reform.

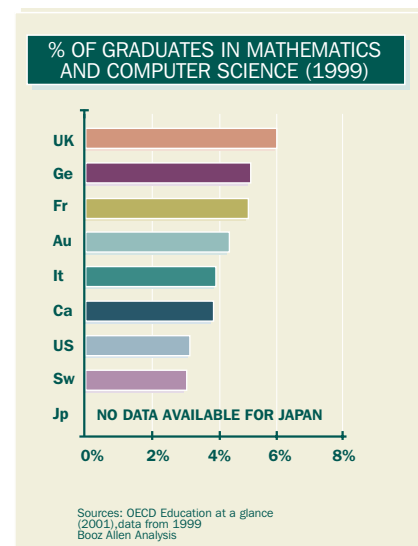
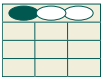


Fig. 10



- The most vibrant nations for financing and innovation are Sweden, Japan and the US.

Financing

- The UK and the US top the league of venture capital / private equity as a % of GDP, followed by Canada and Sweden.
- Continental Europe, Australia and Japan have lower levels of venture capital / private equity.

Discussion of drivers

- **Government policy:** Governments can encourage venture investing by offering legal, fiscal and financial support that benefits venture capitalists and entrepreneurs.
- For example, the US government has implemented a number of measures to encourage venture financing:
 - Favourable tax treatment of losses, e.g. can be offset against profits
 - Targeted tax credits
 - Loan guarantees, etc

- **Environmental:** There are also environmental factors at play in the US and UK:
 - Highly liquid stock markets, which allow for the realisation of capital gains
 - Flexible labour markets
 - Strong intellectual property rights protection
 - Recent economic growth (especially compared to Japan, where VC companies have preferred to invest overseas in the US west coast)

Innovation

- R&D spending as a % of GDP is highest in Sweden and Japan by some margin. They are also the two countries that attract the highest R&D investment from sources outside of business and government (e.g. overseas).
- However, the largest government R&D spend (as a % of GDP) is that of Germany (0.93%) followed by France (0.83%).
- This is reflected in the number of patents per capita, with Japan topping the table and Sweden coming third after the US (see chart).
- Note: there are some questions as to the equivalence of what is counted as a patent, with the possibility that the Japanese numbers are inflated by the fact that "umbrella patents" are not allowed there (each innovation must have its own patent).

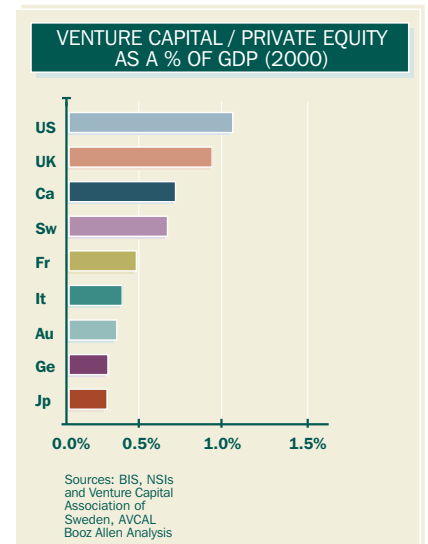


Fig. 11

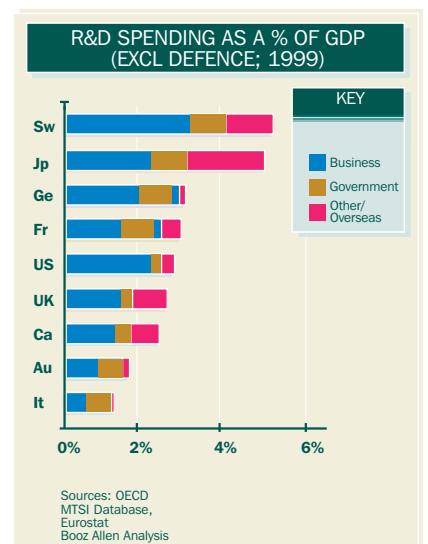


Fig. 12

1.1 The Market Environment - Findings

1.13 Financing and innovation

The US, Japan and Sweden lead in terms of financing and innovation

Discussion of Drivers

- **Environmental factors:** Both Sweden and Japan benefit from considerable inward investment, as they are both leaders in technology and seen as good test markets for global ICT firms. Sweden and the UK, which also attract a high amount of overseas investment, further benefit from a well-educated and English-speaking brainpool.
- **Sources of financing:** In certain countries, there is a greater inclination for companies to look to equity markets for financing than debt markets or internal sources. This can affect the level of investment in R&D, as companies quoted on the major western exchanges experience pressure to maintain near term earnings growth. In Japan and, to an extent, Germany more companies fund investment and R&D from bank loans, or internal cash flow.
- **Corporate tax rates:** Business R&D is also high in Japan, Sweden and the US. In Japan this is the result of a high corporate tax rate which encourages companies to reinvest profits in R&D (effectively 41%, source: E&Y). The US and Sweden have lower corporate tax rates at 35% and 28% respectively.
- **Government policy towards R&D:** Governments have tried to encourage R&D in three ways:
 - Government-sponsored R&D
 - Direct subsidies and loans
 - Tax incentives (most countries allow for a full write-off of current R&D expenditures and many also provide R&D tax credits).
- The international comparison of tax treatment for R&D investments places Canada as the most favourable, followed by Australia, which provides a bonus income tax deduction.
- This ranking doesn't match with the levels of private sector spend on R&D (see previous page), partly because Australia and Canada's tax measures have been introduced since 2001 in response to low levels of R&D in those countries. The impact of these measures appears not to have filtered through to R&D figures yet.
- Of the benchmark countries, Germany and Italy do not currently provide R&D tax credits, and the UK only introduced tax credits in the last budget (2002). Thus these countries have the least favourable treatments of R&D.

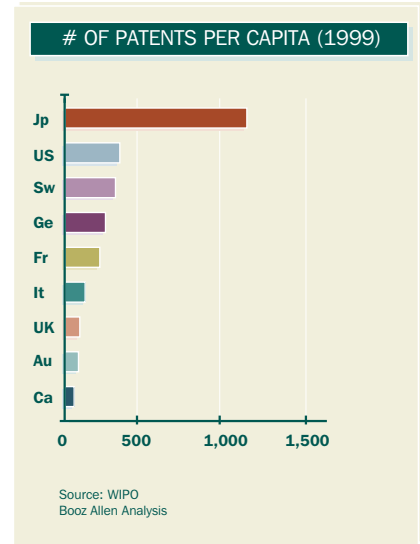


Fig. 13

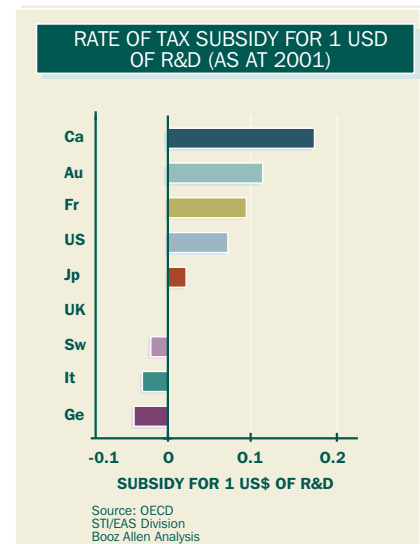
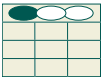


Fig. 14

Dial-up internet access prices have been falling across all of the benchmark countries, with the UK and the US the cheapest thanks to intense competition



Dial-up access prices

- Prices across all the benchmark countries have been falling over the last few years. The US and the UK are currently the cheapest places for dial-up internet access.
- The cost was highest in France and Japan as of August 2000.

Discussion of Drivers

- **Competition:** Competition at both the backbone and ISP level has driven down the cost of internet access.
- At the backbone level, countries that deregulated earlier (e.g. UK) have viable and cheaper alternatives to the incumbent (e.g. Energis in the UK), helping ISPs lower their costs and pass these savings on to consumers.
- The introduction of "subscription free ISPs" in countries that traditionally had metered local call charges, later followed by subscription ISPs with unmetered access, brought further competition and lowered prices.
- The UK in particular benefited from the early entry of Freeserve, the world's first subscription free ISP, which led to fierce competition.
- **Metered vs unmetered local calls:** Those countries where local call charges are unmetered (e.g. the US, Australia, Canada) have had cheaper dial-up access for some time.
- Among countries where call metering is the norm, the emergence of the Flat Rate Internet Access Call Origination model (FRIACO) has greatly facilitated the provision of unmetered narrow-band internet access. The model was established first in the UK (in June 2000) where around 50% of users now have unmetered packages. Unmetered access is generally recognised as boosting usage.

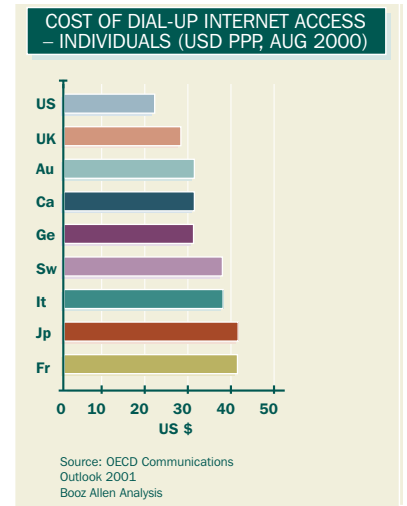


Fig. 15

Broadband access prices

- Large recent price cuts in the UK and France have now brought them more into line with other countries (see charts right and overleaf).
- The cheapest access remains in Japan, with Sweden and Canada close behind.
- Prices in the US and Canada are not following the downward trend and have been rising as of late. In Germany regulatory action on perceived predatory pricing, resulted in a one-off price increase by DT this year, although the latest moves have been down.
- It is also notable that growth in broadband subscribers has tended to be triggered at a certain price point, e.g. C\$40 in Canada. Most countries seem to be converging on a sweet spot or 'zone of take off' for broadband prices around this mark (\$35 - \$50). The upward correction in prices in the US and Germany will keep them in this zone, whereas Japan has overshot. We would expect prices in Japan to rise a little, and prices in France to drop such that they reach the zone of take off (see chart overleaf).

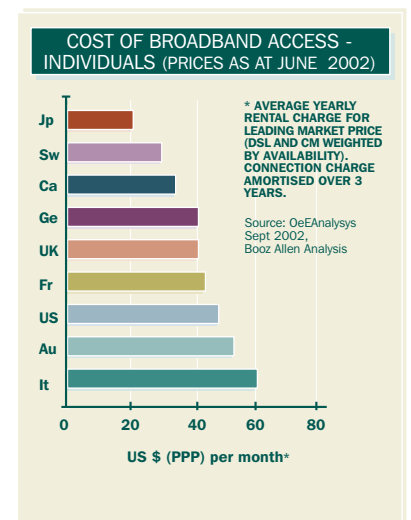


Fig. 16

Discussion of Drivers

- The recent broadband price reductions have been driven by a combination of increasing competition and regulatory pressure, with the balance varying by country. Japan's dramatic price cuts are competition driven, with strong players such as Yahoo moving aggressively to gouge market share from the incumbents.
- In France, by contrast, deep wholesale price cuts have been imposed by regulator ART on France Telecom.

1.1 The Market Environment - Findings

1.14 Cost of access **Broadband access prices are beginning to converge on a 'zone of take-off' - around \$40 per month - with Japan significantly cheaper**

Discussion of Drivers

- **Competition:** Broadband competition exists at two levels: that based on different infrastructures, and reselling.
- Resale competitors include:
 - AOL, Zen, Demon, Pipex, Iomart, Easynet and Freeserve in the UK
 - MSN, AOL, Earthlink, XO and Speak Easy in the US
 - Soray and Telenordia in Sweden
 - AOL.de, Tiscali, NGI, KKF and Claranet in Germany
 - AOL.fr, Liberty Surf, Nerim in France
- **Reselling:** Retail competition can provide a stimulus for price reductions, this is shown by a relationship between broadband prices and the market share of incumbents.
- The scope for reselling to provide downward pressure on end-user prices is, however, limited since the reseller is restricted in price by the wholesaler, and ultimately dependent on them.
- This is seen in the low market shares taken by resellers in many markets:
 - In France, 90% of the 550,000 subscribers to France Telecom's ADSL network are with France Telecom's service provider, Wanadoo
 - In Germany, 87% of the 2.3m subscribers are with T-Online, Deutsche Telekom's service provider
- In the UK, however, resellers have gained a greater share of an admittedly small market. BT Openworld has secured just 50% of subscribers to BT's ADSL service. Moreover, BT has a smaller share than the cable companies in the overall broadband market (unlike France and Germany). Reseller competition may be one driver of the comparatively low end-user prices.

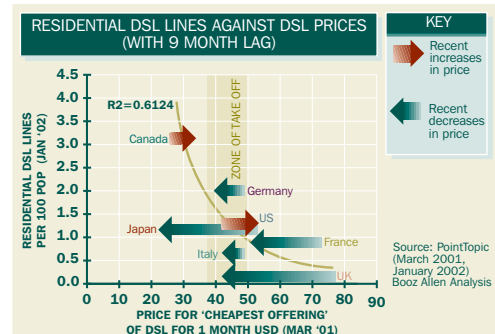


Fig. 17

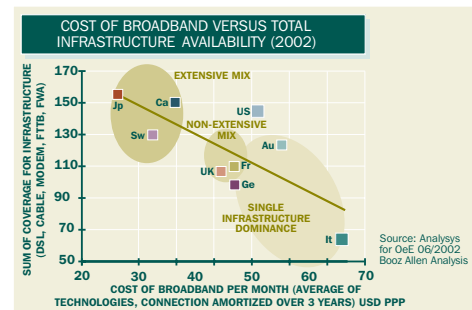
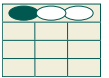


Fig. 18

- **Cross-technology competition:** A number of countries are highly cabled for historical reasons and already have an existing second infrastructure that covers a significant portion of the population. For example, demand for US programming led to the growth of cable TV in Canada. Subsequently in 1996 Canadian cable companies started to offer broadband, before even the incumbent telecommunications operators did. Thus in Canada 73% of the population are able to subscribe to DSL and 64% able to subscribe to broadband cable, whereas in Germany 90% have DSL available but only 24% can subscribe to broadband cable services.
- Early this year, broadband prices showed an interesting correlation with the level of infrastructure competition in each nation (see chart left). This seems to support those who argue that even in the absence of retail competition, competition between service providers on different *infrastructures* can drive prices down.
 - In 'Extensive mix' nations, such as Japan, Canada and Sweden, consumers have significant availability of more than one infrastructure (i.e. cable and DSL), real competition, and the lowest broadband prices.
 - In 'Non-extensive mix' nations, such as the UK and France, an even balance of infrastructures exists but with lower penetration of both technologies. This results in moderate broadband prices. These nations have both seen recent substantial downward moves in price.



**Discussion of
Drivers
(cont.)**

- In ‘*Single infrastructure dominance*’ nations, broadband availability is above 60% of the population, but is largely skewed towards a single medium – DSL for Australia, Germany and Italy. Interestingly, broadband prices in these countries have not been dropping as quickly as elsewhere. This may be because the market dynamics which limit availability to a single infrastructure are also those which produce higher prices i.e. a strong incumbent, perhaps publicly owned.
- The US is not included in any group. Despite showing the infrastructure availability of an ‘*extensive mix*’ nation, broadband prices remain high in the US. One potential cause may be the difficulty (and expense) of physical delivery of DSL in America’s low density urban environments. Another factor may be the extreme fragmentation of the ISP supplier base for broadband in the US – many suppliers may be operating below efficient scale.

- **Infrastructure competition through local loop unbundling (LLU):** Whilst in the US, Sweden and Germany a significant number of exchanges have other operators’ equipment installed, their market share remains very low – less than 3% in Germany (just 70,000 lines vs 2.3m for Deutsche Telekom). For this reason many governments are now reviewing the effectiveness of their policies with regard to LLU.
- Only in Japan does LLU seem to have resulted in competition that has affected prices. There, the first entrant, Tokyo Metallic, beat the incumbent, NTT, to offering DSL, and as a result of the ensuing intense competition NTT has a relatively low market share for an incumbent (35%, vs 94% in Germany) and prices in Japan are now the lowest worldwide.
- **Regulatory action:** Pressure from a powerful regulator has forced prices down, for example, in France when ART imposed price cuts on France Telecom’s wholesale service offer to alternative telecoms carriers, cutting the price for exclusive access to the local loop by 28% and slashing shared access prices by 53%. Regulatory action has also been used to raise prices when it was felt that an incumbent’s pricing was predatory and anti- competitive, e.g. Deutsche Telekom in Germany.

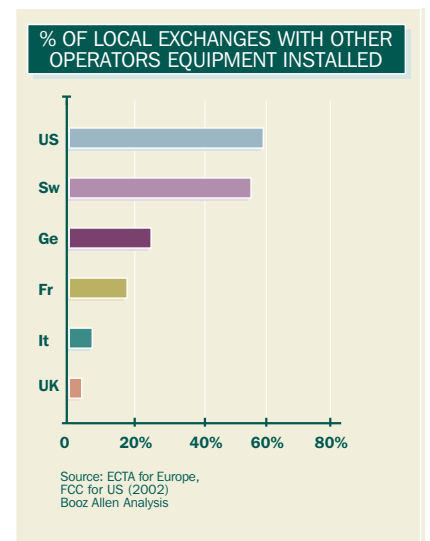


Fig. 19

1.1 The Market Environment - Policy Comparison

1.15 Overview

Three key themes emerge across the benchmark group: ICT in education, stimulating investment, and internet access price regulation

Common Challenges and Themes:

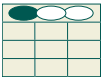
- **ICT in education:** All governments are concerned with the lack of IT user skills in the general population and the lack of specialist IT skills. Furthermore, most see embedding ICT in education as a key lever for reducing the digital divide. Thus all governments are spending around 200-400m euros on ICT equipment in schools and training teachers to use ICT.
- **Stimulating investment:** Governments have an array of legal, fiscal and financial measures at their disposal to encourage venture capital and R&D investment. Approaches have differed vastly, from heavy levels of direct government investment in R&D (France, Germany), to raising corporate tax rates to encourage re-investment of profits (Japan), to providing R&D tax credits (all except Germany and Italy, to differing degrees). Some countries have also made efforts specifically to attract venture capital, such as a loans guarantee policy under the Small Business Administration in the US, or allowing pension funds to invest in VC as in the UK and the US.
- **Internet access price regulation:** Internet access prices, in particular broadband, are targets for regulation given the market power of the incumbent and their role as a monopoly provider of wholesale telephony (at least in most countries). Regulators have been particularly active in reviewing wholesale rates and conditions under which access is provided to the local loop. However, the zeal with which they have pursued this has differed. In Australia, the incumbent, Telstra, has some of the highest prices in the world and yet has not been subject to any regulatory action. In contrast, France Telecom had price cuts imposed on it by the French regulator, ART.

Contrasts:

- As discussed above, approaches have differed from direct government intervention in the form of subsidies in R&D to more subtle measures, like tax breaks. The former is characterised by the French and the Germans, whereas the latter is the approach typically adopted by the US and the UK.
- The other main area of contrast is in the approach to competition, referred to in more detail in the 'Infrastructural Environment' chapter.

The most successful approaches:

- The most successful have been in nations like Canada and the UK, where policies for ICT in education have been characterised by being very high profile, comprehensive (e.g. IT training and online content as well as equipment) and well co-ordinated under a single programme. Canada also started earlier on this path, and its sustained action has made it a world leader.
- The US' venture capital industry is by far the largest internationally, due principally to a series of government actions to encourage venture financing, some of which have been replicated successfully elsewhere:
 - Low capital gains tax rate (20%)
 - Favourable tax treatment of losses, e.g. can be offset against profits
 - Taxing stock options as capital gains when the stock is sold (not as income when the option is granted)
 - Offering targeted tax credits to incentivise companies to invest in VC funds
 - Offering loan guarantees, e.g. the Small Business Administration guarantees loans to Small Business Investment Companies (SBICs) that offer venture capital to new companies
 - Allowing pensions funds to invest in private equity
 - A bankruptcy law that doesn't significantly restrict future business activity
- Japan has achieved the lowest broadband prices, but this owes more to market dynamics (see previous page) than government action, a finding that appears to apply across the whole set of benchmark countries.



- Objectives**
- The National Grid for Learning (NGfL) is a government initiative to help learners and educators in the UK benefit from ICT.
 - There are three elements to the NGfL strategy:
 - A programme for the delivery of ICT infrastructure
 - A structure of educationally valuable content on the internet (the NGfL portal)
 - A programme of training to develop ICT good practice
- Actions**
- **Infrastructure:** The government is funding the cost of equipping and connecting schools, colleges, libraries and community centres to the NGfL. In total, £1.37bn is committed to ICT equipment over 1998-2004. This includes £50m worth of subsidies for teachers towards the cost of purchasing a PC under the Computers for Teachers Scheme.
 - **Content:** The second element of the NGfL strategy focuses on stimulating the development of quality educational resources and making them accessible to the learning community. This includes:
 - The NGfL portal, a network of websites with information to support staff working in education
 - Curriculum Online, to develop digital resources to support teaching and learning
 - Community Grids for Learning to put information that supports lifelong learning online (supported by the New Opportunities Fund, a pot of lottery money)
 - Culture Online, to use digital technology to widen access to the resources of the arts and cultural sector for lifelong learning and enjoyment
 - **Practice:** The third element of the NGfL strategy focuses on the provision of ICT training to ensure that people have the skills to be able to make full use of the infrastructure and content of the NGfL.
 - £230m has been set aside from 1999-2002 (from the New Opportunities Fund) to ensure that teachers and school librarians are equipped with the necessary knowledge, understanding and skills to use ICT effectively in teaching. £20m is set aside to train public library staff in ICT skills.
 - £200m (also from the New Opportunities Fund) has also been committed to the 'Community Access to Lifelong Learning' scheme to support the development and operation of a network of learning centres with online computer access to information and community resources.
- Results**
- **Infrastructure:** The number of PCs and internet connected PCs per 100 pupils has increased rapidly since the NGfL began in 1998 (see below) to 10.3 and 7.5 respectively. The percentage of PCs over three years old has fallen from 59.2% in 1998 to 36.8% in 2001.
 - The number of schools connected to the internet had risen to 97% by April 2001 (see below). 28,000 teachers (~6.5%) purchased PCs under the first phase of the Computers for Teachers scheme between January-July 2000, 94% of whom reported that the PC had increased their confidence to use ICT. Overall in 2001, 67.3% of teachers had access to a PC at home.

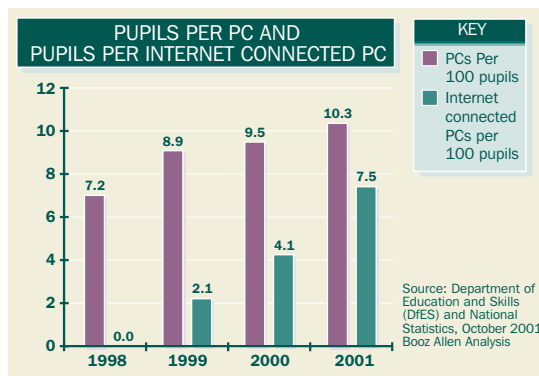


Fig. 20

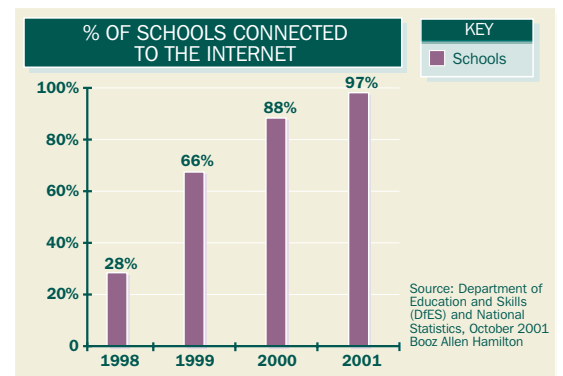


Fig. 21

1.1 The Market Environment - Case Study

1.16 Case Study The National Grid for Learning programme is largely responsible for the strength of ICT in the UK's education (cont.)

- Results**
- **Content:** Since its launch in 1998, the NGfL website has grown to over 362,000 unique indexed documents, including:
 - The Virtual Teacher Centre
 - The Teacher Resource Exchange, to which teachers are invited to contribute lesson ideas
 - The Grid Club, which provides a safe but stimulating range of activities and information for 7-11 year olds
 - **Practice:** There has been an increase in the percentage of teachers reporting feeling confident in the use of ICT within the curriculum (see below). There has also been an increase in the proportion of teachers who have received training in the use of ICT in the last two years from 41% in 1998 to 63% in 2001. This is at least partly due to the success of the training programme under the NGfL, for which 355,000 teachers (84%) had signed up and which 190,000 had already completed by July 2001.

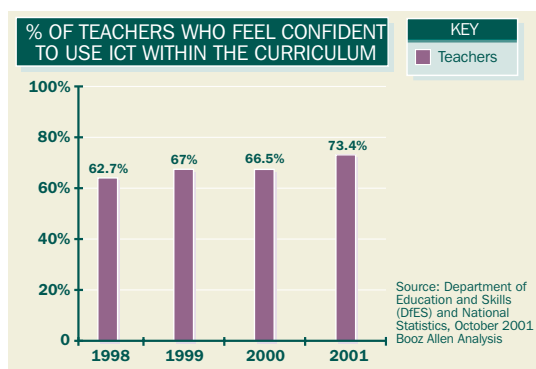


Fig. 22

The Environment for the e-Economy

1.1 The Market Environment

1.2 The Political Environment

- 1.21 Overall Findings and Outlook
- 1.22 Level of Political Leadership
- 1.23 Models of Stakeholder Engagement
- 1.24 Telecoms Regulation
- 1.25 e-Commerce Regulation
- 1.26 Case Study: Canada's e-Business Roundtable

1.3 The Infrastructural Environment

1.2 The Political Environment

Definition The political environment describes the extent to which the policy and regulatory environment promotes the growth of internet adoption and e-commerce

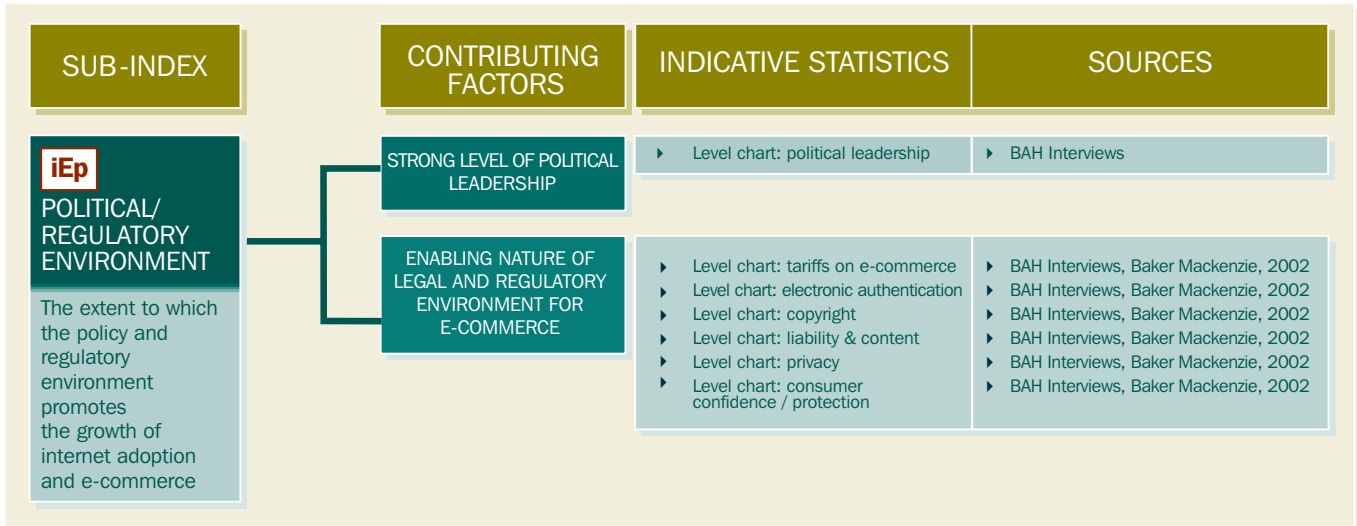
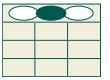


Fig. 22.1

- Definition** ▶ The political environment describes the extent to which the policy and regulatory environment promotes the growth of internet adoption and e-commerce.
- ▶ Strong political leadership is required to advance the e-economy. Political backing is evidenced by championing the e-agenda at the highest levels of government ,establishing an overall strategy, setting up a dedicated organisation, providing resources and funding, etc.. This is crucial if there is to be good co-ordination across government departments and with local government.
 - ▶ In addition, the legal framework needs to be adapted to ensure that it is the same in spirit as existing regulation and does not treat e-commerce adversely (or otherwise). The key issues affected are taxation, authentication (i.e. digital signatures), rights protection, content and liability of distributors (e.g. ISPs), privacy, and consumer protection.



The US, Australia, the UK, Canada have all put in place strong political institutions and regulation to support e-commerce

The Leaders: ➤ The US, Canada, the UK and Australia are all characterised by strong political leadership, including championing from the highest level and a dedicated organisation pushing the e-agenda. They also have very supportive regulatory environments for e-commerce, in particular the US with its moratorium on sales tax on e-commerce (although this comes at a high cost in terms of lost tax revenue that may not be justified).

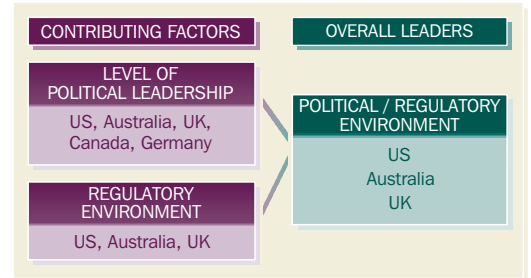


Fig. 23

Government actions: ➤ The political and regulatory environment is, by definition, set by government, so government actions here are key.

Environmental factors: ➤ However, the constitutional set-up, level of centralisation and size of government does affect the ease with which the national government can provide leadership and co-ordinate actions. Thus countries like France and Germany, which are both decentralised and have large governments, have tougher obstacles to overcome.

Most successful policy approaches: ➤ There is much commonality in approach among the benchmark nations. Nearly all have created a dedicated organisation(s) to lead on the e-agenda. Most have put in place the relevant legal framework to support e-commerce without damaging the aims of government. The best approaches are characterised by senior government figures championing this area and getting highly involved.

Outlook: ➤ We expect the most change to come in countries where there has recently been a change of government, notably France. There will also be changes in Australia where the National Office for the Information Economy has been reorganised and had its policy setting role removed.
➤ Otherwise this part of the framework will probably remain quite stable.

1.2 The Political Environment - Findings

1.21
Overall
Findings

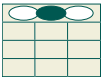
The US, Australia, the UK, Canada have all put in place strong political institutions and regulation to support e-commerce (cont.)

Political Leadership: a word on Level Charts

- Unlike many other areas of the framework, political leadership is a field poorly served by statistical indicators. In order to make objective comparisons between countries, for this and several other elements of the framework, Booz Allen deployed the technique of 'Level Charting'.
- A level chart allows quantitative comparison of essentially qualitative concepts - such as political leadership - by creating a mini framework of ascending levels of sophistication.
- The concept is well established in studies of this nature and is deployed by organisations ranging from Accenture to the UN.
- When properly constructed, each level of such a chart is described in terms of factual criteria with unambiguous (yes/no) outcomes, for example, in the chart below:
 - To attain level 3, a country must have not only a vision for the e-economy, but clear e-agenda implementation plans, with funds allocated to them and clear departmental accountability for delivery.
 - To attain level 4 a country must have an established organisation driving the agenda, which has demonstrated its power to influence other departments, and have a system in place for tracking its own progress.
 - To attain level 5 there must be significant demonstrated impact.
- Thus scores awarded are not subjective - but rather based on an objective and factual comparative profile of each nation.
- Level charts have been compiled through multiple interviews in each benchmark country by local Booz Allen teams, and checked for cross country consistency by the coordinating team in London.
- The chart below shows that the US, UK, Canada, Australia and Germany all have a strong and established political machinery to drive the e-agenda forward, although implementation approaches vary somewhat. These approaches are described in the remainder of this section.

| POLITICAL LEADERSHIP: LEVELS OF SOPHISTICATION | | | | | |
|--|---|---|--|---|---|
| LEADERSHIP | LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 | LEVEL 5 |
| The degree to which Government acts as effective champion of e-commerce, and has organised itself to do this | <ul style="list-style-type: none"> • Government has articulated a vision for e-Economy • Delivery strategies with accountable government departments are not in place • No clear targets set | <ul style="list-style-type: none"> • Clear vision targets set • Clear strategies rippling through each level of government • Delivery responsibility is with existing agencies / departments • Unclear implementation plans and little evidence of concrete allocation of funds | <ul style="list-style-type: none"> • Clear vision, strategies and targets • Funds allocated, implementation in motion • Action is driven by existing government departments • ...or • Dedicated organisation has been set up within the last year | <ul style="list-style-type: none"> • Established dedicated organisation driving / coordinating overall e-Government effort and coordinating activities • Organisation has demonstrated 'teeth' and influence • Measures of progress are in place and progress is tracked | <ul style="list-style-type: none"> • Strong dedicated organisation • Senior Government figures actively champion issue • Significant demonstrated impact |
| | | <ul style="list-style-type: none"> ■ France ■ Sweden | <ul style="list-style-type: none"> ■ Italy ■ Japan | <ul style="list-style-type: none"> ■ Australia ■ Canada ■ Germany ■ UK ■ US | |

Fig. 24



- Overview**
- Nearly all countries have empowered an organisation(s) to lead on the e-economy agenda, recognising the need for co-ordination across government and for resource to keep the momentum on these initiatives.
 - There are, broadly speaking, three different organisational models (specific details below):
 - Setting up a dedicated, cross-governmental organisation, usually within the Cabinet Office or equivalent
 - Setting up a dedicated organisation within the Treasury / Ministry of Finance, and therefore with some budgetary influence
 - Dividing responsibility across several departments, usually giving the e-commerce policy portfolio to the Ministry for Industry and the e-government portion to the Ministry of the Interior, although there are some variations on this.

Model 1: e-agenda driven by a dedicated organisation in the cabinet office

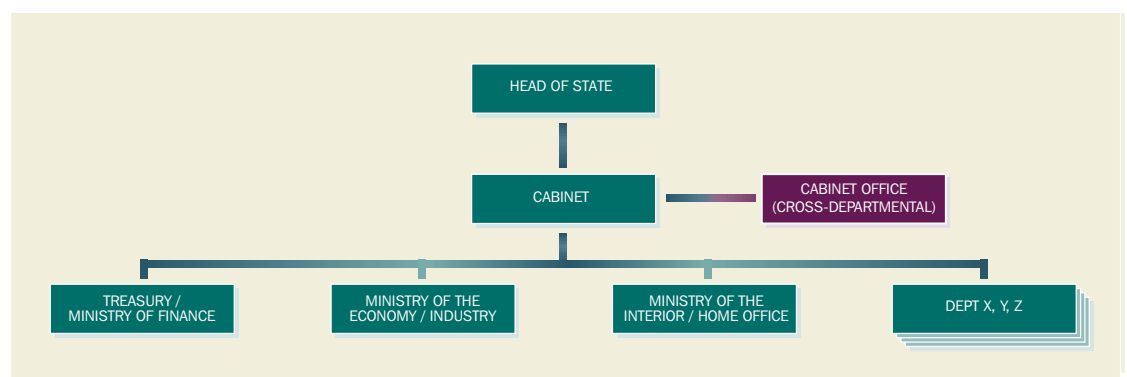


Fig. 25

**Countries:
UK, Japan, Italy,
Australia**

- This model is exemplified by the Office of the e-Envoy in the UK, which sits inside the Cabinet Office. The e-Envoy sets policy in this space. It also ensures co-ordination across government, tracks progress and manages selected projects that are of cross-departmental benefit, e.g. a government intranet (Knowledge Network), and a secure gateway for communicating with the public (Government Gateway). The Office of the e-Envoy has an advisory input into the Treasury’s financing decisions.
- In Japan, the e-agenda is co-ordinated by the Information Technology Policy Office working in the Cabinet Secretariat. This has a cross-departmental co-ordinating role but is on a much smaller scale than the Office of the e-Envoy (20-30 people vs 200+) and does not manage any projects of its own.
- Italy has set up a dedicated organisation, the Ministry for Innovation and Technologies, to develop policy, ensure co-ordination among ministries and track progress. Whilst a Ministry in name, it reports directly to the Prime Minister and co-ordinates work across ministries through an inter-ministerial committee, very much like the Office of the e-Envoy.
- Australia’s National Office for the Information Economy was, until very recently, an independent executive body, like the Office of the e-Envoy in the UK. It has now been moved to within the Department for Communications, Information Technology and the Arts (as of May 2002).

1.2 The Political Environment - Findings

1.22
Level of political
leadership

There are three different organisational models for driving the e-agenda, each of which can be made to work (cont.)

Model 2: e-agenda driven by organisation in the Treasury / Ministry of Finance

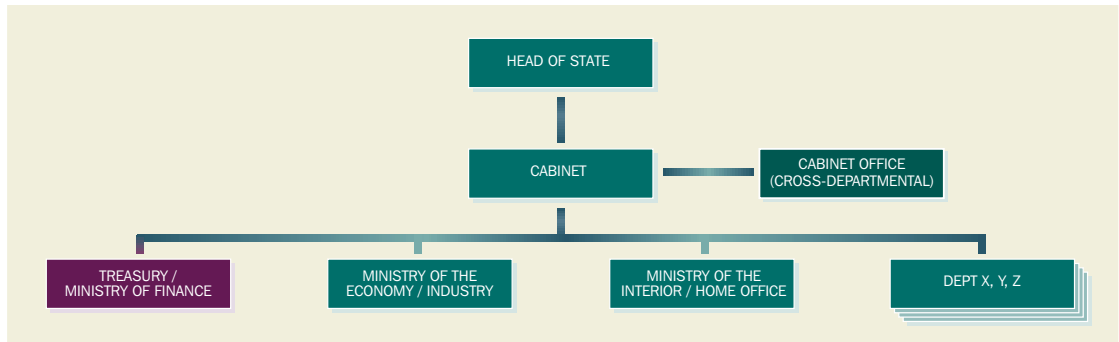


Fig. 26

Countries: US, Canada

- In the US, the Director of IT and e-Government and his team sit in the Office of Management and Budget, which is part of the President's Executive Office. This differs slightly from the Office of the e-Envoy in that it has budgetary powers, but this is the way it has to be run because of the way the US government operates.
- The e-government programme in Canada is co-ordinated by a dedicated division within the Treasury Board, with budgetary influence. However, e-commerce initiatives are directed by another branch of government, Industry Canada (ministry for industry).
- Canada has split the e-agenda between Industry Canada, who lead on e-commerce and universal access policy, and Government On-Line, pushing the e-government programme, which sits within the Treasury function.

Model 3: e-Commerce / universal access driven by ministry of the economy e-government driven by Ministry of the Interior, and/or involvement from other ministries

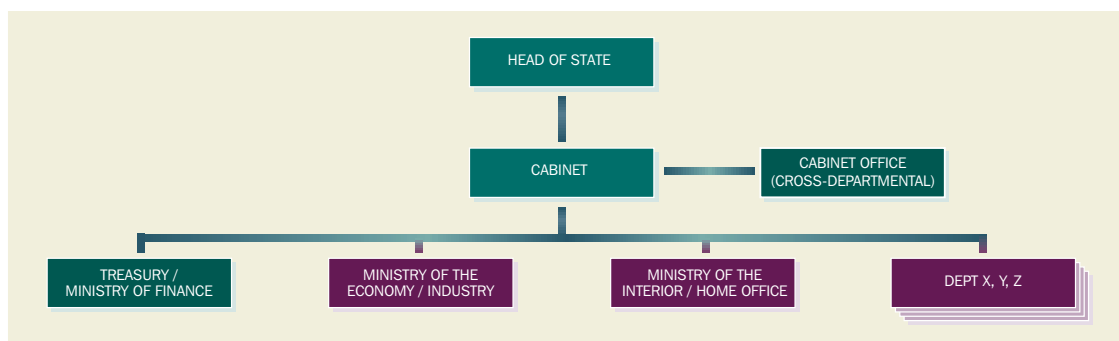
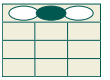


Fig. 27

Countries: Germany, Sweden France

- Germany's organisation is shared across different government departments. The Ministry of the Interior is responsible for the delivery of e-government, the Ministry of Economics is responsible for delivery of e-economy initiatives, and other Ministries are involved for other elements.
- Sweden has a similar set-up to Germany. The Agency for Public Management are responsible for implementing the 24/7 e-government programme. The Ministry of Industry, Employment and Communications supports businesses in implementing e-commerce. Other ministries, notably the Ministry of Justice, also have some involvement.
- In France no single authority takes control of the e-agenda. An Interministerial Committee for the Information Society (CISI) set the e-agenda but it is co-ordinated through a loose network of contacts across departments, and primarily driven by the separate departments.



- Assessment:**
- The difference in approach across countries, even among the three leading nations, suggests that implementation is more important than the leadership model chosen.
 - There is little evidence to suggest that having an independent agency to manage the e-agenda is any more effective than placing the responsibility with an existing ministry.
 - However, it is important to have political leaders championing these issues. For example, in the US the Bush administration has made e-government one of the five pillars of their modernising government programme, and created a high profile Director of IT for the federal government.
 - In Japan and Italy, where emphasis on the e-economy has come only in 2001 with changes in administration, little had been achieved until recently.
 - Similarly in France the government only organised an interministerial committee on this topic two years ago, and even then put little support behind it. This may now change with the new government.

- In Canada, the E-Business Roundtable advises government on policies favourable towards e-commerce. There is also an Information Highway Advisory Council (IHAC) that was established in 1994 to advise more broadly on the information society in Canada.
- The French created a Strategic Advisory Board on Information Technologies (CSTI) in July 2000, chaired by the PM. Its remit is more wide-ranging: how to stimulate innovation and R&D in ICT.
- Germany has involved industry through the "Initiative D21" group, which includes over 200 leading companies and is co-chaired by the Chancellor. Through numerous working groups it generates initiatives, many of which are implemented as public-private partnerships, further involving industry.
- Japan's policy-making body, the IT Strategy Headquarters, has participation from prominent professors and businessmen, including the Sony and Fujitsu CEOs. It is chaired by the PM and ministers from each department also sit on it.
- In Sweden, the government set up an ICT Commission to advise on ICT policy, analyse the impact of ICT on society and promote the use of ICT. In addition many Swedish politicians and civil servants have experience of and strong links with industry.
- The UK government oversaw the creation of the Information Age Partnership (IAP) in March 1998, to help the UK achieve leadership in the e-economy.
- The US Federal Government is advised by the Council for Excellence in Government, a non-profit organisation, on how to improve government at all levels. This includes issues of e-government. The Department of Commerce is also involved in ongoing policy discussions with private sector groups, notably the Information Technology Association of America and the Industry Advisory Council.
- In most countries there are also a number of other government-industry forums dealing with more specific topics, e.g.
 - In Australia, there is an E-commerce "assurance" roundtable, which meets to discuss measures to increase consumer trust in the internet, such as web seals of assurance, privacy, and an Australian code for e-consumer protection.
 - The Canadians have a National Broadband Taskforce to advise on rolling out broadband in Canada.
 - The UK has the Broadband Stakeholder Group, the Digital Content Forum, and numerous others to advise on specific issues.
- The most successful private sector advisory groups are those with industry leads and where there is facilitating involvement from government, and where government involvement is both senior and committed, so policies can be implemented. It is also important that the industry involvement is senior and broad-based (i.e. across the entire ICT sector).

1.2 The Political Environment - Findings

1.24 Telecoms regulation Countries that rolled out ADSL earlier have a higher take-up, if not availability, of DSL services

- ADSL was first launched in Canada in November 1996. However, other than the US, the benchmark countries did not have a commercial DSL offer until 1999 or 2000.

- Assessment:**
- **DSL availability:** DSL availability is driven by a number of factors, including geographic conditions, the dynamics between DSL and Cable ownership, and to a lesser extent, the timing of first deployment.
 - As the figure below highlights, there is not a strong relationship between the timing of the launch of DSL and the extent of current DSL availability:
 - Countries such as the US, where services were launched early, still do not have world leading availability
 - Conversely, Japan; and Italy, who launched relatively late, have leading levels of availability nonetheless
 - This result is surprising: one might have expected that those countries which started rolling out broadband infrastructure earlier, would have progressed further.
 - However, it seems other stronger drivers than time of launch are at work, for example;
 - The economics of rolling out to remote areas (countries with a more dispersed population, such as the US will likely have lower DSL infrastructure roll-out).
 - The dynamics between DSL and Cable ownership;
 - In countries such as Germany and Italy, where the incumbent operator owns both assets, DSL has been pushed aggressively in preference to cable.
 - Incumbents have shrewdly anticipated government rulings that they should dispose of their cable infrastructure, and piled investment into DSL in an attempt to 'grab' broadband market share before the new owner of the cable network is established.
 - For countries whose roll out began most recently, such as the UK, Australia, and where the key infrastructure players are private companies (as opposed to state owned incumbents), the recent capital market squeeze has had a tangible retarding effect on roll out.
 - **DSL uptake:** However, countries where DSL launched earlier do show a higher *uptake* of DSL (see chart below). Where DSL was available earlier, it has been marketed more extensively and awareness is consequently greater - driving uptake.
 - The late launch of DSL in the UK in part explains the lag in DSL uptake, although not the lower DSL availability.

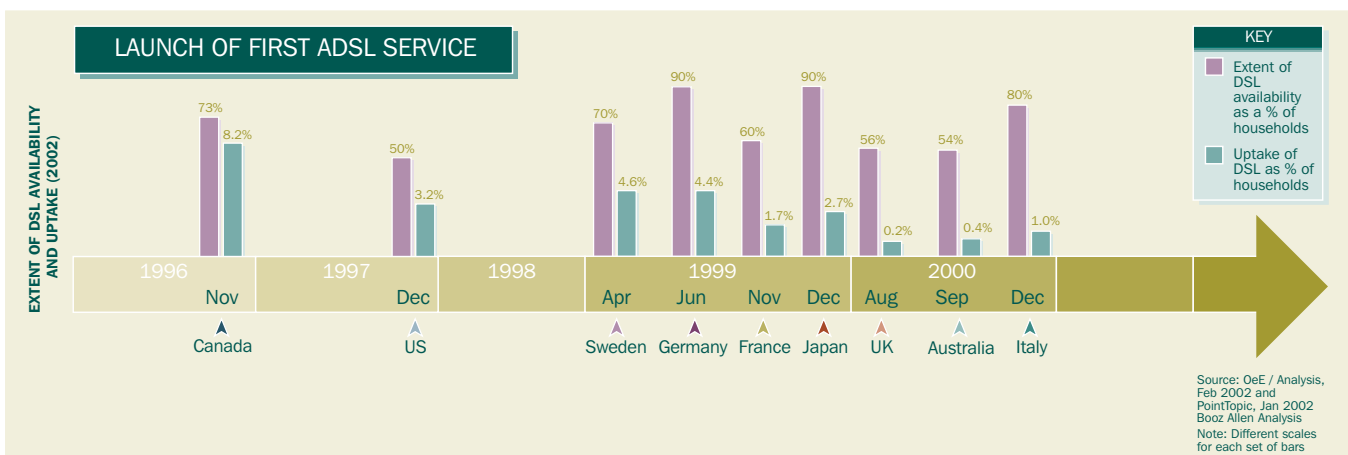
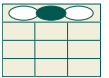


Fig. 28

Local loop unbundling has been attempted in every country but to date has resulted in little competition with the notable exception of Japan



- In all countries there has been a considerable lag between the mandating of local loop unbundling (LLU) and it's becoming effective. In the figure below, LLU is defined as being effective at the point when an alternative operator has installed equipment in a local exchange and is offering commercial service.
- Germany was the first European country to move, mandating in January 1998, and one year later, the first to see launch of an alternative operator.
- Sweden was unbundled fastest. The incumbent, Telia, was shrewdly incentivised to unbundle by the government offering it in return freer scope to promote its broadband business.
- Japan also moved quickly, as NTT was pressed by new entrants and was eager to collect additional revenues, hoping that its ISDN offering would suffice.
- The UK has been towards the trailing edge of the group, mandating unbundling in April 2000, and seeing first competitive exchange operators in April 2001
- In Australia, and the remaining countries, unbundling has been slow as the incumbent has stalled.
- Even in Germany, with its early start, the pace of unbundling has been slow, and the level of genuine competition generated minimal.

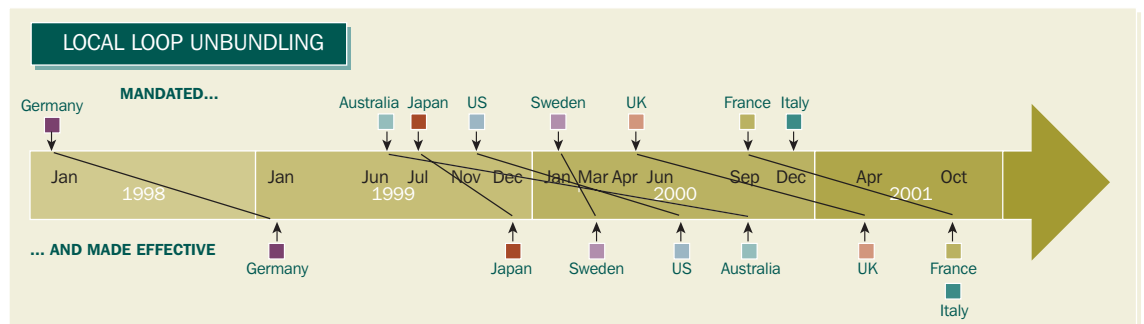


Fig. 29

Discussion of Drivers

- The delays in LLU are for two main reasons. Firstly, the mechanics of LLU are complicated: allowing several operators to use the same infrastructure and install their own equipment, and putting in place service level agreements for the shared infrastructure takes time.
- Secondly, incumbents have naturally tried to slow the process in a number of ways, ranging from tariff-related tactics (e.g. excessive and in some cases predatory prices) to imposing operational obstacles (e.g. refusals to provide co-location, requirement to unbundle multiple lines at once, onerous conditions such as bundling of services).
- Therefore, even in countries where unbundling has taken place, it has been minimally successful, as evidenced by the number of local exchanges with other operators' equipment installed (q.v.). Thus according to Oftel, earlier in the year, only an estimated 650 out of 550,000 DSL subscribers in France access via an alternative operator installed in the local loop; 300 out of 200,000 DSL subscribers in the UK; and 70,000 out of 2.3m DSL subscribers in Germany (still only 3%).
- Also, the economics of reselling are fair less attractive: resellers need to pay for sales, marketing, customer service, and customer premises equipment cost with a narrow margin for a tiny customer base. The incumbent's economics, with greater scale, are very different.

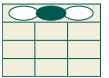
1.2 The Political Environment - Findings

1.25 E-commerce regulation

E-commerce regulation is fairly similar across all the benchmark countries, with the only significant difference the US' unique position on sales tax

- Taxation** ➤ All the benchmark countries are agreed on the WTO standstill agreement on international tariffs for e-commerce whilst it is a growing industry.
- The ability of governments to continue to raise revenue without distorting economic/ technological choices*
- The US is unique in having additionally imposed a moratorium on e-commerce taxation that applies to federal, state and local sales tax (expected to last until 2003). This is thought to have strongly influenced the success of e-commerce in the US.
- All the other countries promote tax neutrality between online and offline goods and services (although digital products, e.g. e-books, are sometimes classified differently from the hard copy equivalent, i.e. books are VAT exempt in the UK but e-books aren't).
- Electronic Authentication** ➤ All the benchmark countries have put in place legislation to recognise electronic signatures and documents. This legislation is technology neutral.
- The legal recognition of electronic documents and signatures, in a technology neutral manner*
- In some countries there is still a requirement though for certain documents to be handwritten, e.g. contracts under family law in Sweden.
- Countries vary in their approach to accrediting and regulating certification authorities. In Canada and the UK this is industry-led. In Japan there is an optional government licence for certification authorities. In Germany, Sweden and Italy, government bodies regulate (in the case of Sweden, a new one, SWEDAC, was especially created for this purpose).
- Copyright** ➤ Most governments have signed, implemented and ratified the WIPO treaties relating to rights protection, or have equivalent legislation in effect.
- The degree of effective intellectual property rights legislation and protection*
- This gives companies the same intellectual property rights online as they would have offline, and also talks to internet-specific issues, such as abusive domain name registrations and cybersquatting.
- Content and Liability** ➤ The most commonly used system for ascertaining ISP liability for hosting illegal content is where the ISP is only at fault if it has been notified of the illegal content and then failed to act on it. ISPs are not obliged to know all the content they are hosting.
- The degree to which government regulates / censors content and holds ISPs liable*
- This approach has been adopted in all the countries, although in France there have been some prominent cases that have bucked the trend (see Estelle Hallyday vs. altern.org case, where the hosting company lost).
- Privacy** ➤ EU countries are bound by an EU Data Protection Directive, which ensures privacy protection but is very extensive and places considerable burdens on online players.
- The degree of privacy protection online (e.g. regarding the sharing of personal information)*
- Only Japan has a self-regulatory scheme, JIPDEC (Japanese Information Processing Development Corporation) introduced a Privacy Mark System.
- Consumer Confidence/ Protection** ➤ Consumer protection tends to be the same as in the offline world, and is often managed by the same agencies (e.g. the Office for Fair Trading in the UK).
- The extent of industry initiatives (beyond encryption and electronic authentication) to engender consumer trust*
- Credit card companies and e-tailers have agreed to take on the liability for credit card fraud in most countries, protecting consumers.
- Some governments have overseen the creation of kitemarks and/or an industry scheme for regulating them, e.g. TrustUK in the UK, JADMA (Japan Direct Marketing Association) and JCCI (the Japanese Chamber of Commerce and Industry) in Japan, the Nordic trustmark SCANSAFE in Sweden.
- Typically kitemarks are common, various and voluntary.

The E-Business Roundtable has acted as an effective e-commerce strategy advisor to the Canadian government, achieving meaningful change in a short period



- Overview**
- Canada's E-Business Roundtable has acted as an effective e-commerce strategy advisor to the Canadian government, managing to achieve meaningful change in a short period of time.
 - The E-Business Roundtable was established in 1999 and was a collection of industry leaders with a self-defined mandate of trying to grow the e-economy in Canada. The Roundtable itself had 36 members, all from ICT industry and industry associations, with the exception of one government representative, the Deputy Minister of Industry Canada.
 - Roundtable functioned as an advisory group to Industry Canada, which in turn lobbied the federal government to enact select recommended changes.
 - Considered unique because it is the first voluntary co-operation in the private sector, across many industries, dedicated not to the goals of a particular industry but to stimulating a large part of the economy.

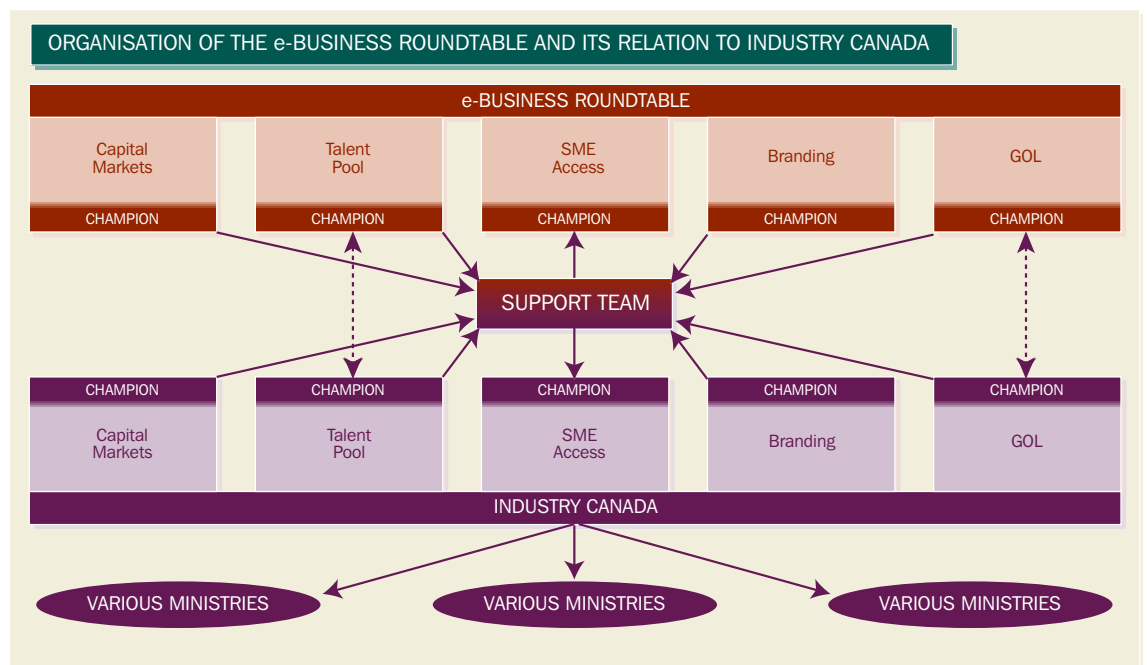


Fig. 30

- Organisation and process**
- Roundtable was segmented into 5 different pillars with a mandate to improve Canada's attractiveness or performance in that particular area: e-Business Acceleration, Capital Markets, Brand Awareness (of Canada a location for e-commerce), e-Business Talent Pool, and Governments On-Line Acceleration.
 - Each Roundtable pillar interacted with a corresponding Industry Canada team, headed by a nominated champion.
 - Industry Canada also provided a support team – 2 people who acted as liaisons between roundtable members, the champions within Industry Canada, and between Industry Canada and the Roundtable itself.

1.2 The Political Environment

1.26 Case Study

The E-Business Roundtable has acted as an effective e-commerce strategy advisor to the Canadian government, achieving meaningful change in a short period (cont.)

| Results | Roundtable recommendation | ➔ | Federal response |
|----------------|--|----------|---|
| | ➤ Reduce capital gains taxes to encourage new venture funding | ➔ | ➤ Lowered the capital gains inclusion rate from 3/4 to 2/3 and allowed for the tax-free rollover of capital gains |
| | ➤ Reduce capital gains tax to 30% for assets held more than one year | ➔ | ➤ Capital gains tax reduced to 50% immediately |
| | ➤ Narrow the gap between Canadian and US corporate taxation costs | ➔ | ➤ Reduced corporate tax rates from 28% to 21% over 5yrs, beginning in 2002 |
| | ➤ Lower personal taxes to retain talent in Canada | ➔ | ➤ Taxes decreased by up to 3% for taxable incomes up to \$100k; deficit reduction surtax eliminated immediately |
| | ➤ Better treatment of employee stock ownership plans | ➔ | ➤ Deduction for employee stock options increased from 1/3 to 1/2 consistent with new 50% capital gains rate |
| | ➤ Stimulate economic growth through Government On-Line (GOL) by devoting a portion of economic stimulus funding to accelerate GOL adoption | ➔ | ➤ The government is providing \$600m over the next 4yrs to implement the Government On-Line strategy by 2005 |

Source: Fast Forward 3.0: Report of the Canadian E-Business Opportunities Roundtable, March 2002

- Key success factors**
- The success of the Roundtable can be attributed to its organisation, membership and endorsement.
 - The effectiveness of the Roundtable was enhanced by senior members of the group who were able to negotiate a path through government bureaucracy and who helped filter requests to ensure that specific, actionable requests were presented that would benefit the economy as a whole rather than one particular industry.
 - The Roundtable's credibility was underpinned by the representation of a variety of industries and institutions, not just the ICT industry. The Roundtable maintained its impartiality by focusing on recommendations that could benefit all industries, not just the e-economy.
 - Credibility was furthered enhanced by very high-level industry representation, such as John Roth, then CEO of Nortel, and very high-level government endorsement from the Minister for Industry.

- Future Development**
- The E-Business Roundtable originally had a 1-year mandate, and in early 2002, after 3 years, it was decided to disband the Roundtable. However, in recognition of the Roundtable successes, the spirit of the Roundtable will be continued in Canadian E-Business Initiative, which is currently being formed.

The Environment for the e-Economy

1.1 The Market Environment

1.2 The Political Environment

1.3 The Infrastructural Environment

- 1.31 Overall Findings and Outlook
- 1.32 Infrastructure Availability
- 1.33 Infrastructure Quality and Security
- 1.34 Policy Overview: Common Themes and Successful Approaches
- 1.35 Case Study: Broadband in Japan

1.3 The Infrastructural Environment - Findings

Definition The infrastructural environment describes the level of availability and quality of the key access infrastructure to support e-commerce, and also to foster competition

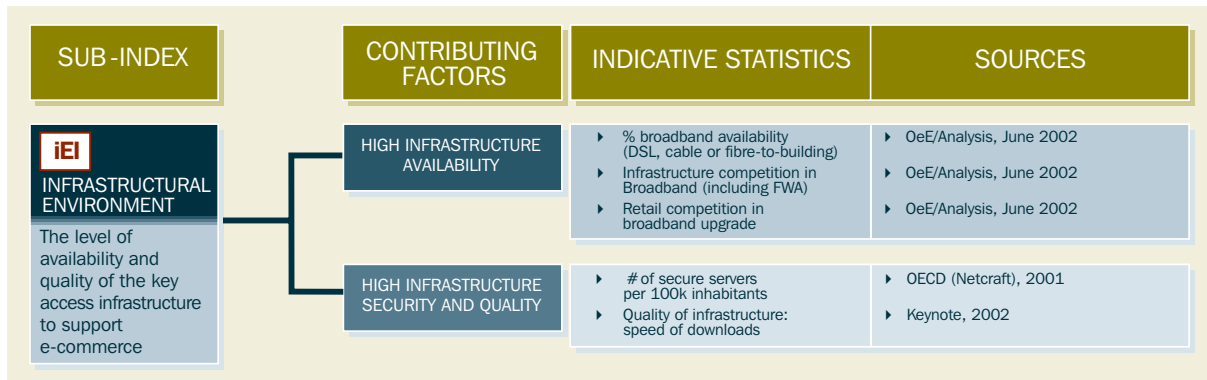
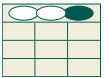


Fig. 31

- Definition** ➤ The infrastructural environment describes the level of availability and quality of the key access infrastructure to support e-commerce, and also to foster competition.
- A country with a strong infrastructural environment will have extensive roll-out of cable, DSL, fibre to the building (FTTB), fixed wireless access (FWA) or other online access technologies. Thus most citizens and businesses have access to broadband.
 - Moreover, countries where alternative (and separately owned) infrastructures exist side-by-side, e.g. cable and DSL, have stronger infrastructural environments because this demonstrably fosters competition.
 - Competing infrastructures may also be built on a single fixed telephony network through local loop unbundling (LLU).
 - The effectiveness of LLU affects the number of new entrants in the DSL market and hence the level of competition.
 - The quality and security of an infrastructure is also important to enhance the user experience and confidence. Secure servers represent the infrastructure necessary to conduct secure electronic transactions and imply the provision of content for sale or commercial use. The quality of a network can typically be measured by the number of packets lost and / or the speed of download, both of which affect the utility of the internet and are therefore crucial.
 - Note there is some overlap with the market environment and the discussion of access costs, in terms of how competition is dealt with.



- The Leaders**
- The leading countries are Japan and the US, with Canada and the UK some distance behind.
 - Explanation of strengths: Japan and the US are both characterised by a high level of infrastructure availability from multiple infrastructures particularly extensive, overlapping DSL and cable networks (the US' networks are less extensive but highly overlapping). The followers lack either extensiveness or competitiveness – the UK with relatively low broadband coverage and Canada with little overlap between infrastructures.
 - In addition, both have highly fibred-networks that have been laid relatively recently and good quality, relatively new routers, resulting in a fast, high quality network.

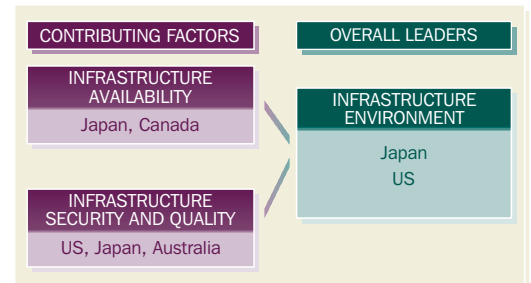


Fig. 32

- Government Actions**
- Governments have been involved in infrastructure in two main ways: in creating fair and free markets through regulation and through providing open access to infrastructures (i.e. local loop unbundling), and by providing fiscal incentives for infrastructure roll-out.
 - All governments have implemented local loop unbundling, but with varying degrees of success.
 - Fiscal measures, e.g. low interest loans and subsidies, are in their early days but it is evident from the South Korean example, where \$10bn was invested by government to create the world's most extensive broadband market with the highest uptake internationally, that this can help speed up broadband deployment. However, this is an expensive strategy. Many governments are examining such intervention specifically to address infrastructure in rural areas which are clearly uneconomic for a commercial player to wire up, while encouraging private sector led roll out in the rest of the country.

- Environmental factors**
- Numerous environmental factors have a considerable influence on infrastructure build-out.
 - **Population dispersal** affects the economics of cable and DSL, and also in the case of DSL the quality of service (the further from a local exchange a house is, the poorer the service, until a threshold distance when DSL is no longer viable).
 - **The extent of cable** in a country directly impacts the level of broadband availability. In some countries, the public sector has built cable networks (e.g. Germany); in others market demand for more television programming drove the laying of cable (e.g. Canada).
 - **The quality of a network** affects the cost of upgrading a network, as does the age/style of buildings and the construction code (e.g. in Italy there is a higher proportion of listed buildings that are hard to cable).
 - **Backbone costs** can also vary significantly, depending on the level of competition (e.g. in the UK there are a number of alternatives to BT, like Energis, because of early telecoms deregulation). The ability to source backbone connectivity cheaply lowers costs for service providers, lowering barriers to entry for potential competitors.

- Successful policies**
- Most policies have been implemented too recently for an assessment of impact to be made.
 - However, what is clear is that countries that deregulated early and have long had an open and competitive environment tend to have lower prices and greater broadband availability. This is certainly the case for Canada and the US, and to a degree, Japan (where local loop unbundling was effective fairly early).

- Outlook**
- This is an area of the framework where we expect to see significant change as prices drop and demand takes off. In addition, government programmes to encourage broadband build-out to remote areas will begin to have an effect - those policies that are most successful will push their countries' levels of availability and uptake higher.
 - Nations such as the UK, pursuing a policy of market-led infrastructure roll-out, will face the challenge of driving extensive roll-out. Rural areas will remain uneconomic to wire up.
 - Nations such as Germany, that have promoted more extensive roll-out through a co-operative approach between government and incumbent, will see less price competition.

1.3 The Infrastructural Environment - Findings

1.32 Infrastructure availability

Availability of broadband and of multiple infrastructures (cable, DSL, other) varies significantly across the benchmark countries, primarily for environmental reasons

The Leaders

- In Germany and Japan 90% of the population can now get broadband. In Canada around 80% (see chart, right).
- However, Germany's and Italy's broadband penetration is somewhat 'one-sided' (see chart, below right) as there is very little cable (particularly in Italy).
- Australia has a relatively high level of cabling, with 4.75m out of 7.28m homes passed (65%), but only 8% of homes connected, making it unusual amongst the benchmark countries.
- In contrast, Japan, Canada and the US all have very high cable penetration.
- For countries with significant rural areas, governments have tended to prioritise either extensiveness or competitiveness, recognising some sort of trade-off may exist between the two. In some cases, in order to achieve very high levels of availability some governments have risked reduced competition both between retailers and between infrastructures by allowing incumbents to develop and dominate the market.

Digital Television - DTV

- Interactive digital television is expected to become a widespread internet access medium by 2005. Yet availability figures for DTV are not currently calculated or published. DTV, like broadband, is a service – not an infrastructure -so a measure of its availability must be founded on the infrastructures over which DTV can be delivered.
- 50% of DTV in Europe is delivered via Satellite, 30% via cable, and around 20% via digital terrestrial broadcast. (Ovum). DSL is not currently a viable broadcast medium.
 - DTV availability over cable is simplest to track: it is simply cable modem availability (see chart, right).
 - Availability via satellite, is a binary metric – 100% in countries where a provider operates, (in the benchmark group, every country apart from Japan), or 0%.
 - Availability via terrestrial broadcast is more complex. In countries where an broadcaster operates, (seven of the benchmark group), availability is driven by the distribution of transmission antennae - but likely to be less than 100%. Customers in remote areas may be unable to receive a signal, and customers in some areas will be able to tune in only if they upgrade their existing aerial, at some cost, and planning risk.
- The UK leads the benchmark group in terms of DTV uptake, driven by high uptake of digital terrestrial television. (see e-citizen chapter) This is not an availability issue however – digital terrestrial is (100%) available in seven of the benchmark countries – but rather a result of the strength of the recent competitive offering in the UK, and the momentum generated by ITV/On digital.
- A measure of DTV availability, based on an agreed calculation framework may be a helpful addition to future reporting.

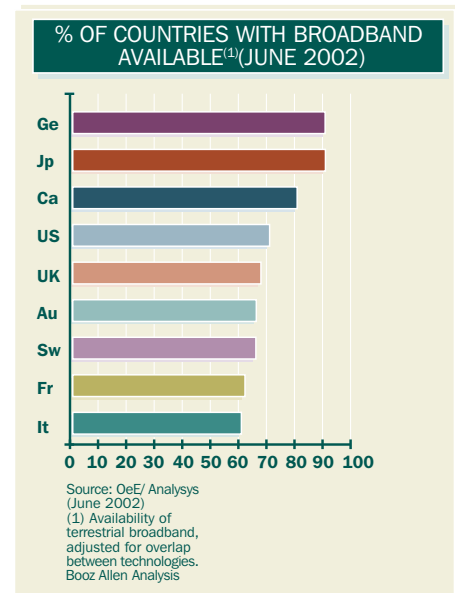


Fig. 33

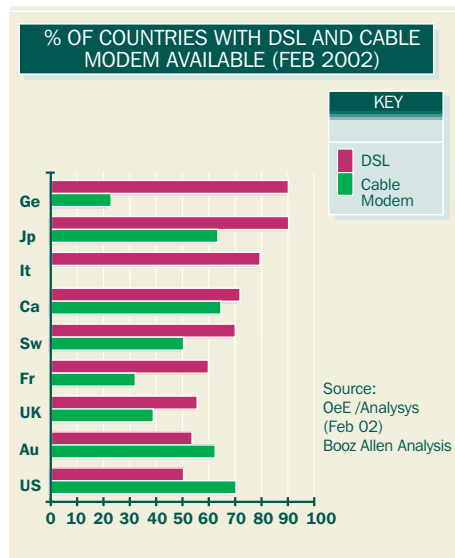
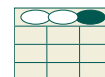


Fig. 34



Availability of broadband and of multiple infrastructures (cable, DSL, other) varies significantly across the benchmark countries, primarily for environmental reasons (cont.)

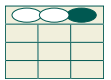
Discussion of Drivers

- **Regulatory / competition authority aim:** Approaches to broadband regulation have differed depending on whether the regulator's primary aim is to have an extensive broadband market or a competitive broadband market.
- In Germany, the regulator, RegTP, has allowed DT to dominate the market (it currently has 94% market share for all broadband, including cable subscribers). Consequently DT has pursued subscriber growth aggressively, rolling out DSL to 90% of homes by March 2001. This compares favourably with BT in the UK (60% as of Sept 2001), where the regulator has aimed for a market that is both competitive and extensive.
- **Population dispersal:** Densely populated areas are far more attractive economically for DSL and cable investment. Those living in urban areas are therefore likely to have broadband availability, and so countries where a large proportion of the population lives in urban areas will have a higher percentage of broadband infrastructure, and vice versa. This the case for Japan where a high percentage of households have broadband available.
- **Extent of cable:** For historical reasons there is great variance in the extent of cable laid in each of the benchmark countries. In Germany, DT laid down cable in much of the country as part of its public service mandate. In Canada and the US, demand for more TV channels led to substantial cable build out. In contrast Italy and France have relatively little cable, as does the UK, where until the 1980s cable operators were limited to small zones and prevented from achieving scale, providing a barrier to large scale investment. Moreover, when UK cable started to grow it was faced with strong competition in its core pay TV market from BSkyB, a satellite provider.
- **Cable ownership:** To be broadband-enabled, a cable home needs to be connected to a cable network that has been upgraded to Hybrid Fibre Coaxial (HFC). In most cases the cable operator will make this investment in order to reap the benefits of a share of the broadband market. However, where the cable company is owned by the incumbent telecoms operator, itself a broadband supplier, there is little or no incentive to upgrade.
- In Germany, the incumbent telecoms operator, DT, until recently owned the cable network (and still owns 6 out of 9 regions). However, knowing that it would be forced to sell this cable network by the EU it had little incentive to upgrade it and offer an alternative to DSL, and as a result just 34% of households have access to cable modem services. In Australia, Telstra, the incumbent, owns 50% of the major cable provider, Foxtel, and again has little incentive to offer an alternative cable broadband product to its DSL. Optus, the number 2 telecoms player, operates the second largest cable network and is therefore similarly conflicted.
- Conversely in Japan, Canada and the US, cable companies have spurred telecoms companies into accelerating their DSL roll-out and improving their service offering.
- **Effect of LLU:** As discussed in the previous section on regulation, LLU has, to date, had little effect on the extent of broadband infrastructure build-out.
- **Government policy:** Other than regulatory actions to create an open and fair market environment, governments have a range of options available to extend broadband availability including:
 - Direct intervention in infrastructure, i.e. owning the infrastructure and leasing it to telecoms providers or end users
 - Demand aggregation for broadband services for the public sector
 - Public-private partnerships, i.e. sharing the costs with the private sector, particularly on the demand side
 - Low interest financing for carriers establishing broadband infrastructure (e.g. Japan, the US)
- There is as yet no national example of demand aggregation of public sector requirements, although a number of countries, including the UK, are working towards this.
- Most countries however are providing financial incentives. This has most notably been the case in the world leader, South Korea, where the government provided \$10bn of subsidies for broadband players to build out their infrastructure. Partly as a result of this, South Korea is the world's leader in broadband.
- In Sweden the government has announced an SEK 8bn (~\$845m) public private partnership programme to stimulate connection of rural communities. The money is to come in the form of grants and tax measures.
- In Australia a similar government initiative, Networking the Nation, aims to enhance infrastructure in rural and regional Australia. However, it is on a much smaller scale than the Swedish initiative, with just AUD 250m (~\$185m) being spent over 5 years.

1.3 The Infrastructural Environment - Findings

1.32 Infrastructure availability **Availability of broadband and of multiple infrastructures (cable, DSL, other) varies significantly across the benchmark countries, primarily for environmental reasons (cont.)**

- Discussion of Drivers (cont.)**
- **Government policy (cont'd):** In Italy the government is encouraging infrastructure build-out through the provision of special rate loans, with an allocation of 500m Euro (~\$620m) . There is also a tax exemption for profits that are reinvested in investment assets that exceed in value the average investment made in the previous five years (this is limited to 50% of profits).
 - Japan's Ministry of Public Management, Home Affairs, Posts and Telecoms plans to financially support municipalities investing in local public broadband networks with a budget of \$60m, in order to narrow the geographical digital divide.
 - The UK government has committed £30m (\$45m) to fund broadband initiatives through the Regional Development Agencies, and is setting up the Regional Broadband Unit to co-ordinate regional broadband initiatives. The government made the explicit decision not to subsidise the cost of broadband build-out, arguing that it should wait for the private sector before considering whether to support under-developed regions. However, there are other initiatives, including an R&D tax credit that applies to investment in broadband content and technology development, and a capital cost allowance.
 - In the US and Japan, the government provides special rate loans to companies building telecommunications infrastructure out to rural areas.



The US is the only country to score highly on the quality and security of infrastructure

- The Leaders**
- Over the two years to July 2000 there was a 470% increase in the number of secure servers detected in OECD countries, suggesting rapid development of e-commerce infrastructure.
 - The US has the highest concentration of secure servers in the benchmark group, Japan the least, with a fairly disperse group. In absolute terms, the US had 71% of secure servers in the OECD region followed by the UK, with 5% of the OECD total.
 - Japan, however, has the best quality of infrastructure, as measured in terms of download times (this measure correlates extremely well with the other measure of quality, error rates / packet loss).

Discussion of Drivers

- The number of secure servers is driven largely by the volume of e-commerce and other secure transactions, e.g. online banking, interactions with the government (online taxes).
- The US has the largest volume of transaction activity by any measure: e-commerce, online banking, online filing of taxes, etc.
- Australia owes its high position to the popularity of online banking. The financial services sector in Australia is quite advanced and rapidly went online, marketing online banking heavily and offering security features to encourage uptake (which enabled the banks to cut costs).
- The UK is also amongst the leaders in terms of e-commerce and online banking, again driven by a sophisticated banking sector.
- The quality of infrastructure is affected by two groups of factors:
 - Network topography: the number of hops between routers data must take, and – to a lesser extent – the physical routing of fibres, affect network performance. Countries whose networks have more complex topographies- while they may in some cases be more resilient - will generally see less performance for the same level of equipment.
 - Fibre age/quality: less of an issue, though newer fibres are able to run at significantly greater speeds and capacities.
- Router capacity should be less of a factor, as long as network upgrades are carried out in line with best practice.
- The US and Germany also have a lot of fibre laid down. In the US this was driven by market reasons, with much of it laid recently in the telecoms boom. The German network on the other hand was state built and, in typical German fashion, to a very high quality standard. This applies to both the telecoms and the cable networks (the cable network was also built by Deutsche Telekom).
- Government policy: Other than government PKI systems and critical infrastructure protection programmes, the governments reviewed have no policy in this space.

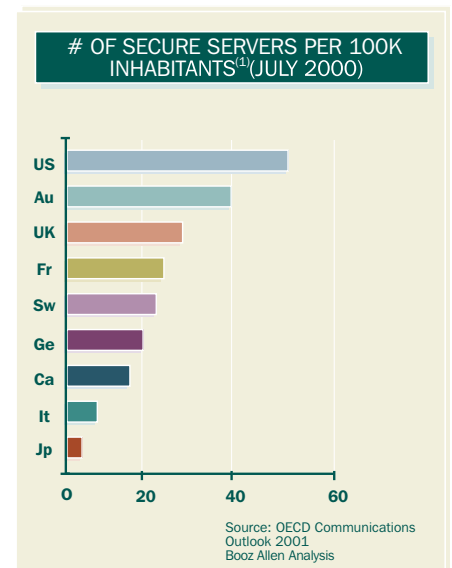


Fig. 35

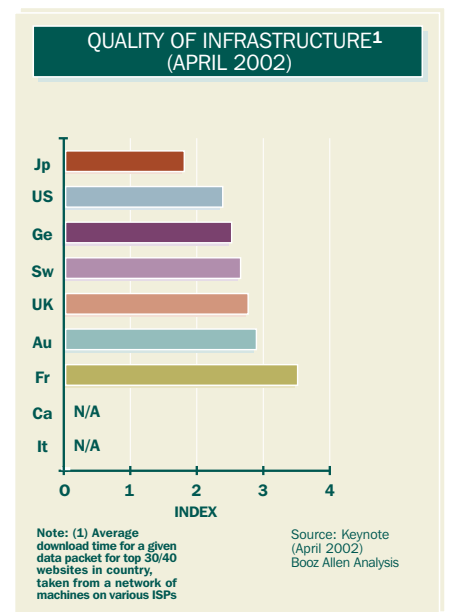


Fig. 36

1.3 The Infrastructural Environment - Policy Comparison

1.34 Policy Overview

All countries are concerned with how to extend and accelerate broadband roll-out, whilst simultaneously creating a competitive market

Common Challenges and Themes:

- **Extending and accelerating broadband roll-out:** The governments of the countries studied have tended to shy away from massive intervention to build out broadband (the South Korean approach), taking care to ensure that regulations which hamper market entry and roll-out new infrastructure are removed (e.g. Local Loop Unbundling, rights of way legislation). Governments are also taking care not to reinforce the dominant position of incumbents.
- Having said that, most governments have put in place some fiscal incentives to encourage the provision of infrastructure, usually focused on areas where it is clearly uneconomic to provide broadband access, e.g.
 - In the US and Japan, the government provides special rate loans to companies building telecommunications infrastructure out to rural areas.
 - Japan's Ministry of Public Management, Home Affairs, Posts and Telecoms plans to financially support municipalities investing in local public broadband networks with a budget of \$60m, in order to narrow the geographical digital divide.
- A number of countries have also set up groups consisting of key stakeholders to assist on broadband policy.
- **Providing competition/choice in broadband:** Ideally governments would like to see competing infrastructures, as these offer the best hope for true price competition. Thus all governments are pursuing policies to enhance competition and open telecoms markets and promote access to infrastructures.
- The presence or absence of cable is largely the result of historical and environmental factors, notably the regulatory environment for cable operators when cable was being laid and the demand for cable TV (vs satellite, or no interest in more programming). Governments can remove barriers to laying new infrastructure, e.g. rights of way legislation, or introduce legislation to force new buildings to include ducts for easy wiring, but given current capital market conditions it is unlikely that much new cabling will be taking place.
- Some governments have forced their incumbent telecoms operators to divest their cable television holdings so as to increase competition in broadband, e.g. Deutsche Telekom in Germany, although there are exceptions, e.g. Telstra in Australia still owns 50% of the largest cable operator.
- All governments have set up a framework for local loop unbundling (LLU), line sharing and interconnection.

1.3 The Infrastructural Environment - Findings

1.34 Policy Overview

All countries are concerned with how to extend and accelerate broadband roll-out, whilst simultaneously creating a competitive market (cont.)

- Contrasts:**
- One major contrast is over the role of the state vs the private sector in infrastructure development.
 - The Canadian government maintains that "the private sector should play a leadership role in the development and operation of broadband networks and services". The Japanese government also mentioned in its e-Japan Priority Policy Programme that "the private sector is to play the leading role in the area of IT".
 - On the other hand, some countries attach more importance to the role of government in delivering broadband infrastructure. For example, the Swedish IT Bill of 2000 emphasises that broadband infrastructure deployment is "primarily to be achieved through market channels" but the central government "has the overall responsibility for ensuring that IT infrastructure with a high transfer capacity is available nationwide." The Japanese government's policy to deploy fibre optic cable across the country by providing financial support to companies laying the fibre as early as 1991 was very early but does not appear to have put the country in the lead for broadband or DSL compared to the US or South Korea. Japan was also one of the few countries that had a low interest financing system available to carriers establishing broadband infrastructure through the Development Bank of Japan and the Telecoms Advancement Organisation, both of which are largely funded by the government.
 - The UK is explicitly leaving broadband deployment to market mechanisms with minimum government intervention. The government believes that it should "continue to drive forward its pro-competitive approach to broadband" and pursue neither financial support to telecoms providers nor ownership of infrastructure by themselves.
 - Another contrast is exemplified by Germany and Japan's broadband markets – Germany has allowed the incumbent to dominate, Japan's market is highly competitive. Thus whilst the level of DSL availability is the same, the level of overlapping infrastructure is vastly different.

**The most
successful
approaches:**

- It is hard to judge the success of these measures at such an early stage. The position of most advanced countries at this stage owes much to the environmental factors in their country. For example, the US and Japan both had extensive cable networks before the internet boom.
- In terms of creating extensive networks rapidly, light regulation (or none at all) has incentivised Deutsche Telekom to roll-out its DSL services rapidly and extend its market domination. However, this has been at the expense of competition in the DSL market.
- In terms of creating the best true competition, Japan has been the most successful, with a number of players taking advantage of LLU and strong infrastructure competition from cable, encouraging the fast roll-out of broadband. Government has played little part in this.
- Over the coming years it will be interesting to judge the success of each country in avoiding a geographic digital divide for broadband, and in managing the quality of their networks. The relative merits of strategies which prioritise extensiveness over competitiveness and vice versa should become clear as prices and availability reach levels of maturity.

1.3 The Infrastructural Environment

1.35 Broadband in Japan Case Study

- In August 1999, Tokyo Metallic convinced the Ministry of Posts and Telecommunications (MPT) to open up the incumbent (NTT's) facilities to other operators in 1999 ("local loop unbundling"), after warning bureaucrats that Japan was being left behind by the US and even South Korea.
- This reform enabled other operators to provide ADSL services, and was to provide Japan uniquely with a high level of facilities-based competition. Tokyo Metallic then became the first company in Japan to offer DSL, followed by other new entrants (the connection fee for NTT was about \$6 per subscription).
- However, the speed of take-up was slow because the ADSL service was only available in metropolitan areas. It took a further four months to upgrade NTT's exchanges for ADSL elsewhere. The MPT revised the provision for NTT connectivity in the law for electronic communication business in order to solve these problems and promote ADSL in 2000.
- This was despite opposition from NTT who had invested heavily in ISDN (Integrated Service Digital Network), to the extent that Japan had the highest penetration of ISDN worldwide. NTT's intention had been to jump straight to Fibre To The Home (FTTH) as the next generation of high speed networks after ISDN.
- Yahoo! then famously launched its ADSL services, Yahoo! Broadband, in September 2001 for \$19 a month, an offer almost half that of NTT's ADSL service. This sparked a price war and massive demand. Yahoo! does not expect a profit from its ADSL service but from its other revenue streams: sales of content and advertisement.
- Thus as a result of early and effective unbundling, and strong market competition, Japan now has one of the world's most competitive broadband markets, leading to cheap prices and consequent rapid uptake (see below: as of April 2002 there were 2.7 million subscribers, or 6.1% of households).

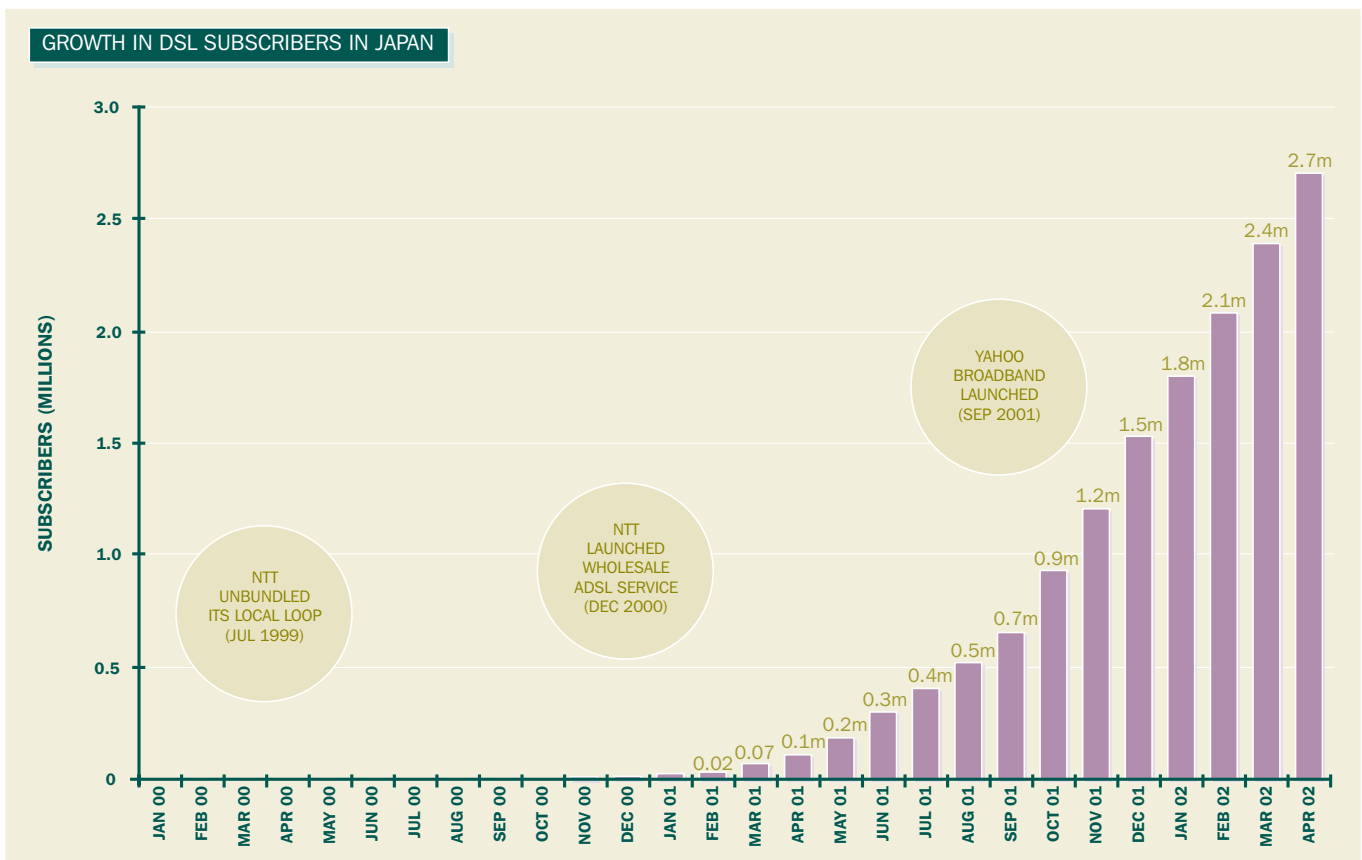


Fig. 37

Chapter 2:

The e-Maturity of Citizens

2.1 Citizen Readiness

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- 2.12 Penetration of Access Devices
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- 2.22 Basic Internet Use: Penetration of Narrowband and Broadband
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- 2.32 Impact on Spending
- 2.33 Impact on Working and Behaviour
- 2.34 Policy Overview: Common Themes and Successful Approaches

2.0 Citizens and the e-Economy

Framework
Summary

All findings in this chapter are based on comparative analysis of citizens in the nine benchmark countries according to the framework and indicators below

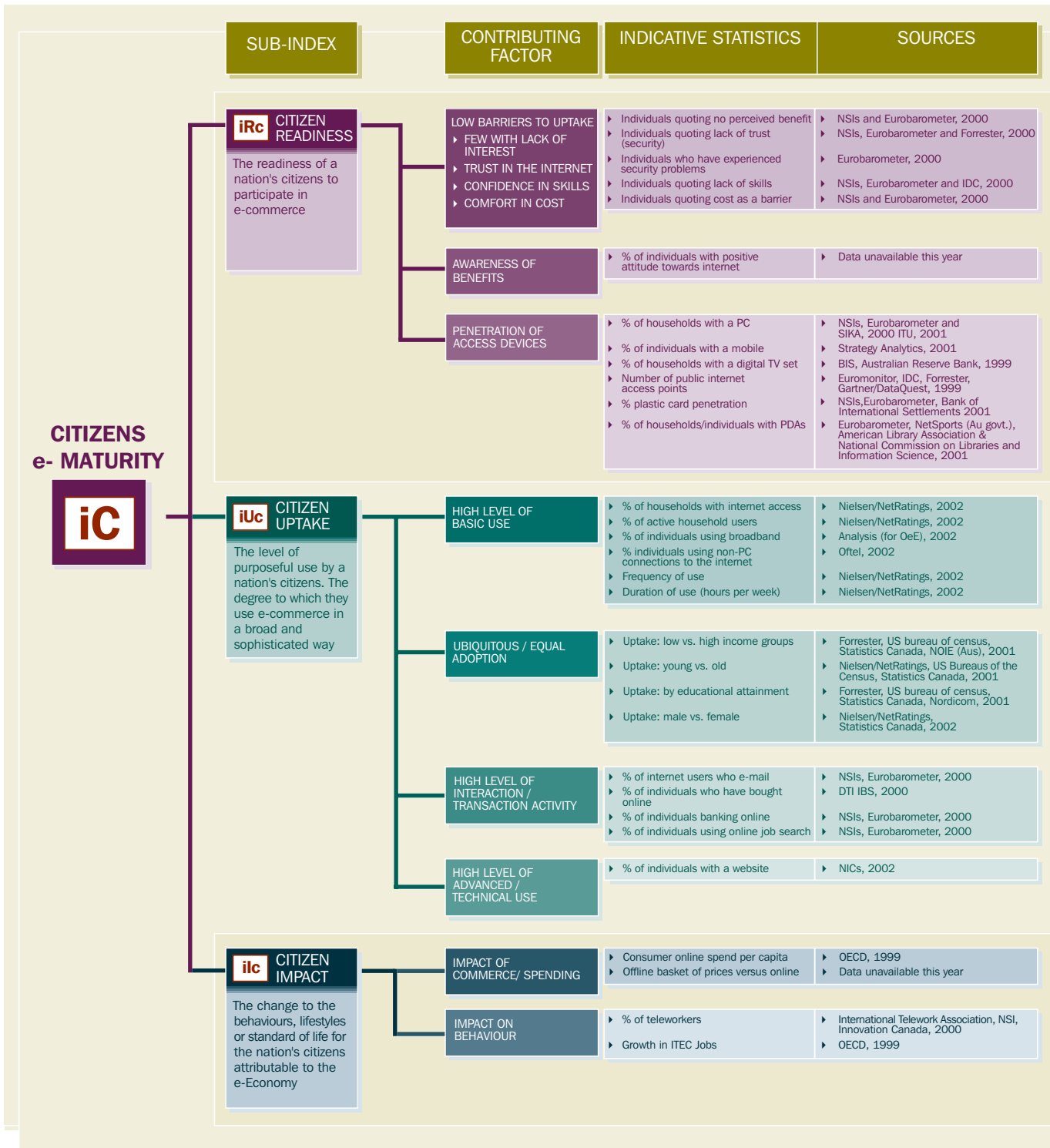
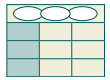


Fig. 38



Summary **The citizens of the US, Sweden and Canada are the most involved in the e-economy, combining high levels of readiness with high uptake and emerging impact**

➤ Overall, the nations with the most ‘e-mature’ citizens are the US, Canada and Sweden. ‘E-mature’ citizens understand and embrace on-line services (*Readiness*), use them in numbers and with sophistication (*Uptake*) and demonstrate changed behaviour or spending patterns (*Impact*).

Citizen Readiness

- Governments have successfully boosted the readiness of citizens through initiatives to raise PC penetration and through targeted training. Measures aimed at boosting consumer confidence have had mixed results so far.
- The nations with the best citizen readiness are Canada and the US, with Italy and the UK just behind.
 - Italian and US citizens have the most positive attitudes towards the Internet.
 - Canada, US and Japan lead in terms of penetration of access devices, with Sweden also advanced.
- Successful policies include Sweden’s PC Tax reform and Italy’s prominent support for the European Computer Driving Licence.

Citizen Uptake

- Governments have focused their efforts on encouraging uptake among specific groups of citizens, rather than on helping those already online up the ‘adoption ladder’ of usage sophistication. Targeted groups have been the elderly, the poor, rural communities and the female population. Canada, the US and Sweden have the highest levels of citizen uptake.
 - Basic uptake is highest in Canada and the US.
 - Fairness of adoption (i.e. absence of digital divide) is greatest in Canada, Sweden, Germany and the UK.
 - Germany and the US have the highest levels of more advanced use – interaction and transaction.
- Each of these leaders, however, exhibits some notable weakness – for Sweden and Canada it is the relatively low level of online transacting, while for the US it is the inequitable uptake, particularly between different income groups.
- A number of successful initiatives have emerged: Germany’s ‘Frauen ans Netz’ campaign, (“Women to the Web”), and the Canadian ‘VolNet’ programme for the Voluntary Sector.

Citizen Impact

- Government policy cannot influence *Impact* as much as the foregoing elements of the e-economy framework: *Environment*, *Readiness* and *Uptake & Usage*. Impact is, rather, the result of strength in all these. For this reason, few policies target impact specifically.
- Citizen Impact has been by far the greatest in the US, with Sweden also showing strong signs of impact.
 - Online spending by consumers is by far the greatest in the US. Swedish citizens have taken next most strongly to buying on-line, but at little over half the US level.
 - The US, Sweden, Australia and the UK have seen impact in terms of working practices, such as ‘teleworking.’

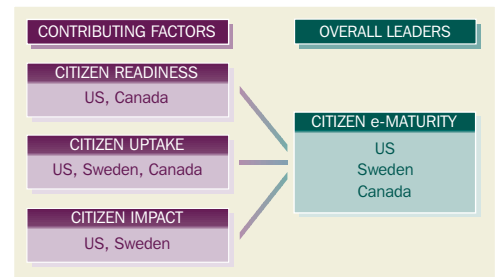


Fig. 39

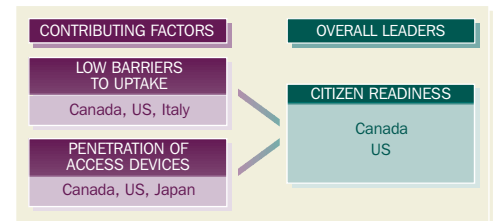


Fig. 40

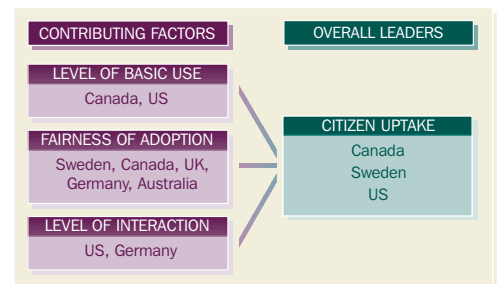


Fig. 41

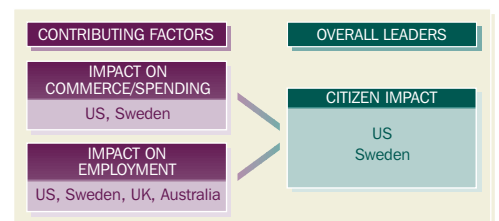


Fig. 42

Note (1): working on-line from home

Chapter 2:

The e-Maturity of Citizens

2.1 Citizen Readiness

- 2.11 Overall Findings and Outlook
- 2.12 Penetration of Access Devices
- 2.13 Attitudes: Enthusiasm and Barriers to Uptake
- 2.14 Policy Overview: Common Themes and Successful Approaches
- 2.15 Case Study: Sweden's PC Tax Reform

2.2 Citizen Uptake and Use

2.3 Citizen Impact

2.1 Citizen Readiness

Definition Citizen Readiness describes the readiness of a nation's citizens to participate in e-commerce, given that it is available to them

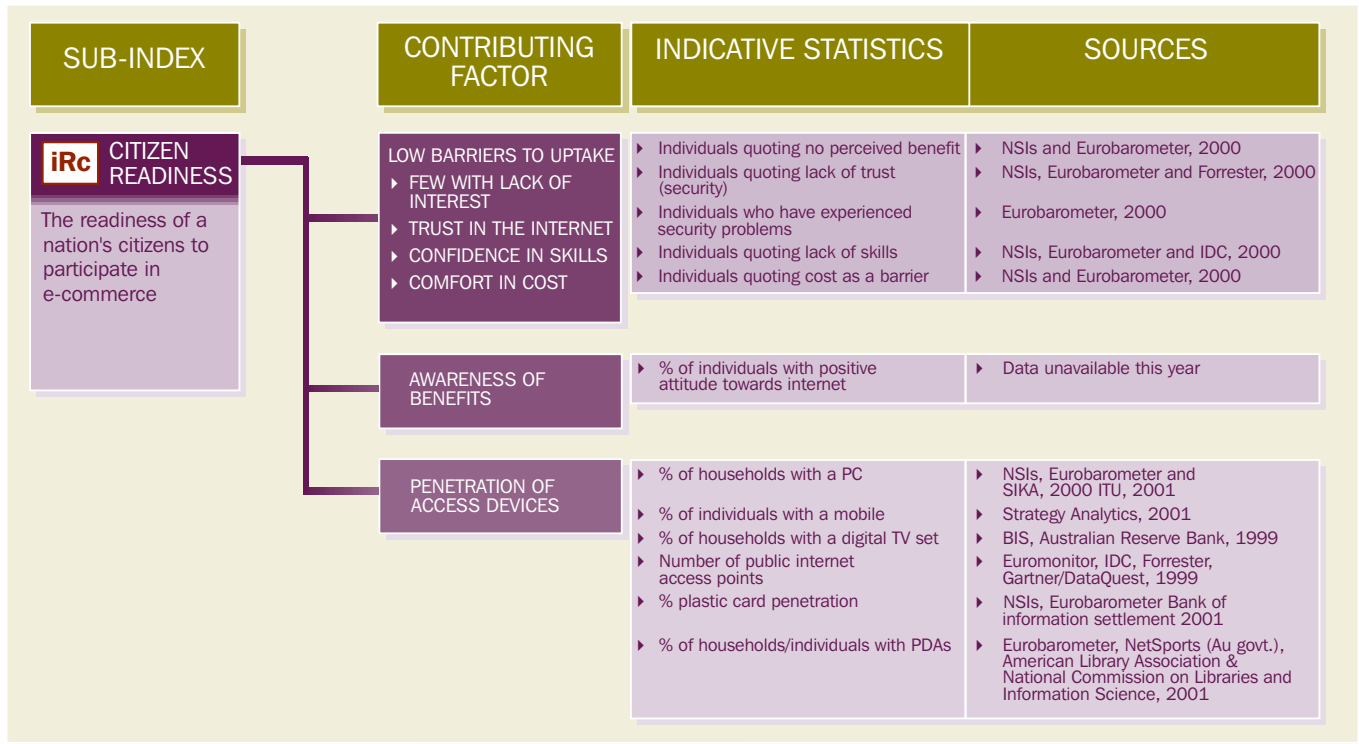
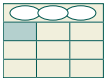


Fig. 43

- Definition**
- ▶ *Citizen Readiness* describes the readiness of a nation's citizens to participate in e-commerce, *given that it is available to them* - that is, to capitalise on the opportunities to participate that the environment affords.
 - ▶ Readiness requires an access device, be it PC, mobile handset or Digital Interactive TV.
 - ▶ It requires an awareness of, and enthusiasm for the benefits of on-line participation in e-commerce, and a positive view of its value for money – still a major sticking point in many countries, where the internet is viewed as expensive and of limited use.
 - ▶ And it requires confidence and trust in the medium. Confidence in having the skills to use it (IT literacy) and trust that the medium is secure. These factors too, hinder uptake in many countries where availability is now quite widespread – in other words, they depress *Readiness*.



- The Leaders**
- The leading countries combine a positive attitude to the internet with high levels of adoption of one or other access device (e.g. PCs in US & Canada, or mobile phones in Italy).
 - Significant variation exists in what citizen perceive to be the most important barriers to further use, and in governments' chosen role in tackling those barriers. Using the internet and ICTs in education seems to be a significant driver of citizens' confidence in their own skills. Several governments, notably Italy and France, have attempted to tackle the skill issue later in life through a range of courses in computer skills.

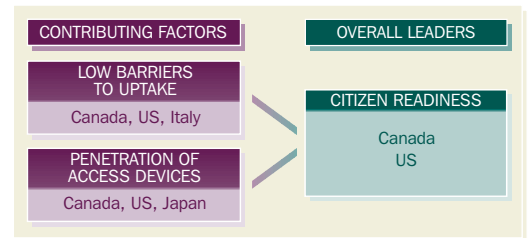


Fig. 44

- Citizens' perceptions of cost as a barrier are driven by either cost of narrowband access, or by the degree to which narrowband access tends to be metered. In those countries with citizens citing cost as a significant barrier to further use, the dominant form of access is relatively expensive, metered narrowband.
- The most **successful policies** appear to be those which target a specific problem. US citizens have the most experience of security problems but perceptions of internet trust are strong – perhaps fostered by government action to police the limits of content. In Italy, experience of ICT in education for current generations of adults has been low, but perceptions of skill barriers are also low – perhaps depressed by significant direct training efforts. In Sweden, PC costs are high, yet access device penetration has been driven upward by tax incentives.
- **Environmental** factors seem to have a significant effect on citizen readiness – for example lower comfort with the English language contributes to lower Japanese confidence about using the internet. In addition - a lack of familiarity with keyboards and the smaller size of many apartments depresses demand for PCs in Japan.

- Outlook**
- PC penetration among citizens, now over 60% in Sweden, shows signs of levelling off in many countries. Alternative access devices are likely to emerge in future years; some serving primarily those who do not currently have connected PCs such as digital interactive television, others serving primarily those that do have PC access but want other advantages, such as mobile internet access through PDAs or mobile phones.
 - Citizen attitudes towards the internet may evolve in contrasting directions:
 - Attitudes to cost will improve since costs will probably continue to fall, both for suitable access devices and for the broadband connection to which customers are gradually moving.
 - Attitudes to issues of security as a barrier could worsen as internet use becomes more complex. Citizens are potentially risking financial security and the confidentiality of information every time they commit to 'interacting' online. The ability of governments and interested commercial parties, such as banks, payments unions, to control security problems, both within their own services and in creating industry standards, will be very important in determining how ready citizens feel to transfer significant offline activity onto on line channels.

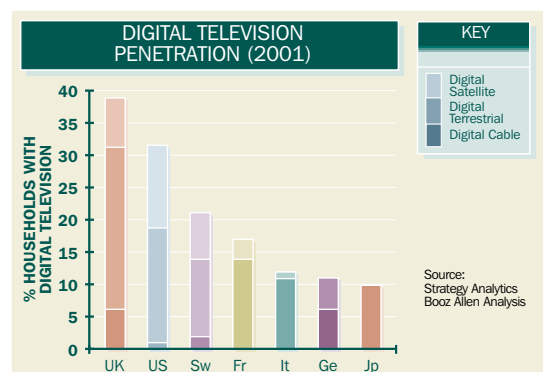


Fig. 45

2.1 Citizen Readiness - Findings

2.12 PCs are the overwhelming access device for now Access Devices

- **PC penetration** in the benchmark countries varies significantly from less than 30% to over 60% of households.
- The leading PC-using citizens are the Swedish, 64% of whom had a PC at home this year.
- Four other nations had passed the 50% mark by the end of 2001, Australia, Canada, Japan and the US, with the UK on 43% ⁽¹⁾.
- **Mobile devices**, are most prevalent in Italy, though in their current form they are not considered mainstream access devices this year, being used, overwhelmingly for simple voice communications. This may change by next year following the launch of handheld mobile access devices such as the XDA in European markets.
- For the moment only the Japanese, with their i-mode devices, access on-line services in any meaningful way, and indeed, for the Japanese, who are less comfortable with computer key boards, the i-mode⁽²⁾ device is the most significant form of access.
- The other significant exception to the access device paradigm is France, where PC penetration, at 28% is the lowest in the benchmark group, but where 6 million homes (25%) have a **Minitel** terminal, with which most French are comfortable making simple informational searches, and even transactions.
- **DTV**, has high potential as a future access medium, as the technology appears increasingly able to support interactive services. The UK leads the group in DTV penetration, and only in the UK is interactive digital showing signs of being a genuine access device in the near future.
- Japan leads the way also by far, in the uptake of **Personal Digital Assistants (PDAs)**, palm top devices such as the Palm Pilot or the Sharp Zaurus. These devices currently enjoy penetration an order of magnitude lower than mobile phones – generally less than 2%, but have the potential to play a significant part in access in the future. Firstly, they are likely to be quite widely available in a ‘connected’ form by the end of 2002, and secondly they offer a user interface ideal for surfing, without the use of a keyboard.

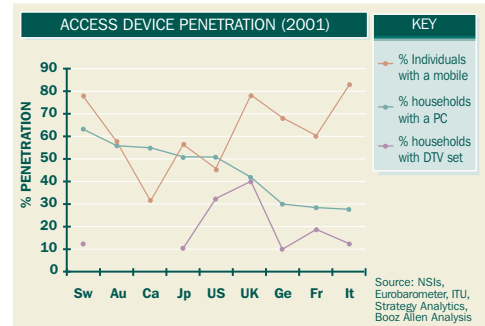


Fig. 46

Discussion of Drivers

- **Cost:** Interestingly, access device cost does not correlate closely with device penetration. The leading PC nations, Sweden, and Australia, are far from the cheapest. (For mobile devices the cost correlation with penetration is much closer).
- Clearly other factors are in play: In Sweden, the Government's **PC Reform** initiative has had an unmistakable impact on PC penetration among citizens (see case study later).
- **Japan** is the country with arguably the greatest availability of cheap PCs, driven by highly competitive consumer electronics markets, yet here the penetration is lower than might be expected – due to two significant **environmental barriers**:
 - Firstly, many Japanese homes have restricted space, available, making many Japanese think twice about installing a Desktop PC and associated peripherals in their homes.
 - Secondly, the Japanese have less liking for the keyboard than their western counterparts.

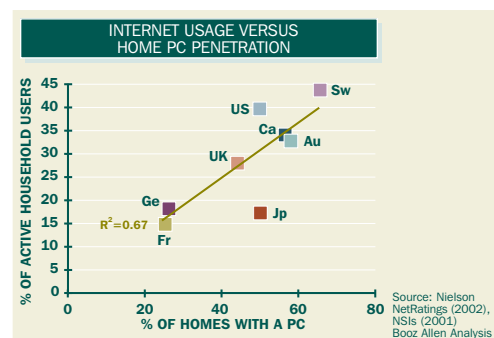
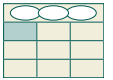


Fig. 47

Note (1): Figure is most recent comparable figure. Latest 2001/2 ONS figure is 49%

Note (2): i-Mode: Japanese incumbent DoCoMo's hugely successful mobile internet service



- The Leaders** ➤ The most enthusiastic nations appear clearly to be the English speaking group of four: Canada, Australia, the UK and the US.
- Italy leads the non-English speaking nations in enthusiasm, while Japan is clearly the most skeptical.
- Discussion of Drivers** ➤ The results suggest that the **English language** is linked with enthusiasm for the net, perhaps due to the wider availability of English language content.
- It is noticeable that Canada and Italy, both countries performing better than their closest cultural 'peers', have significant programmes of government support to boost readiness.
- The UK also has seen a relatively high profile government campaign to boost citizen readiness, which is perhaps a contributing factor for the relatively high enthusiasm.

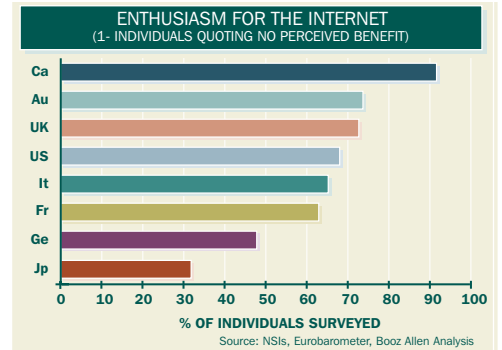


Fig. 48

2.1 Citizen Readiness - Findings

In attitudes to cost, and in confidence in their skills to use on-line technology, the Italians are clear leaders. The French are also relatively confident of their skills

- The Leaders** ➤ The most confident of their skills are the French, with the Italians and Canadians also fairing well. Japanese citizens felt significantly the least ready to use the internet in terms of their skills.
- Perceptions of cost as a barrier to were greatest for the Japanese, the Swedes and the Canadians. While the citizens of Italy, the UK and the US felt cost to be only a minor impediment to further internet use.
- Discussion of Drivers** ➤ The results seem to emphasise broadly the importance of using the internet and ICT in education to build the national skill base.
- Italy has made significant progress in using ICT and the internet in schools in recent years, while the Canadians and Swedes were among the first to push the internet into schools.
- Although ICTs feature prominently in Japanese schools, use of the internet in education remains extremely rare, with only 7 internet connected PCs per 100 pupils.
- Significant environmental factors exacerbating Japanese perceptions of deficiencies in skill are unfamiliarity with widespread English language content on the internet, and with using keyboards in general which do not lend themselves to the complex character set of the language.
- Perceptions of cost as a barrier seem to relate most closely to residential narrowband costs; which are high in Japan and Sweden.
- Type of access may also be a factor - narrowband access in Japan and Sweden is mostly metered, while in the UK and US it is unmetered.

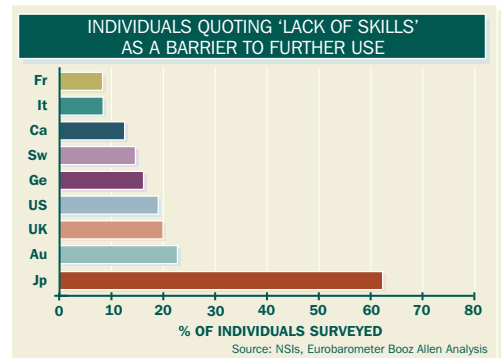


Fig. 49

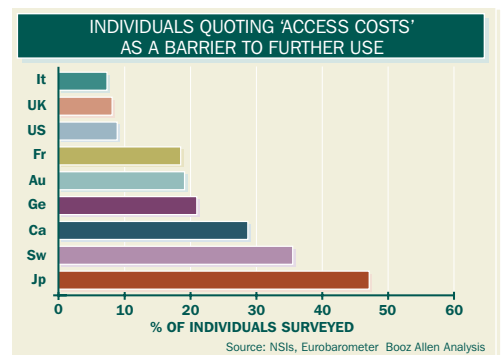
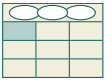


Fig. 50

2.1 Citizen Readiness - Policy Comparison

2.14 Five common approaches emerge across countries Overview

-
- Common Challenges and Themes:**
- Five broad themes in policy emerge from across the benchmark group, with the similarities in approach more noticeable than the contrasts.
 - **Supporting the penetration of 'access devices'.** Either in the home, as with Sweden's PC Tax Reform, or in public places, as in France's programme to develop 7000 PIAPs by 2003. France also offer a variant of the Swedish tax incentive scheme, where firms can make tax free gifts of PCs to staff for personal use. The US operate a scheme where employees can write off PC purchases against tax in certain circumstances.
 - **Building skills and confidence of target groups.** These may be potentially *excluded* groups, as in the case of France's significant Euro 150m campaign to train the unemployed, or the elderly, or even women, as targeted by German initiatives 'Mission internet' and 'Frauen ans Netz'...
 - ...or alternatively, potential *champions* such as teachers, as targeted by Japan's IT Training programmes.
 - **Establishing 'Driving Licences' or 'Passport' qualifications.** France, Italy and the UK have somewhat comparable schemes aimed at granting simple IT qualifications, particularly at low skilled groups such as the long-term unemployed. The Italians are supporting the EDCL as the 'standard' of basic IT qualifications through provision of fiscal incentives to businesses employing people with these skills.
 - **Building trust, or allaying fears.** The best examples of these approaches are the legislative approach of the US where the Child Online Protection Act 1998 (COPA) marked the start of actions by government to control content and schemes to provide 'kitemark'-type verification, or certification of safe services. The UK, and Sweden are pursuing this approach.
 - **Direct marketing campaigns.** Only the UK, with its UK Online campaign, is marketing directly to citizens, on any scale, the benefits of the net in general.
- Contrasts:**
- Two contrasting modes of government action can be seen between the US model of using national level legislation and federal government action to set the boundaries of content *from a distance*, and more interventionist direct provision of training in Continental Europe.
 - The real contrast is in where governments perceive the barriers to further citizen use: US see trust of content as the principal barrier, French and Italians a lack of skills, especially among disadvantaged groups.
- The most successful approaches:**
- **Skills and attitudes:** In Italy, familiarity with the internet is typically low, yet citizen focused policies to roll-out the European Computer Driving Licence have been perhaps the most extensive. The Italian government have provided teachers, government employees and students at 7000 schools with an opportunity to gain the EDCL, and in so doing have given this qualification some currency. Coupled with significant increases in the use of IT and especially the internet in schools, Italians are now among the most confident about their ability to use the internet.
 - **Access devices:** In Sweden, readiness is among the highest in the benchmark group, and household PC penetration is *the* highest in our group. PC penetration growth rates in Sweden over the last few years have also been the highest among our group. A crucial tax reform which gave employers the opportunity to offer their employees a tax deductible PC has been a significant driver of this performance (see case study).



- Sweden has the world's highest penetration of PCs in the home (64% in 2001). The main reason is the PC Tax Reform of 1998. Between 1997 and 1998 the proportion of employees with access to a computer at home rose from 48% to 67%. The spread of PCs has also led to widespread awareness of the opportunities for accessing information and services via the Internet.
- Companies play an active role in purchasing and administering the programme: companies receive a tax relief for the purchase of computers that they then offer to their staff to buy tax-free and to keep at home. The employees purchase the PCs from their employers through monthly 'payments', which are deducted from gross salary, normally over a time period of 3 years. The savings the employee makes is at least 28% and a maximum of 56% depending on the level of local tax and salary (at 50-60% income tax levels in Sweden are high).
- Under the scheme everybody with a permanent position is included in the offer, regardless of job title and not limited to those employees needing a computer at home for work purposes.
- The financing was provided by the banks, that saw this as a very risk free investment, as the government guaranteed the loans.
- The first wave of purchasing computers took place in 1998. The next one is under way (sales of computers in Sweden Q1 2002 are up 24%, while in Western Europe they are down 4%). As the programme continues, people are updating their PCs ensuring that Sweden's households have up to date hardware that are ready to run new generations of web based services once they hit the market.

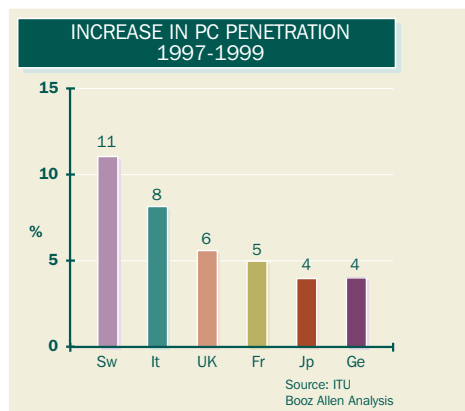


Fig. 51

- **Conclusion:** The tax reform has been a success for the following reasons:
- All parties benefited: the employees receive cheap PCs; the companies benefit from positive side effects like: high IT literacy of staff, increased possibilities for teleworking and reduced demands for pay rises as the discount on the PC is perceived as an extra salary component; the banks see it as a low risk investment; the government achieves its goal to increase PC penetration, connectivity and ICT literacy.
- It was provided to all employees and not only the employees that used computers for work, of whom many took their computer's home anyway. This ensured that a large group of employees were offered an opportunity to purchase a computer that otherwise would not have considered the investment. This in itself contributed to closing the digital divide.
- The benefit for employees is significant, as income tax and VAT in Sweden are high at 50-60% and 23% respectively.

Chapter 2:

The e-Maturity of Citizens

2.1 Citizen Readiness

2.2 Citizen Uptake and Use

- 2.21 Overall Findings and Outlook
- 2.22 Basic Internet Use: Penetration of Narrowband and Broadband
- 2.23 Fairness: Equality of Use Across User Segments
- 2.24 Sophisticated Use: Interaction and Transaction
- 2.25 Policy Overview: Common Themes and Successful Approaches
- 2.26 Case Study: "Frauen anz Netz" – Women to the Web

2.3 Citizen Impact

2.2 Citizen Uptake and Use

Definition Citizen Uptake and Use describes the degree to which a nation's citizens are making purposeful use of internet technologies

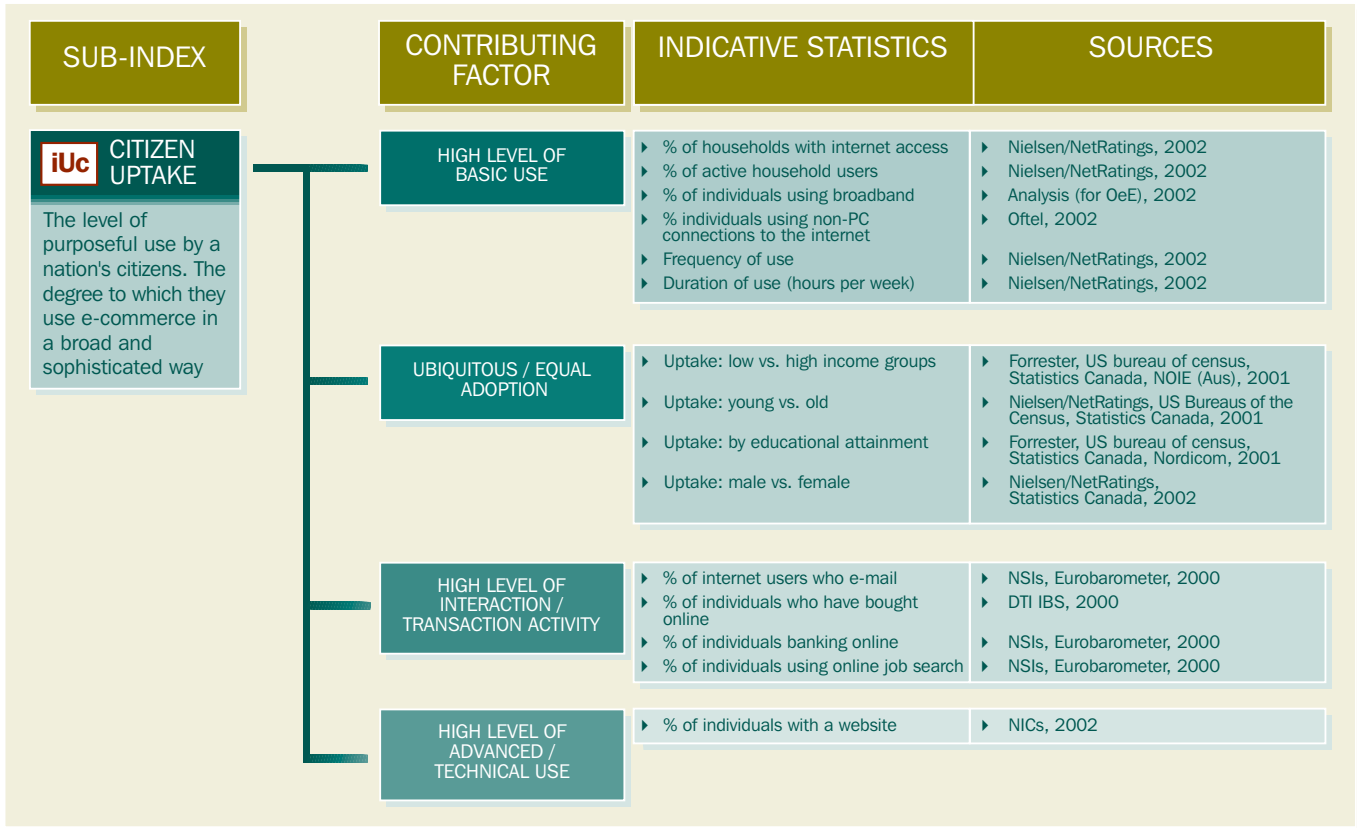
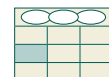


Fig. 52

- Definition**
- ▶ *Citizen Uptake and Use* describes the degree to which a nation's citizens are making purposeful use of internet technologies. *Citizen Uptake and Use* covers many facets of such use, but in particular *ubiquity*, *sophistication* and *equality*.
 - ▶ High levels of uptake and use are characterised by high levels of use across the whole spectrum: from *basic internet penetration* – household internet access, frequent and extended sessions, use of broadband and even diversification to non-PC channels; through *equality of use* - use by typically 'disadvantaged' groups; and finally *use for transaction and interaction* – including e-mail, banking and buying online and even publishing personal websites.



2.21 Overall Findings The nations with the highest levels of citizen uptake are Canada, the US and Sweden

The Leaders

- The leading countries all exhibit very high levels of basic penetration, and show strength across the range of other usage dimensions. A high level of basic use typically forms the foundations for other desirable elements of use including equality of use, and in particular, sophistication of use.
- Even the leaders, however, fall below the average position of the benchmark group in some areas. The US for example, is strong on almost all indicators except for equality of uptake based on income, where it is among the weakest.

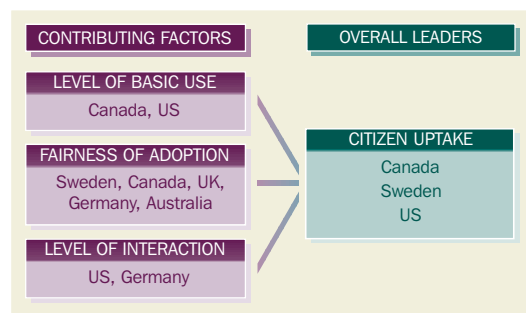


Fig. 53

- **Policy impact:** Government policy in the area of citizen uptake has centred on getting certain groups online rather than the whole population, to avert the emergence of a digital divide between those who have internet access and those who do not. A targeted approach to training has proved successful in some countries, particularly where external contributions extend the budget - for example the 'Frauen ans Netz' scheme in Germany, or the VolNet project to help voluntary organisations online in Canada.
- Government has not typically concerned itself with encouraging more *sophisticated* use of internet, such as online transactions. Among the exceptions are Canada, and to a lesser extent the US, which have both begun to mark out the boundaries of consumer protection for online transactions.
- **Environmental factors:** Given the rather targeted nature of government action around citizen uptake, many of the most important drivers are 'environmental'. The three most important drivers of citizen uptake are not beyond the influence of government policy – but they do largely fall outside of the accepted sphere of e-policy. Cost is a major driver of broadband uptake, particularly when viewed as the relative cost of broadband versus narrowband. The role of competition policy and regulatory action in driving cost is discussed in the 'Market Environment' Section. Similarly, the digital divide seems substantively driven by *workforce participation* in the context of both gender and age – emphasising the importance of using the internet at work in spreading use to citizens' personal lives. Finally, a significant driver of a people's propensity to buy online appears to be their collective ownership of *plastic payment cards*.

Outlook

- Household internet penetration continues to grow across the benchmark group, but much more slowly than during 1999 and 2000 when growth was particularly rapid.
- In the countries with the highest levels of penetration, particularly Sweden, some level of saturation may have been reached. However, since growth in most of the chasing pack has also slowed considerably, it appears that the saturation point may be reached at different levels in different countries.
- Policy-makers will increasingly focus on the *composition* of those who have internet access, or more directly the composition of those who do not. Across the benchmark group there is evidence of direct government action targeted at groups of late or non-adopters; the elderly, the unemployed etc.
- Increasing plastic card penetration in countries with currently low levels, such as Germany, along with the ongoing development of other payment solutions, and growing non-English language content should help to support increasingly high levels of B2C e-commerce in these countries.

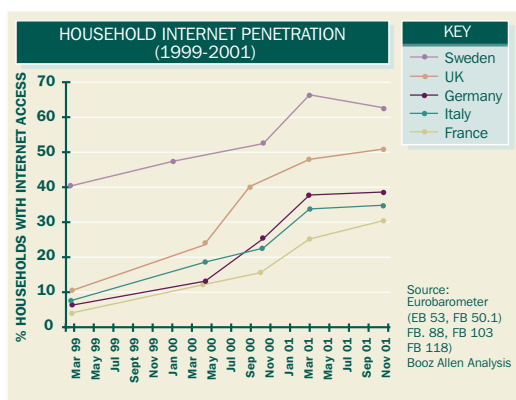


Fig. 54

2.2 Citizen Uptake and Use - Findings

2.22 Basic Internet Use

Sweden leads the group for home internet penetration, but Canada is ahead on broadband connections

- **Household internet access** in the benchmark countries varies significantly from less than 30% to over 60% of households.
- The leading nation is Sweden, with 67% of the population living in internet connected households.
- Three other nations have passed the 50% mark, Australia, Canada, and the US, with the UK next in line as they are currently on 49%.
- The French have the lowest household internet penetration among the benchmark group, at 25%, but this may be distorted by the 16m homes with Minitel terminals (60%). Minitel provides access to information and interactive services such as event information and ticket booking, and so some French users may see less marginal advantage from connecting to the internet.
- **Broadband uptake** is highest in Canada (16.3% of households), with Sweden a close second. Those countries with highest broadband uptake typically have users shared between more than one infrastructure – although the leading infrastructure is most often DSL. Germany, for example, has a high number of DSL subscribers, but very few cable modem users and thus only moderate broadband penetration. Only the USA and Australia break the mould, with cable modems accounting for the largest number of users.
- For the moment only the Swedish make significant use any other broadband technology, with Fibre to the Home (FTTH) accounting for a significant proportion of broadband use. This technology has also recently become available in Italy.
- **Mode of connection:** As distinct from issues of ownership (see Citizen Readiness) modes of use are evolving with Canada, the US and Japan leading the way with technologies such as Blackberry⁽¹⁾ for PDAs and i-mode for mobile phones. Although for the US and Canada there are strong reasons to suspect overlap of Blackberry with PC internet access, in Japan 35% of internet access is through a mobile device, suggesting mobile internet use offers a genuine alternative. Penetration of these technologies has already reached between 10 and 20% of internet users in the leading countries – though usually acting as an additional rather than main means of access. In other countries though, such as France and Italy, fewer than 5% of users use non-PC connections.
- **Frequency and Duration** of use are highly correlated. Frequency and duration are highest in Canada, the US and Japan where the average users is online for over 10 hours per month and more than 20 internet sessions.

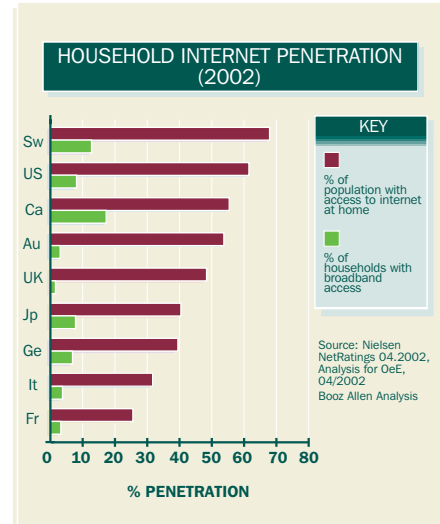


Fig. 55

Discussion of Drivers

- **Cost** appears to be a driver of both narrowband and broadband access. The relationship is not uniform, and analysis is complicated by changes in pricing. However, it is noticeable that the three most expensive narrowband countries (Italy, France and Japan) are among those with the lowest penetration rates.
- For broadband, cost also appears to be a driver of penetration. At the time of writing significant price cuts have occurred in the UK and Japan; early indications are that these are spurring demand. There is in fact a very strong correlation between recent prices and current levels of broadband penetration.

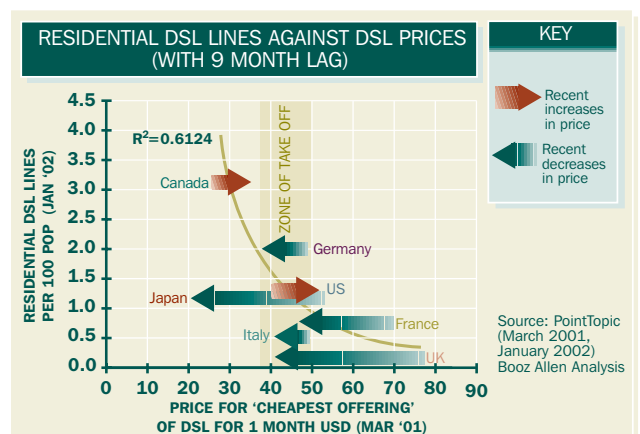
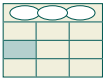


Fig. 56

Note (1): Blackberry, a handheld wireless device with keyboard, designed for mobile e-mailing



Discussion of Drivers (cont.)

- **Access device penetration** is a strong driver of basic internet use. Where PC ownership is highest, so is internet penetration. It is not clear quite which way the causal flow operates, but those countries with high internet usage rates now have been among the leaders in PC penetration for several years.
- The relationship between duration of use and take-up of unmetered access is not clear internationally, but in individual countries is quite revealing. In the UK for example, data shows the average unmetered user uses the net for twice as long as the average metered user.
- Lower prices have encouraged migration from narrowband to broadband services. As mentioned in the *Market Environment* section there seems to be a price zone of take-off; a psychological point (different for each country) at which migration from narrowband to broadband accelerates considerably.
- A further driver of broadband penetration, is the **price differential** between broadband and narrowband. As the chart opposite shows, citizens are price sensitive when it comes to substituting broadband for narrowband, and will only "trade up" when the price premium they are effectively required to pay looks low relative to the increased utility, or benefit, the service brings.
- Note: The chart (right) shows price differentials between a basket of narrowband prices and the best available DSL price. Thus it is possible for the best flat-rate DSL offer to undercut a metered narrowband basket, resulting in the negative price differentials for countries such as Sweden and Japan.
- In addition to cost, time since launch of ADSL services also correlates well with DSL uptake. Those countries which launched DSL first have also been those which have seen the most uptake. One plausible conclusion is that it is 'only a matter of time' before those countries with less broadband take-up will catch those with more. A possible objection to this statement though, is the argument that competition, both actual and potential, has driven both DSL launch dates and pricing of broadband. Where the threat of competition is greater, broadband service providers have launched services sooner to gain market share and have priced these services competitively.

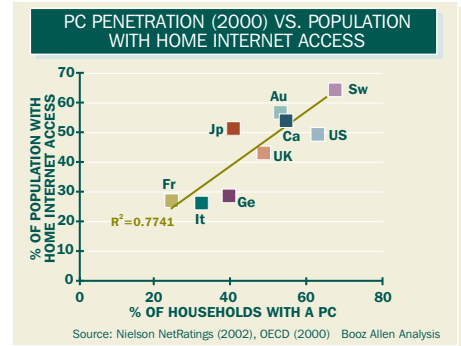


Fig. 57

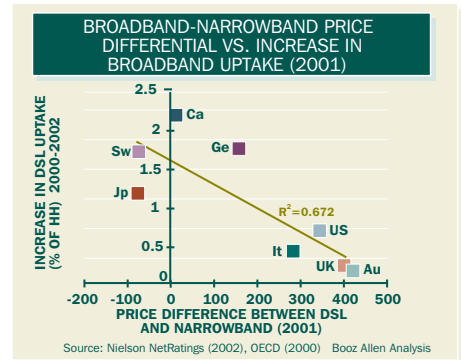


Fig. 58

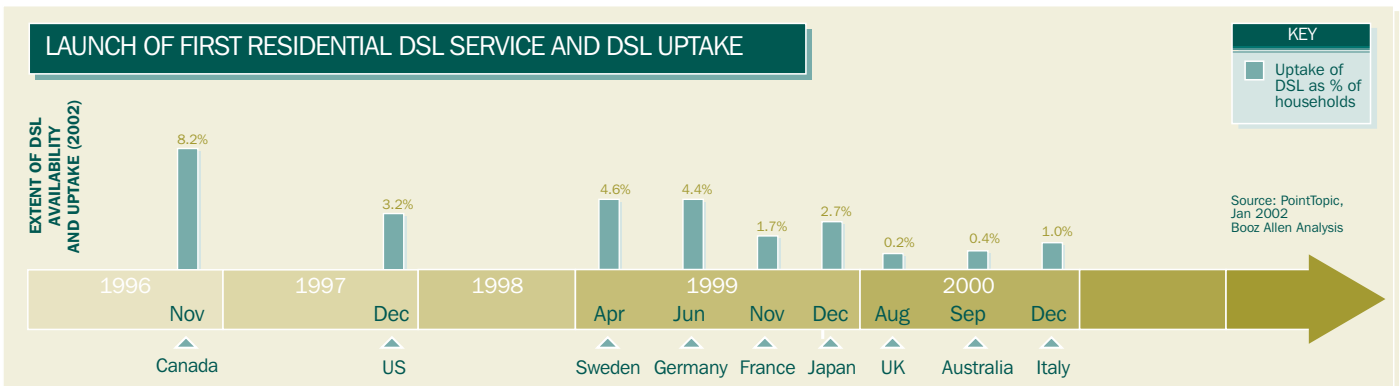


Fig. 59

2.2 Citizen Uptake and Use - Findings

2.23 Equality of Use

Sweden, Canada and the UK have the most 'equal' levels of internet use along dimensions of gender, age and income

- The 'digital divide' can have a number of dimensions, but the three most salient among the benchmark set are: gender, age and income.
- The female population, the old, and the poor tend to have lower rates of internet penetration. The age divide is the 'broadest' of the three divides.
- **The gender divide is narrow in all countries** compared to other divides such as age and income. The US, Australia and Canada have the lowest levels of gender divide, while Japan and Italy have the highest with male penetration rates around 1.3 times female rates.
- The **age divide** is considerable in all countries in our benchmark set, even with the 'threshold' between young and old set at the relatively young 35. Australia, Sweden and France have the narrowest divide, while Japan and the US have the broadest. The Japanese age divide is significant, with penetration among the under 35s around 4 times that of the over 35 group.
- The **income divide** also shows considerable variation between countries, being narrowest in Germany, Canada and the UK, while most noticeable in the US and Australia.

Discussion of Drivers

- **Social Structures:** For the gender divide, *female labour force participation* appears to be a strong driver. In the US, Sweden and Canada (3 of the top 4) female participation rates are over 65%. This emphasises the role that experience of the internet at work plays in determining the propensity to use the internet at home. Only Italy breaks the mould here, with a gender divide no greater than the other benchmark nations despite the lowest female participation by some distance.

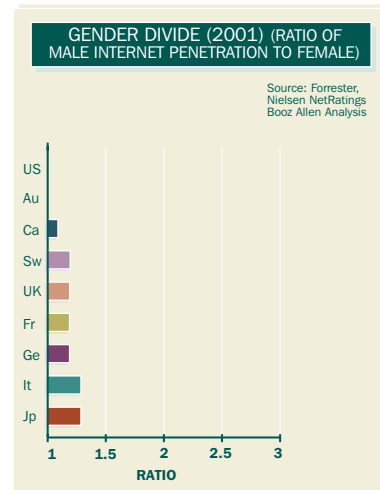


Fig. 60

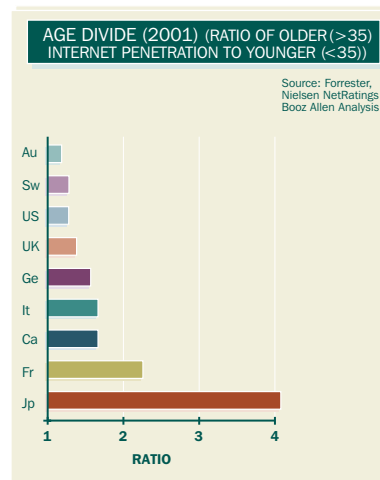


Fig. 61

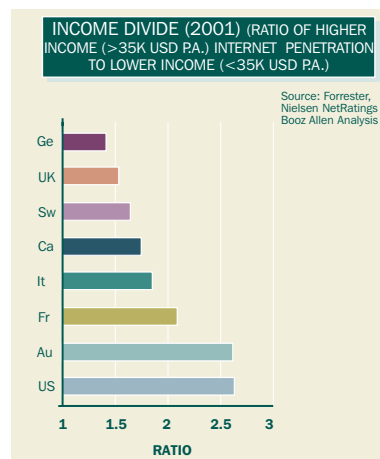
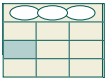


Fig. 62



Social Structures (cont.)

- The income divide seems to be more driven by *income inequality* than by *cost of narrowband access*. The countries with the greatest income-based digital divide (US, Australia) are countries with high overall income inequality. There is some sensitivity to access cost in some countries, though the US’s high inequality of access despite low narrowband charges, suggest the link is not strong.
- Similarly, *labour force participation* rates among older population segments correlates strongly with the age-based digital divide. This points again to the role of the internet in the workplace in driving overall uptake. The significant exception is Japan, where linguistic and cultural factors seem to be influential. This effect will become less important over time as most subsequent generations to leave work will do so with internet experience, and thus with experience of using the web.

Government Policy

- For the *age divide*, the Swedes and Canadians seem to have been most active with policies such as SeniorNet and Generations Can Connect respectively achieving local success.
- On the *gender divide*, the Germans have had considerable success. Schemes such as the widescale provision of subsidised training for women have helped (see case study) – with private sector support a success factor.
- The UK bucks the trend on the *income divide*, with considerably more internet penetration among lower income groups than may be expected, given relatively high levels of income inequality. Mass marketing schemes, such as the TV campaign for UK Online, may well have played a role in reaching these groups. The rapid improvement in ICT penetration in schools may also have contributed.
- Another approach to closing the digital divide has been the development of a network of Public Internet Access Points (PIAPs). Most governments in our benchmark group either directly provide access points, or they have a system of accreditation.

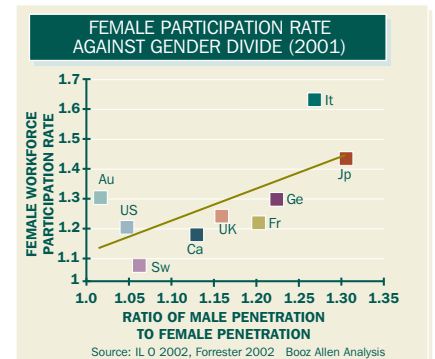


Fig. 63

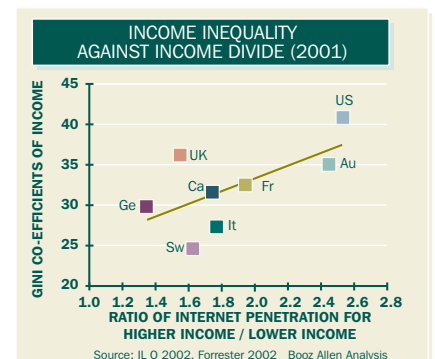


Fig. 64

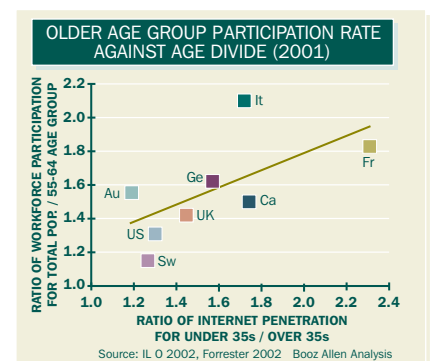


Fig. 65

Note: Gini co-efficients describe inequality in a single index. Used internationally in a range of areas, commonly income distribution

2.2 Citizen Uptake and Use - Findings

2.24
Sophistication
of Use

The US, the UK and Canada have the users who are most comfortable transacting online

- Less than half of all those who regularly use the internet are willing to engage in internet transactions, though there is considerable variation among users in each country.
- The citizens of the US, the UK and Canada are the most likely to find a value proposition in online buying, put concerns about trust behind them and take the plunge. The Germans, Italians and, somewhat surprisingly, the Australians, have been among the most reticent to buy online.
- For online banking, it is the Australians who lead, followed by the Swedes, Germans and Canadians.
- The different countries leading in banking online versus buying online suggests that the two types of transaction have different drivers.

Discussion of Drivers

- **Government Policy:** Government action to encourage online purchasing has been limited, most governments choosing to leave it to the private sector. Policy activity has been confined to the area of building consumer confidence through promoting best practice in secure payment systems and protection of information.
 - In Canada, the government worked with businesses to develop a standards document for businesses selling online called *Consumer protection for e-commerce*.
 - In the US, the government is currently enacting several bills guaranteeing consumer rights on the internet. Furthermore, the Supreme Court has made clear its intention to protect consumer rights in the online sphere.
- The countries where citizens have the highest propensity to transact online, are generally those where government has made conspicuous steps to create a framework for ensuring consumer confidence:
 - In Canada, the government worked with businesses to develop a standards document for businesses selling online called *Consumer protection for e-commerce*.
 - In the US, the government is currently enacting several bills guaranteeing consumer rights on the internet. Furthermore, the Supreme Court has made clear its intention to protect consumer rights in the online sphere.
- In those countries with fewer online consumers, action to reassure the consumer about the security of online transacting has been less common. In Australia, for example, the government has focused on facilitating business to business transactions by promoting attempts to create industry standards, rather than measures to ensure consumer protection.

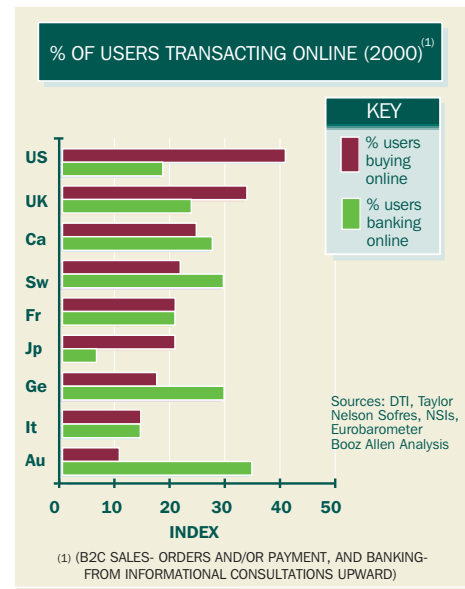
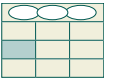


Fig. 66



- **Environmental Factors:** Internet penetration may be something of a driver of propensity to buy online. Familiarity with the internet and simple forms of transacting are essential in nurturing the confidence to buy online.
- A further driver of these purchasing results is use of plastic cards. For internet purchasing to be a convenient proposition the user needs to hold a credit or a debit card. Alternatives exist in some countries, such as the invoice system in Germany, though since these are rare the plastic card is still generally the key to online purchasing. Citizens' propensity to buy online roughly corresponds to their propensity to hold and use plastic cards (see figure below). Once again online banking shows a different pattern, since this does not require a plastic card.
- US online purchasing is boosted by two other unique environmental factors:
 - The US's strong culture of and comfort with, catalogue shopping, which has translated into comfort with ordering online.
 - A particular comfort with credit cards, which have been brilliantly marketed as *more secure* than cash (the *maximum* downside for theft or fraud is always \$50).
- Notably, Australia and Canada depart from the otherwise strong correlation, having a low % of on-line buyers, given their high plastic card penetration. In Canada, this is driven by Canadians' preference for debit cards with PINs at the point of sale. Most online payment software is designed around credit card payment – with no PIN, something about which many Canadians feel less secure.

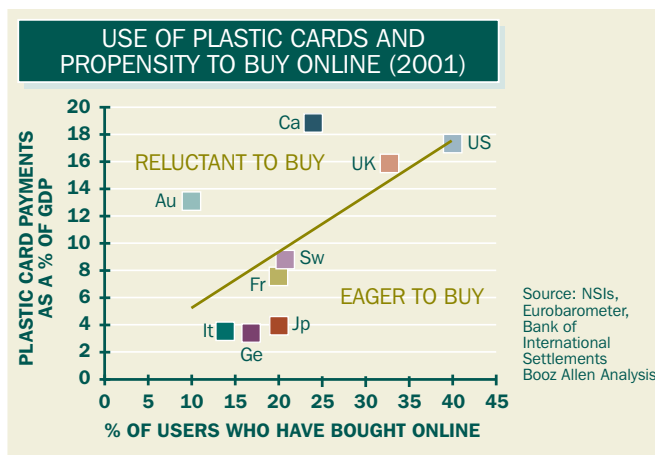


Fig. 67

Four common approaches emerge across countries

Common Challenges and Themes:

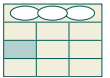
- Much government action to boost uptake and use is focused on *creating conditions* that encourage uptake, for example, low access prices and skilled citizens. These measures are described in earlier sections. Governments have also acted more directly to promote uptake:
 - **Getting citizens online** – surprisingly few policies target the entire population in an attempt to get them online, the UK's mass media marketing campaign to support 'UK Online' being a rare example. Providing government content as a 'draw' to get people online, and get them interacting (e.g. through job-employee match-making) is more common.
 - **Closing the digital divide** – almost every benchmark nation has developed, or is developing, policies in this area; -
 - Policies often take the form of directly targeted training, or awareness campaigns.
 - There are some examples of policies which *directly provide* access points into the homes of target groups (such as the elderly or the poor), through schemes such as "Wired Up Communities" which provides access devices, or "Computers Within Reach" which subsidises them for these groups.
 - Geographic divides have typically been tackled through either direct provision of infrastructure, or provision through co-operation with the private sector. For example the *Connecting Canadians* scheme provided broadband to extensive parts of remote Canada and made internet service available to residents. In the UK it seems to be regional government/development agencies who are taking action; for example the Welsh Assembly scheme (using EU contributions) to connect parts of Wales to broadband when the private sector initially failed to do so.
 - **Encouraging greater sophistication of use** – there is less activity in the area of encouraging more *sophisticated* use of the internet by a nation's citizens.
 - The Italian government's energetic push to put many of their core services online appears to suggest a strategy of using e-gov itself as a means to encourage more sophisticated citizen use (e.g. learning broadly applicable interactive skills, through mastering specific G2C interactions such as filing tax).
 - The US federal administration is alone in effectively allowing B2C purchases to be free of sales tax. Few governments participate directly in the drive to encourage consumer confidence too – accreditation of payment systems for example, is left largely to the banking sector with government playing a facilitating role. Voluntary kitemark schemes do not seem to have worked well anywhere so far, with no single standard gaining 'instant recognition' for consumers.
 - **Encouraging voluntary organisations online** – a few governments have attempted to specifically encourage voluntary organisations to get online. Canada have been most prominent through *VolNet* which offers both skill development and discounts on online equipment to voluntary groups.

Contrasts:

- **Which digital divide?** – all governments in the benchmark group see the digital divide as a problem which they have some role in tackling. Most take the approach of direct provision of some sort of internet training to target groups. Another common approach is to try and use IT in education to even out the divide – this is the American approach at the federal level to overcome the income divide. A major contrast, however, is which dimensions of the digital divide governments concern themselves with. In Canada, Australia and Sweden, wiring up rural areas seems to be a major goal, whereas in Germany women and the elderly have a relatively high degree of policy activity. In the UK getting the internet to lower income groups is a major policy area.

The most successful approaches:

- Approaches to increase sophistication of use and to increase the online population generally are yet to have full impact, more tangible success has been had in closing the digital divide and getting voluntary organisations online.
- Of the approaches to close the urban-rural digital divide, Canada's *Connecting Canadians* has had arguably the greatest impact, bringing 8,800 rural communities online.
- The most successful government scheme to get a target group online through training has been Germany's 'Women to the Web' (see case study).
- The government of Canada has also been very successful in directly intervening to support voluntary organisations going online; they have been by far the most active among the benchmark group in this area. *VolNet* provided a free internet account for one year, a 50% discount on internet connected computer equipment, and basic skills development training. 10,000 voluntary organisations used the scheme, which trained some 17,000 staff and volunteers.



- The Women to the Web campaign ("Frauen ans Netz") is a good example of successful campaigning in close cooperation with stakeholder engagement.
- Launched in 1998 as a PPP (Private Public Partnership: BMBF/BA with DTAG, private sponsors), the initiative has been chiefly coordinated by a non-profit "centre of excellence" (largely funded by the German Federal Government).
- Core activities are beginner level internet courses (fee = 28 EUR), which have been carried out in more than 200 places all over Germany. These courses specifically target women.
- Support of activities by "Brigitte" magazine significantly contributed to awareness building / PR.
- By February 2002, more than 100,000 women had taken a course within the initiative; another 200 have show interest or are already enrolled for future courses; by the end of 2001, the website www.frauen-ans-netz.de counted more than 13 million site visits by end '01. 98% of women having taken a course intend to continue to use the internet.
- In addition to these very definite 'local effects', Germany has made considerable progress at the macro level in closing the gender digital divide (see chart). The role of 'Frauen ans Netz', especially in promoting awareness among the target group, but perhaps also in directly providing training, may have been significant.

Conclusion: Women to the Web has been successful because:

- **PPP** - Involving the public sector, through *Brigitte* magazine, was crucial to the success of the training scheme. This involvement gave the scheme considerable free exposure – vital for generating any large scale uptake, but usually very expensive.
- **Targeted** – Rather than try to increase awareness of the benefits of the internet for all, or try to train everyone, *Women to the Web* was aimed very clearly at a target group: women. This focus enabled the generation of high levels of awareness much easier, and it meant that the impact would be more concentrated among a group the market seemed to be failing out of reach.
- **Pricing** – the training scheme was not free but subsidised. This enabled the quality of the training to be higher, and for the scope of the scheme to be much more scalable without 'burning' the budget. The message is that some offline segments *will* pay something for IT training, and that in some cases demand for such training is considerable.

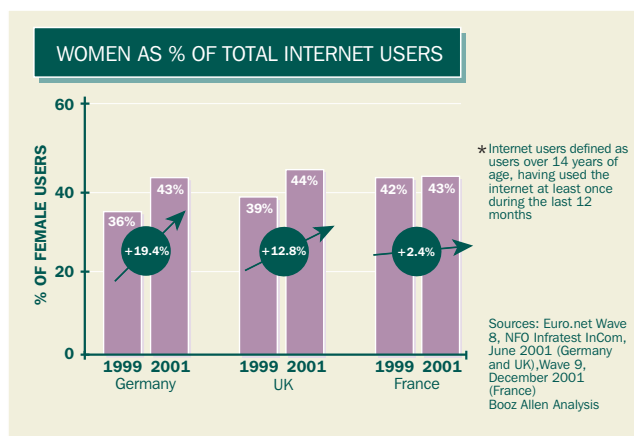


Fig. 68

Chapter 2:

The e-Maturity of Citizens

2.1 Citizen Readiness

2.2 Citizen Uptake and Use

2.3 Citizen Impact

- 2.31 Overall Findings and Outlook
- 2.32 Impact on Spending
- 2.33 Impact on Working and Behaviour
- 2.34 Policy Overview: Common Themes and Successful Approaches

2.3 Citizen Impact

Definition Citizen Impact describes the degree to which the internet effects genuine change in the lives of a nation's citizens

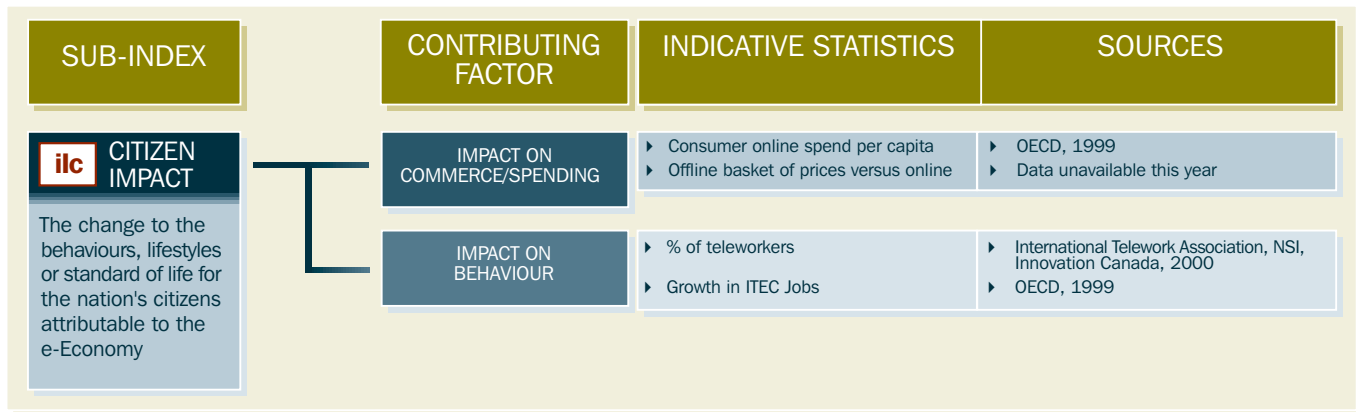
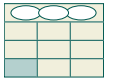


Fig. 69

- Definition**
- ▶ Citizen Impact describes the degree to which the internet effects genuine change in the lives of a nation's citizens.
 - ▶ The impact of the internet can be seen through a significant movement of spending from offline channels onto *online channels*...
 - ▶ ... and it can be seen through changes in working behaviour – both the sector and type of work, as the e-economy should stimulate an inflow of jobs into IT sectors, and change modes of working, for example, with citizens taking advantage of the possibilities for remote working.



The Leaders ➤ Even in the leading countries however, evidence of impact is limited so far. The US has seen by far the most impact on citizens; both in terms of spending habits and in terms of changes in behaviour. Sweden, UK and Australia are the other countries to have seen noticeable impact on its citizens.

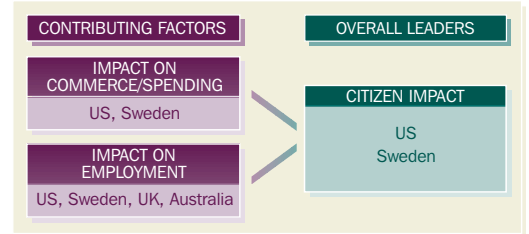


Fig. 70

Drivers of Impact ➤ The most important driver of citizen impact is citizen uptake, particularly the simplest forms of uptake such as basic internet penetration. Those countries with the highest levels of uptake have typically seen the highest levels of citizen impact. While the UK and Australia have seen perhaps more impact than their levels of uptake would suggest, Germany has seen less. The policy message seems to be: increase uptake and impact will tend to follow in time. Indeed, there is already some evidence of increased levels of e-commerce in Germany.

➤ **Government policy** has tended to focus on getting citizens onto the adoption ladder rather than encouraging them to spend larger proportions of income online. Most governments feel their role is more to create opportunities for online spending rather than actively encouraging it over offline channels. That said, there is evidence to suggest Canadian and US government attempts to support consumer confidence have had some success – these countries have citizens who are most confident about online spending and have most experience of it.

Outlook ➤ The amount spent online has risen steeply over the last few years, and this growth is likely to continue. As an individual becomes a more experienced user, his or her propensity to buy online increases considerably, so we can expect the online buying population to grow with time as users mature.

➤ ICT has had a significant impact on individuals' ability to remote work, and the accompanying take-up of these opportunities has been dramatic. We can expect this growth to continue, particularly as broadband increases the ability of home internet users to handle significantly more information, and mobile internet services further increase the scope of flexibility for working arrangements.

2.3 Citizen Impact - Findings

2.32 Online Spending

US consumers spend the most online per capita, but online consumers in Germany and Japan spend the most per buyer

- There is considerable variation in the value of B2C transactions per capita. The US has significantly the largest value of online B2C per capita.
- Looking only at the subset of the population who have bought online, it is German and Japanese consumers who spend the most online. The UK has a relatively high spend per capita, driven by high internet penetration rates, and a high propensity to buy online among users. The actual average spend per buyer is the lowest in the group – UK citizens make frequent purchases of small value.
- The strong US performance is clearly driven by a greater % of the population spending *something*, not that each one is spending more. Characteristic of large online buying populations is a large number of occasional buyers.

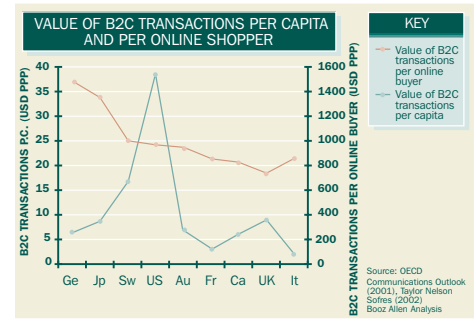


Fig. 71

Discussion of Drivers

- There are two forces at work here; one is the combination of propensity to be online and buy online among the general population, the other is the propensity to buy repeatedly or expensive items over the internet. There appears little relationship between the two. German online buyers' high spend per buyer p.a. is potentially due to a higher relative proportion of 'big-ticket' purchases such as cars.
- **Environmental Factors:** Two major environmental factors have supported the US consumers' propensity to spend online: the experience of US consumers with mail order shopping, and the rapid availability of compelling offers to US shoppers – such as Peapod online grocery. In Europe, major retailers in some sectors were slow to launch comprehensive offers, while many of the early launches disappointed users.
- **Government Policy:** Government policy has not generally prioritized getting users 'up the adoption ladder', seeking to focus instead on ensuring everyone is on the ladder and that opportunities to 'climb' are available. The Canadian government, for example, have tried to create a framework for greater online spending by publishing best practice guidelines for security standards in online transactional engines.

2.33 Employment in ICT

The ICT sector has grown fastest where it is the largest – in the UK and Sweden

- The proportion of a nation's citizens working in ICT has increased for all countries. This increase has not been uniform, ranging from 5.9% in the UK to just 2.3% in Germany.
- This increase in share of ICT has been greatest where the ICT sector was already the largest – in the UK and Sweden, and least where the ICT sector was smallest – in France and Germany. This suggests that the larger ICT sectors have successfully leveraged their position to gain most from the growth opportunities afforded by the expansion of interest in the internet.

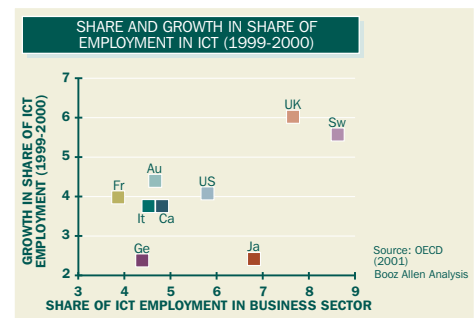
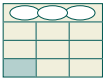


Fig. 72

Discussion of Drivers

- **Environmental Factors:** Foreign investment has been a driver. The UK has benefited from sharing cultural and linguistic ties with the US – these links have encouraged US ICT firms entering Europe to invest first in the UK. In general, the UK has the largest foreign direct investment rates in the EU – indicating other supporting factors such as flexible labour markets and low corporate tax rates may also be attractive for FDI.
- **Government Policy:** Government has generally sought to encourage the development of ICT jobs in all countries in the benchmark group, sometimes through direct financial incentives for FDI.



The Leaders ➤ **Teleworking:** There is considerable variation in the incidence of teleworking between citizens of the benchmark countries. The US leads with around 14% regular or occasional teleworkers.

Discussion of Drivers

➤ **Preceding factors:** The ability of an employee to work remotely is vastly increased by the availability of ICT, both at their remote location and at their usual work location. As figure 2.3(7) shows, household internet penetration correlates very strongly with teleworking.

➤ It is not obvious that the causality is all one way; i.e. that home internet penetration drives teleworking. The opportunity to telework may also drive uptake of home internet penetration. Some companies provide their employees with the means to work from home – for example laptops or even internet connections – and some employees value homeworking enough to make the investment themselves.

➤ **Environmental Factors:** There appears to be only a weak correlation between the proportion of *employment in the service sector* and the proportion of employees who telework. One would expect, *ceteris paribus*, that a service sector employee would be more able to work remotely than a secondary or primary sector worker. With teleworking levels everywhere low, we can expect this environmental factor to act as something of a future ceiling.

➤ **Working culture** may also drive propensity to telework. In countries such as Japan, business revolves around sustained rather than transactional relationships. As a result face-to-face interactions are very important. The strength or absence of this factor may be suppressing opportunities for teleworking in Japan and continental Europe, and supporting 'Anglo-Saxon' working cultures such as UK, Canada, Australia and the US.

➤ **Government Policy:** Concerted government action to promote teleworking is not common, though localised examples do exist. An exception is Italy, where the government is currently completing negotiations with the principal public sector unions to agree terms for teleworking in the public sector.

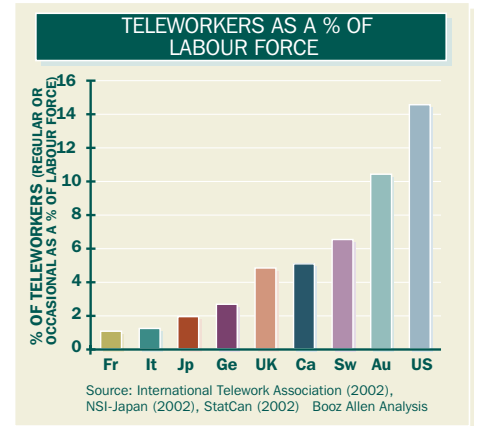


Fig. 73

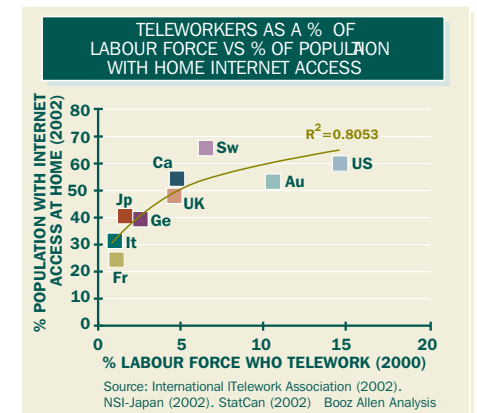
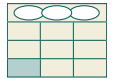


Fig. 74



Policy aimed at stimulating citizen impact tends to be focused on the early parts of the adoption ladder

Common Challenges and Themes:

- Few governments target policy specifically at the *citizen impact*, preferring instead to focus on the earlier steps on the adoption ladder. One exception is teleworking, where governments may seek to remove obstacles to wider adoption of the practice.
- **Encouraging teleworking** – Generally, governments have not involved themselves in private sector teleworking arrangements, with no country conspicuously encouraging teleworking. Most governments have also left public sector teleworking arrangements to be solved by local agreement and negotiation. A notable exception to this trend is Italy, where the government have facilitated an agreement on teleworking with most of the main trades unions, and are now driving pilots on teleworking through the public sector.

Chapter 3:

The e-Maturity of Businesses

3.1 Business Readiness

- 3.11 Overall Findings and Outlook
- 3.12 Penetration of Access Devices
- 3.13 Attitudes: Enthusiasm and Barriers to Uptake
- 3.14 Policy Overview: Common Themes and Successful Approaches
- 3.15 Case Study: Germany's "Innovation and Jobs" Action Plan

3.2 Business Uptake and Use

- 3.21 Overall Findings and Outlook
- 3.22 Basic Business Uptake:
- 3.23 Fairness: Equality of Use Among Small and Large Businesses
- 3.24 Sophistication of Use
- 3.25 Policy Overview: Common Themes and Successful Approaches
- 3.26 Case Study: Australia's "ITOL" Grants Scheme

3.3 Business Impact

- 3.31 Overall Findings and Outlook
- 3.32 Impact on Spending
- 3.33 Impact on Service Offering and Working Practices
- 3.34 Case Study: France's SESAM-Vitale Programme

3.0 The e-Maturity of Business

Framework
Summary

All findings in this chapter are based on international comparative analysis of business in the nine benchmark countries according to the framework and the indicators below

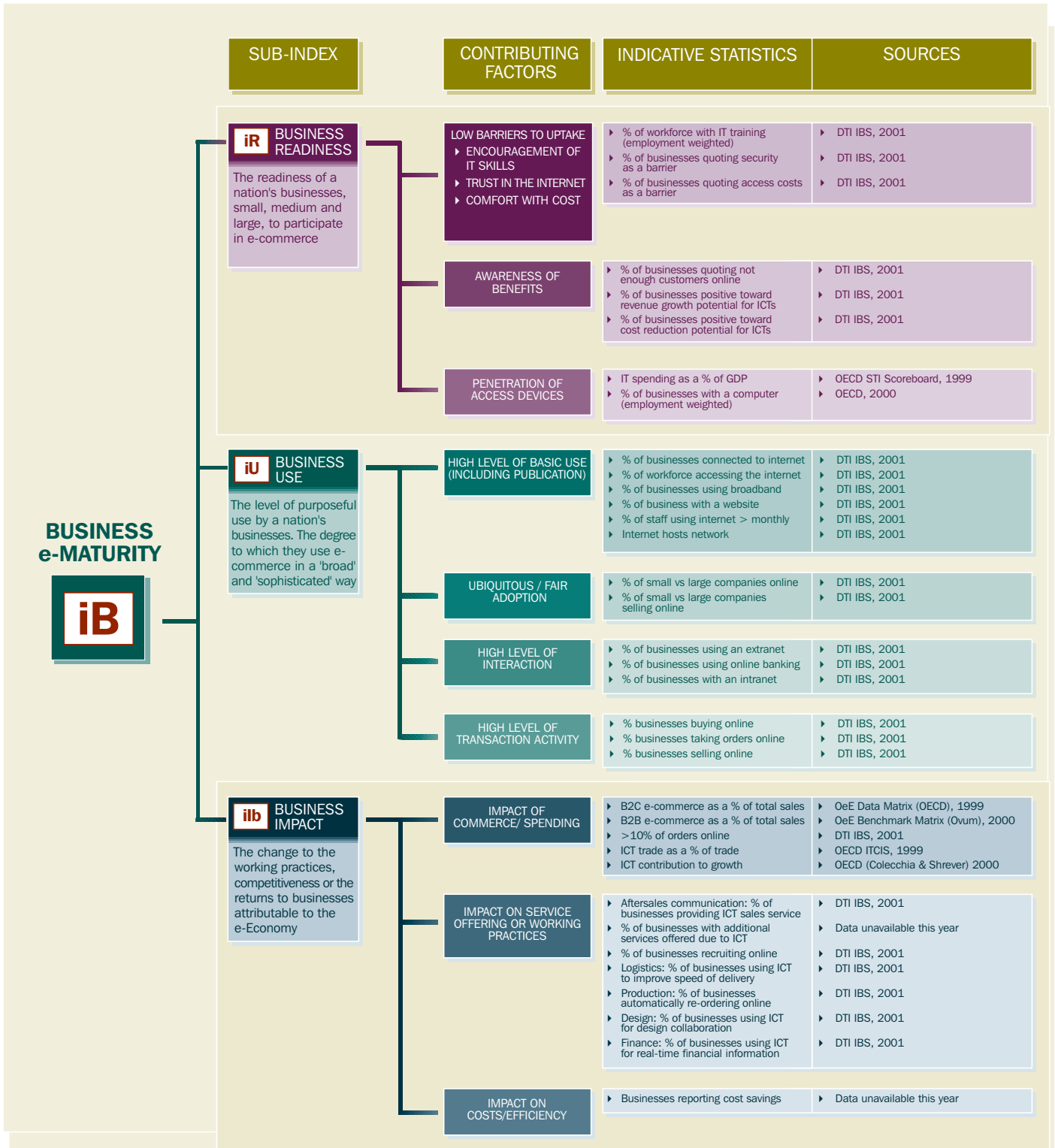
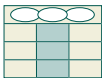


Fig. 74.1

Note 1) Department of Trade and Industry. International Benchmarking Survey



Business Readiness

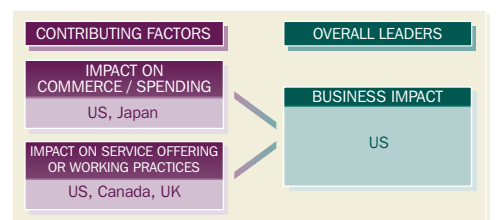
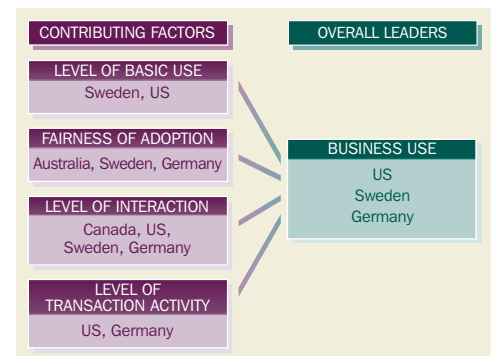
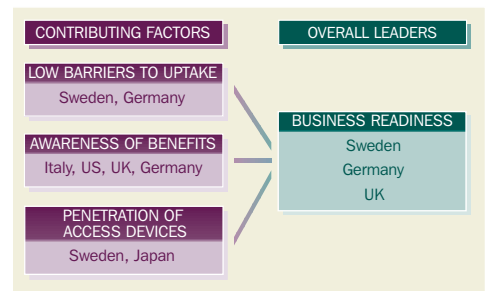
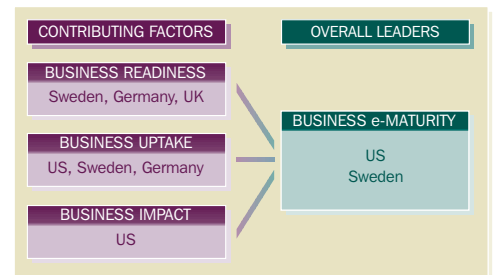
- Overall, the most advanced business e-economies are those of the US and Sweden. All three components, readiness, uptake and impact follow a similar pattern among the benchmark group.
- Government policy has tended to focus on delivering skilled workers through the education system, though some shorter term measures have also been successful. These include adult education and 'green card' schemes for skilled migrants.
- Business Readiness is strongest in Sweden, followed closely by Germany and the UK.
 - Sweden and Japan lead in terms of access device penetration – though businesses in these countries are quite sober in their assessments of the potential of the internet.
 - Italy and the US have the most positive business attitudes; combining optimism about the potential upside of ICT with relatively low levels of concern about the potential barriers to further uptake.
- It is noticeable that enthusiasm for the internet among small businesses in particular is dropping, as early pilots have failed to deliver the impact expected.
- Successful policies include the UK Online for Business programme and Germany's "Innovation and Jobs for the Information Society", backed by 1 billion Euros of training investment.

Business Uptake

- Policy emphasis around uptake has generally been on ensuring smaller businesses are supported in establishing a web presence, and in trading online. Information, advice and training are the typical means of support rather than financial incentives. Governments have also acted to lighten the regulatory burden, and to help firms find staff with the right skills.
- Sweden, Germany and the US have the highest levels of business uptake. The components of business uptake follow broadly the same pattern between countries:
 - Basic uptake is highest in Sweden and the US.
 - Fairness of uptake (i.e. SME uptake) is highest in Australia, Germany and Sweden.
 - Canadian businesses have the highest level of interactive use; while German and American businesses are the most involved in transactions.
- Policies which have had significant impact include the US' "Internet Tax Freedom Act" of 2001, and Australia's "ITOL" grants scheme, which has helped bring whole sectors on-line through collaborative projects.

Business Impact

- Impact on business' spending, and on key processes has been dramatically higher in the US than in any other country, with Sweden, Canada and the UK following.
 - Online spending by businesses is much the greatest in the US, as it is for consumers.
 - US workers also show the greatest evidence of significantly changing the very pattern of work, for example, through working on-line from home – 'teleworking'.
 - Japanese businesses have made some of the most significant changes to their service offerings by applying on-line technology, although little change in internal working practices.



Chapter 3:

The e-Maturity of Businesses

3.1 Business Readiness

- 3.11 Overall Findings and Outlook
- 3.12 Penetration of Access Devices
- 3.13 Attitudes: Enthusiasm and Barriers to Uptake
- 3.14 Policy Overview: Common Themes and Successful Approaches
- 3.15 Case Study: Germany's "Innovation and Jobs" Action Pla

3.2 Business Uptake and Use

3.3 Business Impact

3.1 Business Readiness

Definition Business Readiness describes the readiness of a nation's businesses to participate in e-commerce, given that it is available to them

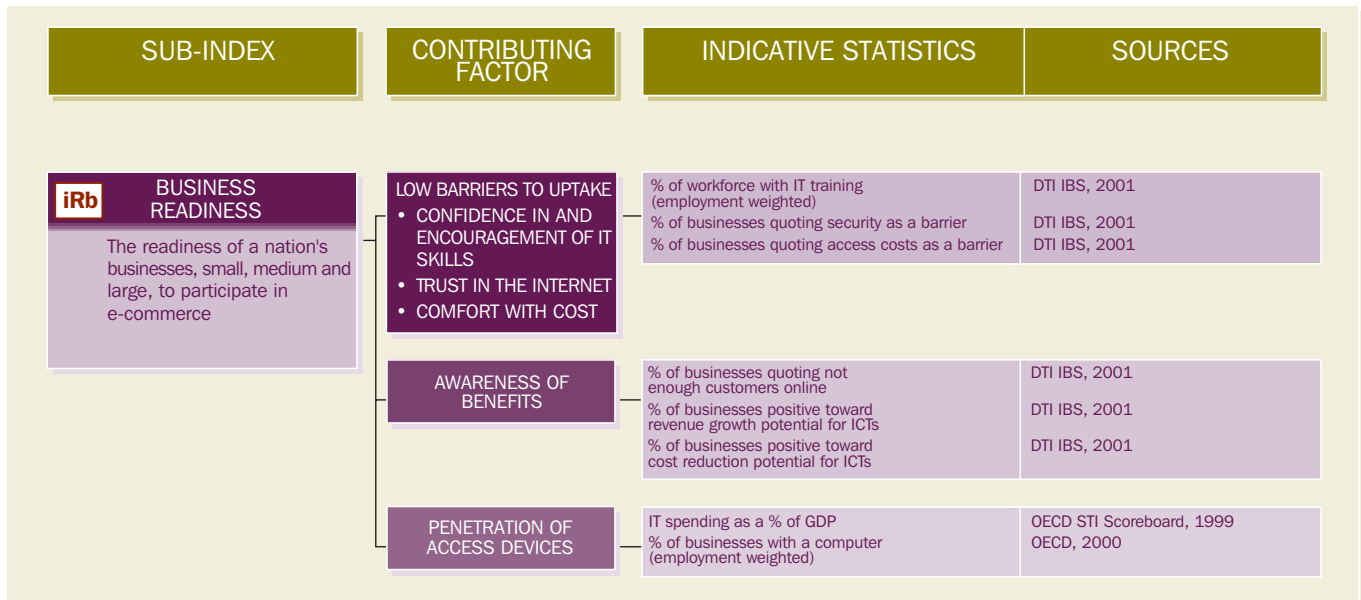
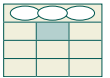


Fig. 74.6

Definition

- *Business Readiness* describes the readiness of a nation's businesses to participate in e-commerce, given that it is available to them. That is, to capitalise on the opportunities to participate that the environment affords.
- *Readiness* requires firstly an access device, such as a PC, but for businesses to participate in more sophisticated forms of e-commerce, it also requires investment in software and other forms of hardware (e.g. routers).
- It also requires a positive attitude towards the financial benefits of ICT, be they on the revenue or the cost side, allied with a confidence that demand is sufficient to support their offering .
- And it requires confidence and trust in the medium. A lack of faith in the security or value of participating in e-commerce, or in the ability of staff to cope with the systems, will depress *Business Readiness*.



Leading Nations

- Sweden and Germany, in particular, combine high access device penetration with low barriers to uptake.
- There is a tendency for businesses in those nations which have the highest overall readiness to be the most sceptical about the internet's benefits.
- Sweden and Germany, for example, having among the highest business readiness scores, do so *despite* considerable scepticism about the potential for the internet among the business community. Businesses may feel 'burned' by their early experiences.
- The UK combines the elements of business readiness most neatly – relatively high access device penetration, limited concern about barriers to further use and upbeat business attitudes towards the advantages of ICTs.
- More generally, it is clear that businesses are increasingly ready to use the internet – but only if their concerns over security are met. Business attitudes across the benchmark group also indicate that additional ICT use will probably be directed toward cost control rather than revenue growth.

- **Successful policies:** Of the three parts of business readiness (access device penetration, awareness of benefits, barriers to uptake) it is 'barriers' which have received most government attention – particularly barriers to update caused by skills deficiencies within the workforce. Typically this action has focused on schools and universities in attempts to boost IT skills in the long term, but there are some examples of successful adult education schemes – for example in Italy. Policies aimed at 'awareness of benefits' have been rather scarce, though the UK government has successfully generated brand recognition for its *UK Online for Business* initiative, a factor which may have driven the success of its advice network. Policies directly promoting access device penetration have been even less common – though some broader policies to encourage investment or even R&D are beginning to provide some tax relief on hardware spending.

- **Environmental factors:** Business concerns about both high cost of access a modest online market for their services match well with recent reality: access costs have been high, and buying populations small. Governments have generally recognised that tackling these concerns at source is a more valuable strategy than attempting to influence business perception per se.

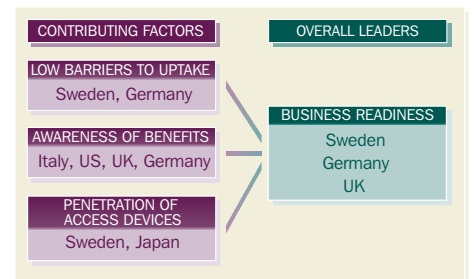


Fig. 75

3.1 Business Readiness - Findings

3.11
Overall
Findings

The nations with the highest levels of business readiness are Sweden, Germany and the UK

Outlook

- Business access no longer appears a major barrier to uptake. Almost all businesses, even the smallest, now have a PC, although PC *density* within businesses is likely to grow further.
- Investment in more advanced hardware, such as internet routers and so on, will be crucial to driving the next phase of e-commerce – increases in online transacting and greater levels of real-time interaction (for example between suppliers and manufacturers).
- ICT expenditure by both businesses and citizens grew strongly in the late 1990s (see figure on right) for the entire benchmark group, suggesting that businesses have been embracing the challenge.
- Continental Europe has grown most strongly (France, Germany, Italy) while Sweden has also seen strong growth, though it started from a strong position. Meanwhile while the UK's growth rate has been much slower. The US and Japan did not grow during the same period.
- (Note: The declining role of ICT expenditure in GDP in the US is partly distorted by the very strong growth of US GDP during the late 1990s, and may be influenced by the strength of the dollar over this period).
- Initial analysis of the 2002 international survey of businesses from the UK's DTi indicates that the differences between benchmark countries in business readiness is narrowing. There are also indications that set-up cost is increasingly seen as a barrier for businesses in attempting to get further involved in e-commerce.

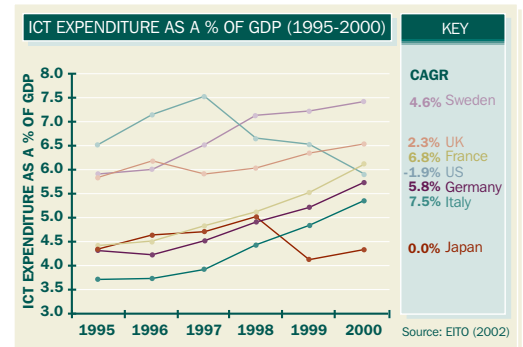
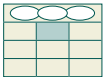


Fig. 76

PCs as access devices for e-business are no longer a barrier to progress. Investment in more advanced ICT equipment is greatest in Sweden, Australia



- The question of whether a nation's businesses have the basic access equipment to participate in the e-economy is becoming more complex. PCs are now near ubiquitous, and differences between countries are only revealed by examining the wider investment picture (see chart, right).
- **PC penetration** among businesses in the benchmark group is now generally between 90 and 100%.
- Penetration of more **advanced access tools** – such as hardware, software and even services (indicated by % of GDP spent on IT) is more revealing. Here Sweden, Australia and Canada spend the most, Italy the least.
- Similarly, **density of PCs** within a business (indicated by the PCs / 100 population) follows the same pattern - with the notable exception of the US. Again, Sweden, Australia and Canada (and the US) have the greatest density, while Italian businesses have the least.

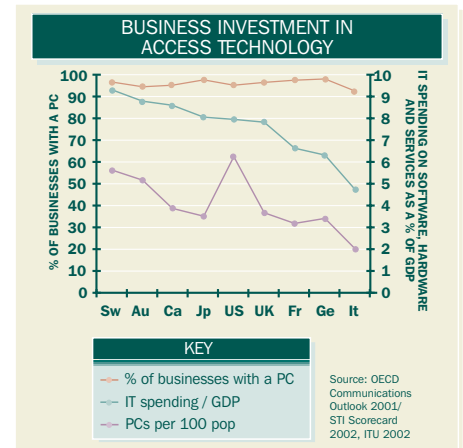


Fig. 77

Discussion of Drivers

- **Government Policy** in the area of business readiness has generally been focused on creating conditions which foster business investment rather than directly subsidising or even providing access devices.
- Exceptions include the Italian government scheme training entrepreneurs and then providing them with a 'starter kit' including a PC, and more generally allowing all incremental investment to be tax deductible. The UK government also offers a tax break towards the cost of PC and communications equipment.
- **Environmental Factors:** Cost appears a weak driver of business access device penetration, perhaps because businesses are not price sensitive to IT 'essentials' such as access devices, or because of businesses' ability to gain preferential prices through bulk purchasing.
- However, there is extensive evidence that *over time*, falling PC prices have driven business uptake of these access devices – in real terms PC prices having declined by around 20% between 1995 and 2000 – a period during which PC penetration has increased by between 100-200% for the benchmark countries.
- Those countries which have seen the greatest increase in PC penetration between 1995 and 2000, were generally also those countries which saw the largest decline in IT Equipment prices (see chart, right).

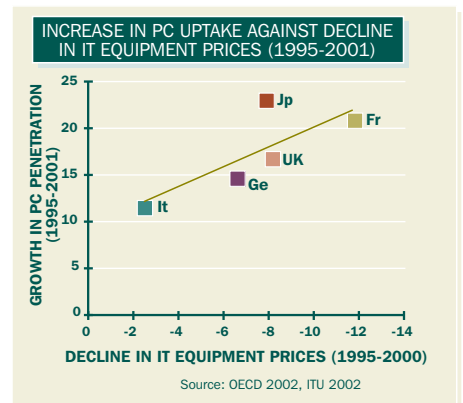


Fig. 78

3.1 Business Readiness - Findings

3.13 Enthusiasm Enthusiasm for the Potential of e-commerce is highest in Italy and the US

- Businesses in the benchmark countries are considerably more positive about the potential for ICTs in cost reduction, than in revenue growth.
- The nations with the most enthusiastic businesses appear to be Italy and the US – countries at opposite ends of the scale of experience.

Discussion of Drivers

- Businesses have learned from the ‘dot-com crash’ that the internet’s potential to boost top line performance is limited, but they remain noticeably more confident that ICTs do have a role to play in cost reduction (see chart, right).
- The findings suggest that **experience** has dampened enthusiasm – especially in Europe. Italy, the most enthusiastic business community, was perhaps later to the dot com boom and hence less burned in the crash.

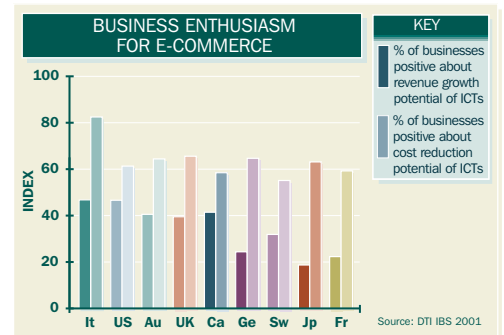


Fig. 79

3.13 Barriers Business attitudinal barriers to uptake are lowest in Sweden, the US and Germany

- In general, there is some similarity between attitudes of businesses in each of the benchmark countries (see chart, right).
- Business concerns about access costs, customer base and security are highest in Canada, Italy and France.
- Concern about security is the principal barrier in all countries except Sweden, with well over 50% of businesses citing security concern as a barrier to their pursuit of e-business.
- Between 40% and 50% of businesses believe that there are still insufficient on-line customers to make e-business a priority for them.
- And access cost is a concern - albeit a lesser one, in most countries – lowest in Sweden and Germany.

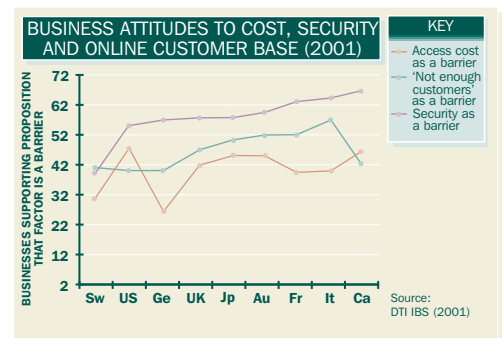
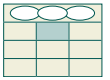


Fig. 80



- Beyond attitudes, the IT skills of the workforce also an important determinant of Business Readiness. Swedish, French and German businesses provide the most IT training to their staff, with Italian and Japanese providing the least (see chart, right).

Discussion of Drivers

- **Government Policy:** Governments are reacting to business concerns. On the IT training side, Italy and the US are towards bottom of the scale, with only around 50% of businesses providing IT training for staff. Both of these national governments have recently changed tax law to promote investment in training – perhaps in response to this situation.
- In Canada, where business concerns about security are the greatest, the government has taken early steps to facilitate the development of industry-wide standards for customer protection.
- **Environmental Factors:** If anything, business approaches to IT training reinforce skill deficiencies caused by the education system rather than redressing them. For example, Italian and Japanese businesses offer the least IT training, while they also have the lowest PC density (number of PCs per pupil) in schools. Sweden has the highest PC density in schools, but also the highest level of IT training within business. General perceptions of the importance of IT seem to be driving both use of PCs in education and business needs to train staff in IT.
- **Cost:** Concern about access costs has been driven - particularly among SMEs by the relatively high cost of leased line circuits. In the US cost concerns are high despite relatively low leased line costs! This may just be a reflection of how cost conscious businesses are in the US. The advent of broadband has the potential to address these concerns for a large proportion of SMEs.
- **Lack of customers:** Again, business attitudes mirror reality - businesses complain most about a lack of potential online where internet users have the least experience of buying, such as in France and Italy. Given that internet penetration for businesses is so high, it is likely to be potential B2C sellers who feel this barrier most. The policy implication is that persuading business of the benefits of e-business will be difficult until the size of the online buying community grows.

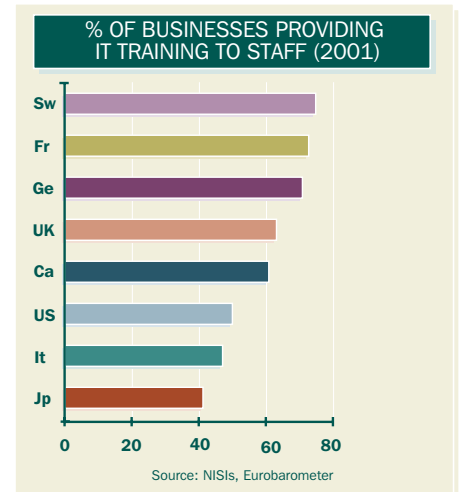


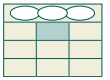
Fig. 81

3.1 Business Readiness - Policy Comparison

3.14 Four common approaches emerge across countries Overview

Common Challenges and Themes:

- Four broad approaches to improving business readiness emerge from across the benchmark group:
- **Publicity/Research** – Much of business readiness is about attitudes, and almost all governments have made some effort to improve business attitudes – either towards the internet in general or to assuage particular concerns of the business community.
 - The UK approach has included straight forward *marketing* through TV advertising for the *UK Online for Business* support network.
 - Other approaches, such as the recently launched *ECOM* network in Japan host exhibitions and symposia to spread experience of best practice. In Italy a national awareness campaign is being driven from 100 multimedia centres which also provide training to 45,000 entrepreneurs.
 - A very popular approach is to provide government information on e-business through a dedicated portal, such as the Canadian BusinessGateway.ca which provides a single access point for all government services and information needed to start, run and grow a business.
 - Another popular approach is to conduct primary research of business attitudes, either to ‘spread the gospel’ among reticent businesses, or to identify problems which need prioritising. Canada have one of the most frequent surveys of business attitudes. The UK government operate annual ‘e-commerce awards’ as well as publishing best practice case studies for e-business, and they conduct an annual benchmarking study of the state of e-business internationally.
- **Tax breaks for training** – The government of the US allows businesses to write off IT training against tax through the *Technology Education and Training Act (2001)*. A tax credit of 100% applies to the first \$1500 of IT training provided by a business on behalf of an employee. With much wider scope, the Italian government have recently committed 4bn EUR to a policy which allows firms to write off tax on any investment over and above previous levels (5 year average). This includes investment in ITC training as well as equipment and software.
- **Access device tax breaks** – There are very few schemes which use the tax system directly to encourage business investment in access devices. As mentioned, the Italian government are allowing tax write-offs on all incremental business investment – this explicitly includes ITC equipment. More directly, the Italians offer a national training scheme for entrepreneurs (currently 45,000 enrolled) which concludes with an exam – those who pass the exam receive an IT set (PC, printer etc.).
- **Filling the IT skills ‘gap’** – All governments have made moves to increase the use of IT in education to create a generally IT-literate post-school population, and most have also attempted to increase the *highly IT skilled* graduate population. A good example of the latter is the UK scheme *Skills for the Information Age*, which brings business and universities together to ensure the IT skills being developed in graduates are those skills desired by business. Given the long lead time on these initiatives, a few governments have also made efforts to increase the pool of potential IT employees to satisfy business demand which typically outstrips supply.
 - The government which has gone furthest to fill the IT skills gap has been Germany – perhaps understandable given that they have the largest shortfall in Europe. To meet a target of an additional 250,000 IT specialists by 2005, federal schemes have included encouraging businesses to provide IT training to staff. As a very immediate solution, the federal government have provisioned 20,000 Green Cards for foreign IT specialists until 2003. By February 2002 over half had already been taken, with 2-3 new jobs created around each Green Card specialist. The policy was, and remains, controversial.
 - The US government has also supported adult education in IT, as part of the *Adult Education Programme* stemming from the *Workforce Investment Act*. The Department of Education provides grants to states which then distribute funds via a competitive tender process among training service providers.

**The most successful approaches**

- Clearly a successful 'emergency' approach to filling the IT skills gap has been the German Green Card scheme. The take-up of appropriately qualified specialists has been large with over half of the cards being taken before February 2002. A particularly interesting dimension of impact has been the 2-3 jobs which are estimated to have been created around each Green Card – the IT specialist effectively creating jobs for less specialist support. The value of the policy extends beyond simply filling IT vacancies, into job creation and potentially genuine skills transfer from the specialist. The scheme has, however, caused considerable political controversy in Germany.
- The UK government's *UK Online for Business* has been successful in two regards. Firstly, in terms of creating awareness that there exists a support network for businesses getting online, the mass marketing approach has been a useful fillip to more internationally common techniques. 'Brand' awareness among SMEs now runs at 46%. Secondly, and more importantly, UK Online for Business is being used; by 2001 the scheme had helped over 160,000 businesses. Perhaps this owes something to the multi-channel approach. The project provides the standard physical presence, though comparatively extensively with >100 centres but these are supported by a telephone helpline, a website and detailed advice from 'virtual advisers'. The remote contacts have been used extensively; the helpline fielding 38,000 queries, the website attracting 225,000 unique users and the virtual advisers providing indepth advice on demand to 1000 businesses. The UK have spent more on their version of the 'business support' scheme than most – £67m over 3 years.
- Of the few adult training schemes which aim to provide *expert skills* (as opposed to simple user skills), the Italian scheme has perhaps been the most successful. It is somewhat premature to judge ultimate success, but already 45,000 entrepreneurs are enrolled. A strong potential driver for this scheme is that at the conclusion the trainee is rewarded with an IT set (PC, printer etc.) Alternatively, the role of the Italian government in pushing qualifications as standards (inc. the ECDL), may encourage attendees of training *in general*. The government are pushing all public employees to take accredited courses and making available other training resources for targeted sectors (e.g. unemployed).

3.1 Business Readiness

3.15 Case Study Germany – Filling the ITC skills gap through the "Innovation and Jobs" Action Plan

- Objectives**
- Measures to boost the supply of IT specialists were a prominent part of the "Innovation and Jobs in the Information Society" action programme. The lack of IT specialists is a major issue for ICT in Germany, where there is a relatively low proportion of graduates in computer science. An estimated 75,000 roles were unfilled in 2000 because of a lack of sufficiently skilled applicants – perceived to be a significant brake on growth of the ICT sector and the German economy in general.
 - The Action Programme began in 2000 with a target of attracting an additional 250,000 IT specialists by 2005.
- Actions**
- A combination of long and short term measures were used to tackle the problem, aiming to alleviate current acute shortage of IT specialists while building the foundations to avoid the need for such emergency actions in the future.
 - The Federal Government concluded agreements with unions and management to create the action programme. Unions and management were represented through the 'Alliance for Jobs, Training and a Competitive Germany'.
 - **Short term** measures were laid out in the "Immediate action programme to meet demand for IT specialists in Germany." A green card for 20,000 IT specialists was the most high profile immediate action. The scheme affords non-EU specialists with a degree or an appropriate offer from a German employer the right to work in the country for 5 years.
 - **Long term** measures focused on training, both during education and once already in the workforce:
 - The industry itself committed to a 50% increase in the number of IT training places, from 40,000 to 60,000.
 - Federal Labour Office committed to an increase in ICT training courses with spending of around 1bn EUR.
 - Government committed to an increase in the number of computer science places at universities through spending an additional 50m EUR, and an improvement in the applicability of those courses for subsequent work in the sector.
- Results**
- A recent progress report on the Action Programme has concluded that the target of attracting 250,000 new IT specialists by 2005 should be hit. The measures had already created an additional 160,000 IT specialists by 2001.
 - By Feb 2002, 10,000 of the green cards had been taken. Although the reception was less strong than was hoped for, by the end of 2003 all the cards should have been issued. The benefits of these green cards go further than direct job creation, by 'removing the blockage' of a skills gap in the labour market, each card has created around 2-3 associated new jobs.
 - The longer-term measures are also showing early signs of success:
 - The ICT and media industries had created an additional 30,000 training places by the end of 2001 - even more than they had committed to provide.
 - Federal Labour Office training schemes showed an additional uptake of 10,000 in 2001 (around 30% increase) - and with an improved rate of integration into the workforce (>70%).
 - Numbers of computer science students enrolling in 2000/1 were up around 100% on figure from 1997/8.
- Key Success Factors**
- **Coherent action plan.** The German federal government solution to the IT skills gap problem represented a coherent solution created from a combination of measures – each initiative reinforced the impact of the others. Combining long term and short term actions provides the dual impact of alleviating the symptoms in the short-term while neutralising the basic problem over the longer-term.
 - **Co-operation.** The government heavily involved both unions and employers in devising the action plan. This enabled the government to 'get something back' from each – additional training from the employers, and backing for the green card scheme from the unions. In addition, this agreement gave government the additional political backing it needed to push through a controversial set of changes.

Chapter 3:

The e-Maturity of Businesses

3.1 Business Readiness

3.2 Business Uptake and Use

- 3.21 Overall Findings and Outlook
- 3.22 Basic Business Uptake
- 3.23 Fairness: Equality of Use Among Small and Large Businesses
- 3.24 Sophistication of Use
- 3.25 Policy Overview: Common Themes and Successful Approaches
- 3.26 Case Study: Australia's "ITOL" Grants Scheme

3.3 Business Impact

3.2 Business Uptake and Use

Definition Business Uptake and Use describes the degree to which a nation's businesses are making purposeful use of internet technologies

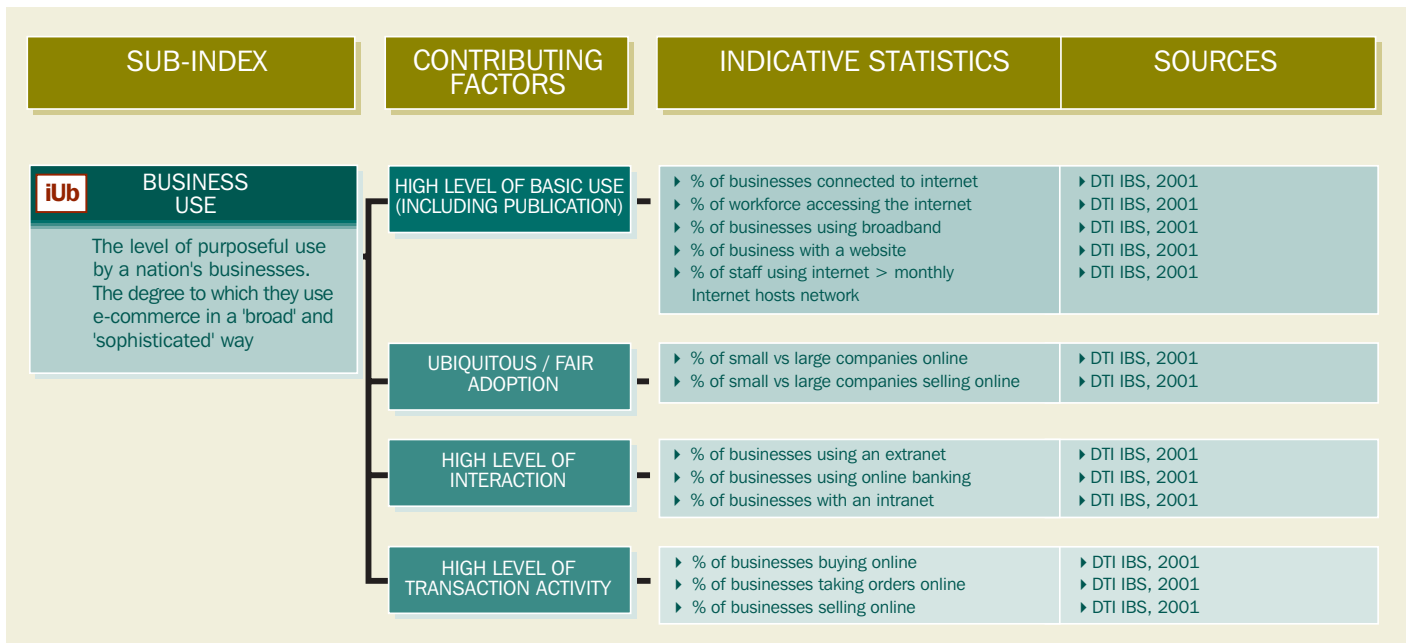
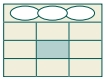


Fig. 81.1

- Definition**
- ▶ *Business Uptake and Use* describes the degree to which a nation's businesses are making purposeful use of internet technologies. Business Uptake and Use covers many facets of such use, but in particular *ubiquity, equality and sophistication*.
 - ▶ Countries with high levels of *Uptake and Use* are characterised by high levels of use across the whole spectrum of usage patterns...
 - ▶ ...starting with *basic internet penetration* – businesses connecting to the internet through both narrowband and broadband, businesses giving employees internet access and businesses establishing a web presence through a web page...
 - ▶ ...through *equality of use* - use by all sizes of business including small and medium enterprises
 - ▶ ... and finally *use for interaction and transaction* – including information flows within the enterprise through an intranet and beyond through an extranet, and finally to buying and selling goods and services online.



Leading Nations

- The US, Germany and Sweden have the most business uptake and use; while Italy, France and Japan have the least.
- As with citizen uptake, those nations with the foundations of high basic business uptake are those which also exhibit most interaction, transaction and even fairness of adoption.
- Sweden would be world leading, but for a noticeably lower level of transactions among its businesses.
- **Successful Policies:** In general, government policy has focused on supporting smaller businesses in their endeavours to get online rather than promoting more ‘sophisticated’ online behaviour. Most of the benchmark group governments have provided support networks for SMEs, through both resources on the web and a physical presence on the ground. The most successful versions combine an extensive local network with the flexibility of access through multiple channels – including the old-fashioned phone and more intensive face-to-face help.
- **Environmental Factors:** Differing cost levels have played some role in determining business uptake in different countries in the benchmark group. In particular, the cost of leased lines correlates well with business use of broadband.

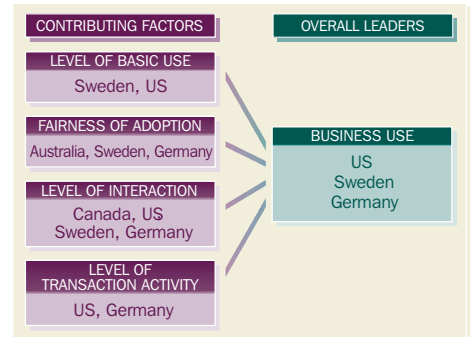


Fig. 82

3.2 Business Uptake and Use - Findings

3.21
Overall
Findings

The nations with the highest levels of business uptake are the US, Sweden and Germany (cont.)

- Outlook:**
- Growth in use of broadband among SMEs will be watched particularly closely, with a whole range of offerings on the market in most countries. Considerable growth can be expected in this area, particularly in Europe, where prices for broadband connection, especially DSL, have been falling in recent months.
 - The impact of the 'dot-com' crash on business uptake of ICT will soon be seen. Already attitudinal surveys indicate they see more potential in the internet as a cost reduction tool rather than as a means of revenue growth. Over the period 2000-2001, the propensity of businesses to sell online rose; this trend may be reversed or at least level off into 2002, particularly in markets such as the US which have felt the change in mood most acutely.
 - Of concern to all of the benchmark group is the stalling, or in some cases declining, willingness of businesses to trade online. Although the trend of businesses allowing customers to buy or order online rose a little, this was more than offset by a decline in the proportion of firms willing to order or buy online (see figures right). This trend has been particularly prominent among small businesses.
 - This decline in online trading has been seen most prominently among the previous leaders – the US and the UK.
 - Preliminary assessment of the new 2002 international survey of businesses from the UK's DTI indicates something of a change in fortune for our benchmark countries, with North American uptake slowing and the Japanese making especially strong progress across the whole set of uptake indicators.
 - The new survey also indicates that the stalling of online trading has continued. Interestingly, European countries appear to fare worse, all with flat or declining levels of selling on-line. Outside Europe; Australia, the US and Japan are seeing growth. Potential causes for this are currently under investigation.

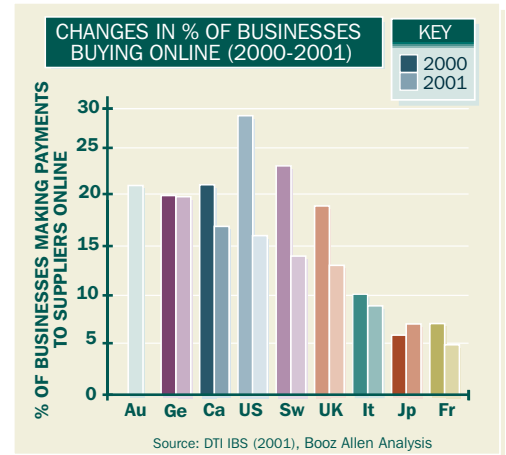


Fig. 83

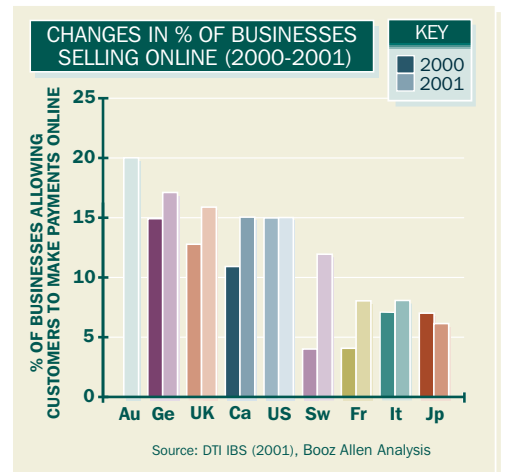


Fig. 84

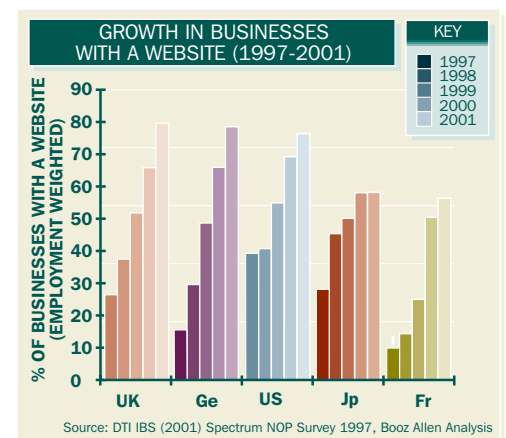
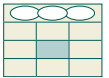


Fig. 85



Basic internet access

- The vast majority of the employees in the benchmark countries work for companies which have internet access. However, typically only 20-40% of employees make regular use of the internet or e-mail.
- Swedish, German and Canadian workers are most likely to work for companies which are online (see chart, right).
- In all benchmark countries between 60% and 80% of people work for businesses which have websites. The pattern of **web presence** broadly follows the pattern of internet penetration, with Swedish, German and British businesses keen to establish a presence on the web.
- Although US firms are not the most likely to have websites, it is clear that the majority of the world's businesses have their websites hosted in the US, as measured by the number of hosts per head. This 'virtual trade' illustrates how businesses in any one country are not constrained by national markets and offerings when making their decision whether to establish a web presence.

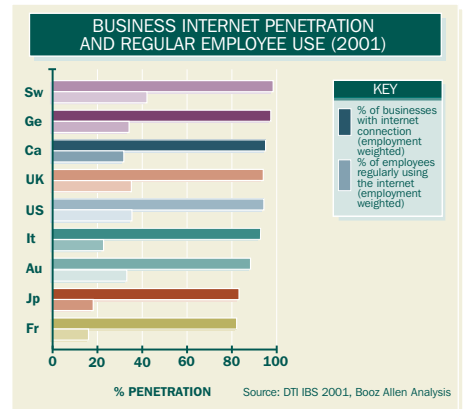


Fig. 86

Broadband

- Business broadband uptake is universally higher than residential uptake. This may partly be due to the longer time period broadband offerings have been available to businesses, but the strength of business demand for professional high speed access may also explain the difference.
- Considerable variation exists between business uptake of broadband among the countries in the benchmark group with the set ranging from around 20% in Australia right up to around 60% in the US and Sweden.
- Business uptake of broadband also follows a very different pattern from residential uptake of broadband. This suggests different drivers are at work. This variation is most obvious in France where business broadband penetration is vastly ahead of residential uptake.

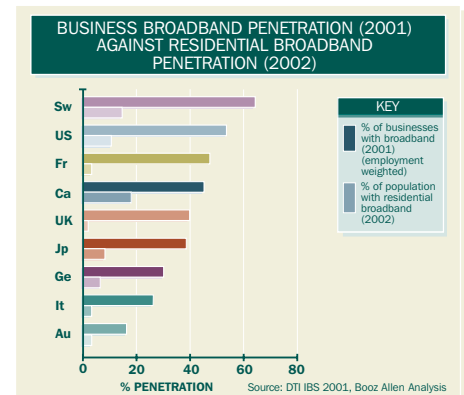


Fig. 87

Discussion of Drivers

- Cost appears a weak driver of *standard narrowband* internet penetration for businesses. There is almost no relationship between business penetration and any plausible price driver such as peak-time dial up prices, or DSL charges, or even leased line prices. Clearly the 'waverers' when it comes to simple connection are the SMEs – yet they do not seem to be prohibited from online connection by high prices.
- Although the *sectoral structure* of the economy does not seem to drive narrowband penetration, it does correlate with broadband penetration. Those countries where the primary and secondary sectors are strongest, such as Australia and Italy, have the lowest penetration of broadband among businesses. A tentative conclusion may be that although all businesses need to have an internet connection, service sector companies are more likely to make the investment necessary to make the upgrade to broadband. This is corroborated by stronger cost concerns over *additional use* among those with lowest broadband penetration.
- Although cost does not seem to drive business narrowband uptake, it has more of a role in the case of broadband (see chart). Many larger businesses which use broadband do so through leased lines, though this varies between countries. The cost of leasing these lines differs markedly between countries – and broadband penetration among businesses follows a similar pattern. Notably, the exhibit seems to suggest businesses are quite price sensitive to leased line prices – perhaps this is where newer super-high speed DSL and cable modem offerings have a role to play in driving further broadband penetration.

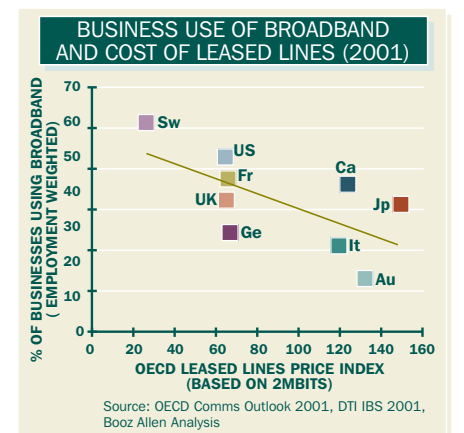


Fig. 88

3.2 Business Uptake and Use - Findings

3.23 Equality of Use Smaller businesses are most likely to use the internet in Sweden, Germany and the UK

- **Equality of access:** In all benchmark countries the smaller the business, the less likely they are to be online or to be selling online (taking orders or taking payment).
- The pattern of smaller business use differs considerably from the pattern of basic use, with smaller businesses in Sweden, Germany and the UK making more use of the internet than their counterparts in Canada, France and Japan.

Discussion of Drivers

- **Environmental Factors:** E-economy factors such as *general* levels of *penetration* among individuals or businesses, or even levels of advanced activity such as *online buying* by citizens and businesses do not seem to explain SME uptake.
- More environmental factors, such as *proportion of businesses in the primary sector* or *use of plastic cards* do not seem to explain SMEs behaviour either.
- **Government Policy:** Given the lack of environmental explanations, policy explanations may be particularly important. Governments have been very active in the area of getting SMEs online, and some have made it a particular focus. Those countries with high levels of SME internet penetration do also have long-standing schemes to promote use of the internet among SMEs.
 - Sweden have the NUTEK network, and also the SVEA information and training system. Germany have a national network of SME e-commerce support centres, and beneath that are state level and even city level bodies providing an extensive, heterogeneous, support network. The UK has seen SME uptake increase considerably since the launch of their extensive and multichannel 'support network' *UK Online for Business*, with the government hitting the target of getting 1.5m SMEs online by 2002.
 - The French and the Japanese, who have the lowest proportion of small businesses online, have also had the least targeted support. In both cases, and particularly Japan, support for SMEs going online is growing significantly, but from a limited current base. The French model, *MINinfo*, has been well received in trials – with 40,000 documents viewed online per month despite very limited exposure.

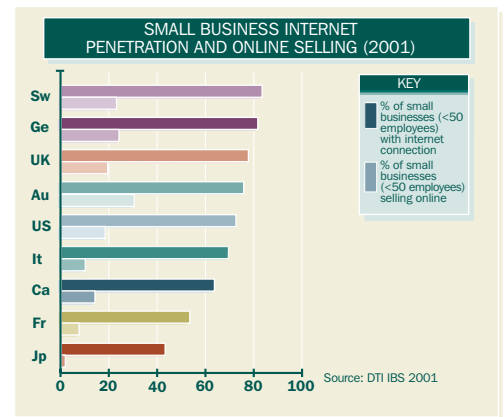
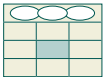
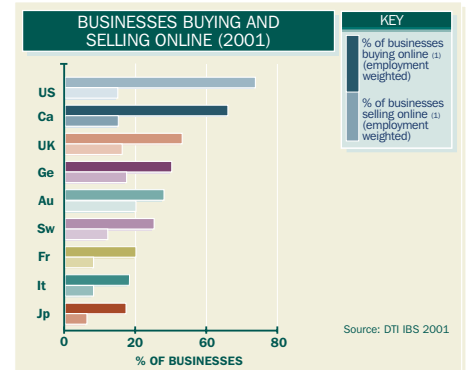


Fig. 89

North American businesses are most likely to buy online, while Australian and German businesses are most likely to sell online



- **Online transactions:** More businesses buy online than sell online for all countries in the benchmark set.
- Furthermore, while the businesses of the US and Canada are the most likely to *buy* online, it is the businesses of Australia and Germany that are more likely to *sell* online. The business sector in the UK seems to best 'combine' online buying and selling.
- In spite of this paradox between propensity to buy or sell, it is clear that the businesses of Japan, Italy and France are the least likely to buy or sell online.
- Note: the *value* of online transactions is addressed in the next section *Business Impact*.



Discussion of Drivers

- The most direct drivers are the foregoing factors – such as basic *Readiness and Usage*. It is noticeable that buying online correlates strongly with the overall readiness score. One notable exception is Sweden, whose level of online buying is low, given its high readiness score.
- **Government Policy:** Policy specifically to encourage businesses to trade online has been conspicuous only in Sweden and the US – countries which do not perform strikingly well. In the US the *Internet Freedom Tax Act (1998)* was designed as a supply side measure to free businesses trading online from regulatory constraints. The effect seems to have been to encourage online buying by businesses as well as consumers, perhaps because of the tax advantage it confers on online buyers.
- A plausible alternative explanation for the US having surprisingly few online sellers is the greater maturity of the market – consolidation has occurred among large retailers, and smaller players may feel they have 'learned their lesson' from the dot com crash. These factors may not be at play to the same extent in Germany for example.
- A further policy approach has been facilitation of industry co-operation towards online standards. In Australia, this has been driven through *ITOL Grants (see case study)* aimed at getting businesses selling online; Australia has the highest proportion of businesses selling online. In Canada, the target of policy was 'consumer protection' standards, with more relevance for online buyers; Canada now has the second highest % of businesses buying online.
- **Environmental factors:** *Language* seems to be a driver of business propensity to buy online, though not to sell. Lack of familiarity with English may well cause potential purchasers to decide against purchases, especially in the context of business anxiety about the security of buying online. The top four of the top five online buyers are all native English speaking, with the bottom three having the lowest levels of English. There is no reason why selling should follow the same pattern as the seller can determine the language of the trade.

Fig. 90

3.2 Business Uptake and Use - Findings

3.24
Sophisticated
Use

North American businesses are most likely to buy online, while Australian and German businesses are most likely to sell online (cont.)

- **Payment systems** are a plausible driver of online selling to consumers (B2C) in most of the benchmark countries. The propensity for customers to own and habitually use plastic cards for purchasing makes online selling much easier for businesses. In cash-using societies, such as Italy and France, normal spending patterns are not so easy to transfer online.
- Of course for businesses considering whether to sell online to other businesses (B2B), plastic cards will not be a factor; B2B transactions typically require more advanced payment systems than B2C, such as Electronic Data Interchange (EDI).
- Germany has one of the highest rates of online selling from businesses, yet plastic card penetration is low. This may be because most of the businesses selling online are engaging in B2B transactions which do not need a plastic card. However, B2C has grown strongly in Germany recently, as German businesses have overcome the problem of low credit card penetration through adaptations of the 'invoice' system. Amazon, for example, require customers to pay for goods on receipt at post offices.

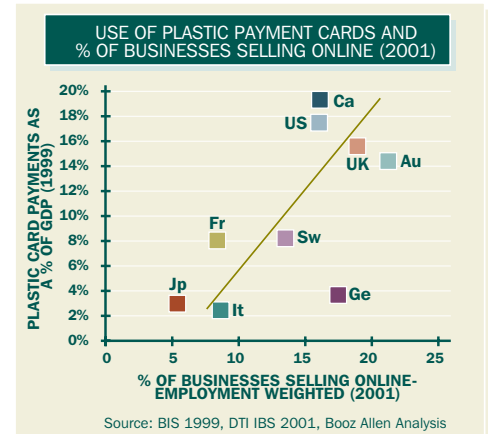
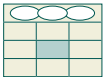


Fig. 91



Common Challenges and Themes:

- Five broad themes in policy making emerge from across the benchmark group, with the similarities in approach more noticeable than the contrasts.
- **Support to get SMEs started.** Perhaps the most common approach to getting more businesses of all sizes online, and fully participating in e-commerce, is the provision of advice, support and training. There is considerable variation in the scale and the quality of the resources provided;
 - In France, as the result of a cross-departmental initiative *MINinfo* centres have been created to provide local information and support to businesses generally, including in matters of e-commerce. Launched in 2001, it covers 13 (out of 96) French departments. The Canada *Business Service Centres* provide support targeted at the e-economy by making government resources available. In the UK the *UK Online for Business* initiative has supported a significant increase in SMEs going online (see Business Readiness section).
 - In Japan, on the other hand, the government go further and provide training. The *ECOM (Electronic Commerce Promotion Council)* holds training workshops symposia, and exhibitions promoting e-business.
 - The German Federal Government prefers to identify and encourage best practice through competitions supported by the private sector. The Centres of Excellence network (see Equality of use 3.23) will propagate the results.
 - Both the Japanese and Italian governments are considering schemes where they would subsidise the provision of consulting services to businesses for e-commerce schemes.
- **Support to get SMEs doing more sophisticated things.** Policy to support internet use and e-commerce among SMEs is something almost all governments in the benchmark group are directing efforts towards. These policies are in addition to those designed to support business *in general*, from which SMEs also benefit. A range of approaches have been taken to get SMEs up the ladder of usage sophistication, differing according to where they focus on the adoption ladder and the form of support government provides to SMEs. The questions seem to be ‘Where is the blockage for SMEs?’ and ‘How much should we get involved to fix the process?’
 - PROVIDING FUNDS - The French and Japanese approach is to provide support to SMEs for obtaining suitable access devices, and more advanced IT applications. Typically these schemes are designed to promote *innovative* technologies rather than simple use of ICT and so probably relate to those SMEs higher up the adoption ladder. In France, the government provides matching grants through the *Atout* scheme of up to 200k EUR to SMEs planning to adopt cutting edge technologies. The Japanese offer tax incentives (7% off purchase price), and cheap loans to SMEs installing IT systems (US\$127m in 2001).
 - PROVIDE TRAINING/RESOURCES – Rather than support SMEs directly, some governments prefer to provide training or other resources. The most ambitious are the Swedes, with their initiative *IT.SME.SE*, which has the targets of moving SMEs to more sophisticated forms of use. SME organisations can apply for matching funds to support training among their members. In the US the Small Business Administration (SBA) offers sponsored training in online classrooms and at their 400 centres nationwide.
 - PROVIDE TARGETED ADVICE – In addition to normal business advice networks, some governments provide advice targeted at promoting e-commerce in SMEs. In Canada a member of the *Canadian Technology Network* will act as a pathfinder to connect an SME with an e-business problem to an expert source of advice elsewhere in the network. In Germany, 24 regional centres support businesses in conjunction with local organisations such as Chambers of Commerce.

3.2 Business Uptake and Use - Policy Comparison

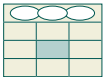
3.25 Policy Overview

Five common approaches emerge across countries (cont.)

Common Challenges and Themes:

- ▶ **Lightening the regulatory burden.** Some governments have recognised that regulation of the internet and e-commerce has the potential to impose significant burdens on businesses, while many businesses conducting e-commerce are little able to cope with these burdens – especially those which are small.
 - The issue of taxation of online commerce is a live one for those nations which have multi-level tax jurisdictions, particularly sales tax. Governments in both the US and the EU have recognised that for businesses which sell electronic goods between tax jurisdictions, it is a considerable burden to manage multiple tax accounts and to identify an online customer's location when there is no physical product delivery.
 - The European Union countries in our benchmark set ([France](#), [Germany](#), [Italy](#), [Sweden](#) and the [United Kingdom](#)) have participated in a regional level agreement on VAT. A rule change in January 2002 requires that businesses selling 'digitally delivered products', including internet downloads, need only levy VAT at their domestic rate – not at the rate of their buyer. This enables such companies to collect and submit VAT for just one government, not for up to 15, and to collect that tax at a single rate, not 15 different ones.
 - The federal government of the [United States](#) have attempted a less tidy solution, although the scope of this solution covers all products purchased online, and not just those digitally delivered. The *Internet Tax Freedom Act (1998)* created a moratorium on taxing internet access and prohibited states from requiring 'out-of-state' merchants to collect and remit sales tax. This does not mean citizens are free from the requirement to pay sales tax, but it saves businesses the potential headache of collecting sales tax on behalf of up to 50 different states.
 - More generally, governments are trying to use the internet to lighten the burden of business regulation. For example, in [France](#) businesses can submit tax online, in [Italy](#) the ENTRATEL system enables online tax filing and other administrative declarations.

- ▶ **Enabling businesses to find the skilled staff that they need to do e-business.** As a component of *Market Environment* we discussed the number of IT staff, and in *Business Readiness* we discussed whether businesses are training their staff in IT. Some governments are addressing the problem that even when sufficiently IT-skilled staff exist in the market, they can be difficult for businesses to identify.
 - One solution is simple matching - in [Australia](#) the government does this through the *IT Skills Hub*, which matches ICT workers' skills with businesses' specific requirements. The [US JobBank](#) from the Department of Labor performs a similar matching role with around 1m job descriptions in the database.
 - Another approach is to leverage the IT skills of the student and academic personnel base. In the [UK](#), the *Teaching Companies Scheme* places a high-quality graduate into a company for 2 years to work on a project central to their needs.
 - A variant of the 'leveraging student skills' model has the additional aim of gaining employment for graduates in IT functions, particularly in small businesses. In [Canada](#), the *Student Connection Programme* trains a student in IT for business, and then places them into a small company for a few months (perhaps summer holidays) to help them with IT issues. A number of these students are subsequently employed by the company. A similar scheme called *STEP* operates in the [UK](#).



- **Facilitating online B2B interaction.** A few governments are going as far as actively providing content as a draw to businesses to go online. In addition to putting existing services online, governments may provide additional services, or play the role of facilitator in bringing industry participants together online.
 - In Australia the government provides *Information Technology On-Line* (ITOL) grants exclusively to projects, which will bring together industry participants online. Funds have been concentrated on sector specific collaborations, and particularly to projects aimed at producing industry-wide, or even economy-wide, standards. For a small outlay, just 7m AUD over the last few years, there have been some notable successes – enough to encourage the Australian government to commit another 13m AUD over the next 5 years (see case study).
 - The Italian government are investing 50M EUR in *E-commerce for Fashion*. Projects will promote aggregation in the fashion industry through portals, market places and so on.

Most successful approaches

- SMEs require quite a lot of support when it comes to getting online and selling online. Those countries with the highest levels of SME internet penetration and SMEs selling online are often those countries which also have *long-standing* schemes to create a support network for SMEs *specifically targeted at e-commerce*, rather than just general small business support. This is the case in Germany, where several layers of such support exists, Sweden and the UK. The lack of such extensive SME-focused support for e-commerce may have contributed to low levels of business uptake in Japan, France and Italy.
- Lightening the burden of collecting sales tax among US businesses may not have achieved its primary aim – getting smaller businesses *selling* online, but it may well have played a role in getting businesses, especially smaller ones, *buying* online.
- Another successful scheme is the Canadian *Student Connection Programme*. The scheme provides final year undergraduates in non-IT subjects with training in IT, and then arranges a placement with a smaller business where they help with IT projects. Launched in 1996, the scheme operates from 15 centres within universities and colleges. Over 85,000 Canadian businesses have use the scheme, which has trained and placed over 3,500 young people – some of whom have subsequently been hired by the small business in an IT capacity.

3.2 Business Uptake and Use

3.26 Case Study Australia: Information Technology On-Line (ITOL) grants encourage collaborative industry initiatives

- Objectives:**
- The objectives of the ITOL program are to provide assistance for a broad range of activities throughout Australia by targeting projects that:
 - Encourage collaborative industry based projects which aim to accelerate adoption of B2B e-commerce solutions across a range of industry sectors, (by clusters of SMEs).
 - Foster awareness & uptake of innovative e-commerce solutions within and across industry sectors which deliver sustainable returns & contribute to increased competitiveness.
 - Leverage the output of one focused business service project across entire industries / multiple industries, thus increasing the value:cost ratio.
 - Project funds are extremely limited – thus the funds available through ITOL (AUD 2m per annum) are for facilitation, not comprehensive implementation. Projects go through a rigorous selection criteria administered by the National Office of the Information Economy and are funded based on meeting agreed performance targets.
 - The ITOL funding focus reflects these objectives – the largest pool of funding has been to business services that are focused on specific industry clusters of SMEs, and on standards development that can be leveraged across industries.
 - Sample projects include: 'E-Hub' the electrical cabling industry e-commerce initiative, virtual supply chain management for the franchise sector, and Australian Earth Data on-line.
- Results:**
- The key focus is maximising the value/cost ratio, or 'bang for the buck'. This is reflected in the funding priorities.
 - The success of the programme is reflected in the recent extension of a further AUD 13m for the next 5 years.
 - One example of an ITOL project is the "SuperEC programme" for e-commerce uptake in the superannuation market.
 - *Description:* The SuperEC Programme is an initiative of the superannuation industry that aims to deliver industry-wide cost reductions and efficiency gains by promoting industry message standards for electronic commerce. This programme will create the standards, relationships and processes for the automated exchange of superannuation information across all industry stakeholders.
 - *ITOL grant:* AUD 110,000
 - *Consortium members:* The full range of roles involved in processing of superannuation transactions are represented in this programme. As at 10 February 2000 the number of confirmed participants was:
 - Industry Bodies 3
 - Superannuation Fund Administrators 12
 - Payrolls 1
 - Intermediaries 3
 - Regulatory / Government Bodies 1
 - Another example is the "Master Builder I-build" for a whole industry portal for relevant industry information access.
 - *Description:* This project comprises the design and construction of a whole-of-industry portal to engender greater awareness within the building and construction industry of the multiple online approaches of accessing information and services. The building industry is notoriously fragmented and slow in its uptake of IT compared to other industries and it is hoped that this initiative will provide a single entry point for the industry to access general industry information, tender listings, online training courses, economic forecast and project management and document management applications. We are also working with the public and private sector clients, architects, engineers, quantity surveyors, project managers and numerous sub-contractors across all trades to ensure commonality of outcome with regards to our e-business strategy.
 - *ITOL grant:* AUD 110,000
 - *Consortium members:* Master Builders Association Inc consisting of a national body plus nine state based bodies.

Chapter 3:

The e-Maturity of Businesses

3.1 Business Readiness

3.2 Business Uptake and Use

3.3 Business Impact

- 3.31 Overall Findings and Outlook
- 3.32 Impact in Business Spending
- 3.33 Impact on Service Offering and Working Practices
- 3.34 Case Study: France's SESAM-Vitale Programme

3.3 Business Impact

Business Impact describes the extent to which the internet has transformed business


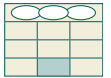
| SUB-INDEX | CONTRIBUTING FACTOR | INDICATIVE STATISTICS | SOURCES |
|---|---|--|--|
|  BUSINESS IMPACT The change to the working practices, competitiveness or the returns to businesses attributable to the e-Economy | IMPACT ON COMMERCE/SPENDING | <ul style="list-style-type: none"> ▶ B2C e-commerce as a % of total sales ▶ B2B e-commerce as a % of total sales ▶ >10% of orders online ▶ ICT trade as a % of trade ▶ ICT contribution to growth | <ul style="list-style-type: none"> ▶ OeE Data Matrix (OECD), 1999 ▶ OeE Benchmark Matrix (Ovum), 2000 ▶ DTI IBS, 2001 ▶ OECD ITCIS, 1999 ▶ OECD (Colecchia & Shrever, 2000) |
| | IMPACT ON SERVICE OFFERING OR WORKING PRACTICES | <ul style="list-style-type: none"> ▶ Aftersales communication: % of businesses providing ICT sales service ▶ % of businesses with additional services offered due to ICT ▶ % of businesses recruiting online ▶ Logistics: % of businesses using ICT to improve speed of delivery ▶ Production: % of businesses automatically re-ordering online ▶ Design: % of businesses using ICT for design collaboration ▶ Finance: % of businesses using ICT for real-time financial information | <ul style="list-style-type: none"> ▶ DTI IBS, 2001 ▶ Data unavailable this year ▶ DTI IBS, 2001 ▶ DTI IBS, 2001 ▶ DTI IBS, 2001 ▶ DTI IBS, 2001 ▶ DTI IBS, 2001 |
| | IMPACT ON COSTS/EFFICIENCY | <ul style="list-style-type: none"> ▶ Businesses reporting cost savings | <ul style="list-style-type: none"> ▶ Data unavailable this year |

Fig. 91.1

- Definition:**
- ▶ Business *Impact* describes the extent to which the internet has *transformed* business. It is the impact of online technologies on the way businesses do business.
 - ▶ Attempts to measure impact using *macro* economic tools have proved unsatisfactory, largely because evidence of business transformation as a result of the *internet* – *and in isolation from other factors* – is simply not captured by current methods.
 - ▶ In this study, a set of *micro* indicators are used, each of which evidences (if imperfectly) one aspect of transformational change in business behaviour.
 - ▶ It begins with their spending behaviour – the greater the proportion of spending, which is online, the greater the impact.
 - ▶ Business Impact is also evidenced by changes in service offering, with the internet expanding the type of services delivered and the way existing services are received by customers of businesses.
 - ▶ Ultimately business impact is evidenced by businesses changing their CORE processes such as ordering, design or aftersales service.
 - ▶ Ideally, these changes feed through into tangible cost savings or efficiency gains; although evidence of this is only beginning to emerge and is not comprehensive.

Business impact has been by far the greatest in the US, where impact has been felt in procurement, service offering and internal processes



The Leaders:

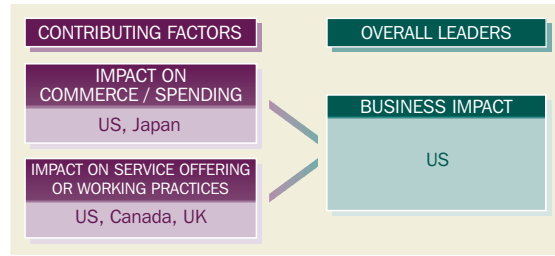


Fig. 92

- The most *Business Impact* has been seen in the US where, uniquely, impact has been felt in procurement, service offering and working practices. The US is far ahead of any other nation.
- The components of business impact follow broadly the same patterns among the benchmark group. Japan is something of an exception because despite relatively strong movement of spending online, there have been comparatively few changes in working practices.
- Similarly, Germany – another country which has made extremely strong progress over recent years in the other business indices, still has modest impact scores, suggesting that the impact of recent progress is yet to show.
- Canada's experience is the opposite, with relatively strong impact on working practices yet weak impact on spending and on service offering.
- The most important drivers of Business Impact are the preceding layers in the model; Readiness and Uptake. The only country to deviate significantly from this trend is Germany, where impact has been less than expected, given the high levels of uptake. Evidence suggests this growth in business impact may yet occur, with e-commerce showing strong growth.
- **Policy Successes:** Few policies have targeted specifically encouraging *Business Impact*, with policymakers concerning themselves more with the higher layers of the e-Economy framework; *Environment, Readiness and Uptake*.

Outlook:

- Evidence of real *Business Impact* – transformation of businesses – is only now beginning to emerge:
 - As with any transformational wave, businesses are moving first to 'automate' existing processes and behaviours (e.g. move timesheet collection systems on line).
 - Examples of using the unique capabilities of the internet to 're-invent' processes (eg purchasing through on-line reverse auctioning) are still not comprehensively captured through any survey or study.
- Over the coming years, examples of genuinely transformed or reinvented processes should multiply, and so should the resulting financial savings or efficiency gains.
- Businesses now see the internet primarily as a tool for cost reduction (see *Business Readiness*) as opposed to a means of revenue generating so we can expect impact on costs to show first.
- Experience to date has shown that the internet is more useful for some industries, and for solving some problems, than it is for others. We can expect to see more intersectoral unevenness in uptake and impact. The e-business maturity may continue to grow in industries for whom the internet is a compelling solution, and decline in industries where it is not.
- The strong growth of the ICT sector in the late 1990s (illustrated by growth of exports in the chart below) has slowed significantly over the last couple of years across the benchmark group. Capital markets have tightened, capital expenditure on ICT has been slashed. The progress on business impact may therefore slow, with businesses moving forward through intelligent application of the tools they already have rather than through investment.

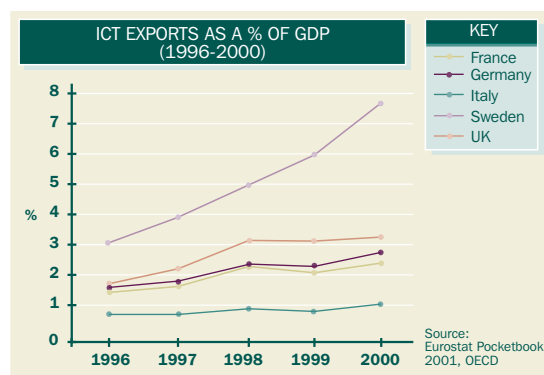


Fig. 93

- Preliminary assessment of the new international survey of businesses from the UK's DTI indicates that businesses are beginning to realise the impacts of their previous ICT investments. In line with expectations identified in the Readiness section, businesses worldwide are finding that ICT has greatest benefit on reducing their costs rather than on growing their revenues.

3.3 Business Impact - Findings

3.32 Impact on Spending

The US has seen the greatest impact on B2C and B2B spending patterns, along with significant economic impact of ICT on growth and trade

- **Procurement:** Overall the value of B2B transactions is greater than B2C. However, proportionately more B2C sales have been *transformed* into online spending than B2B sales (see figure right). In other words, a greater proportion of B2C transactions have moved online than B2B transactions. This may be driven by the typically less complex nature of B2C transactions.
- B2C procurement is much larger in the US and Sweden than in any of the other benchmark countries; while B2B spending is highest in the US and Australia.
- **ICT in the economy:** The role of ICT in driving trade and growth in the economy varies considerably among the group.
- ICT's contribution to growth has been greatest in the US and Australia, while its contribution has been much less in Italy and Germany (see chart below). It should be noted that these calculations use a growth accounting method and do not consider the role of ICT uptake in driving *total factor productivity (TFP)* the so-called 'technological progress' component of growth often attributed to IT improvements.

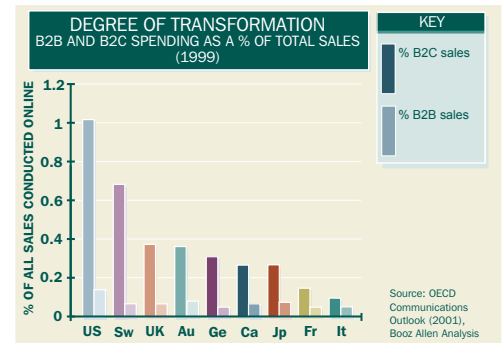


Fig. 94

Discussion of Drivers

- **Government Policy.** Government everywhere has encouraged the growth of the ICT sector. A potentially very significant version of policy in this area has been financial support for start-up ICT businesses. The governments of the US and Australia have both offered *seed capital for ICT businesses* which were unable to tap the capital markets successfully. Given the role of small companies in growth, and particularly small ICT companies in driving ICT sector growth, government support for small firms may have had growth impacts.
 - The long standing US scheme of *Small Business Investment Companies* has centred on IT firms for many years, with some notable successes. This scheme is expensive, but claims to more than recoup all costs through taxation of subsequently successful small businesses.
 - The Australian scheme of *ITOL grants* (see case study in Business Readiness) is much younger and much cheaper. Furthermore, the scheme aims to encourage spending.
- **Environmental Factors.** Clearly the impact a national ICT sector has on both trade and growth depends on a number of environmental factors. Most of, these are intangible, and concern the ability of a nation's businesses to put what ICT there is to use in generating either domestic growth, or growth in trade.

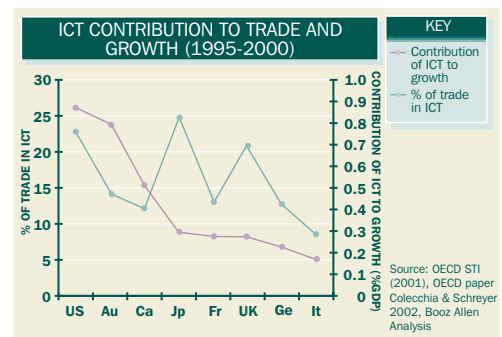
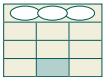


Fig. 95

Businesses in the US have seen the greatest change in their processes - both customer-facing and internal



- Considerable variation can be seen between the businesses of the benchmark countries when it comes to transforming business processes.
- The technologies in question may be divided into:
 - simpler 'support functions', including changes in after-sales processes, recruiting and financial management information, which are relatively easy to put online (see left-hand chart).
 - 'core operations' which present a greater challenge to redesign, such as logistics, collaborative design and automatic re-ordering (see left-hand chart).
- Level of redesign on *core operations* follows more of a consistent pattern than that of simpler 'support', reflecting the higher barriers to transformation of these processes.
- Businesses in the US, Canada and the UK have led in the adoption of technologies affecting core operations processes; with those in France and Japan much slower to embrace them. While transformation of support function processes has been, on balance, fairly equal across the benchmark group.

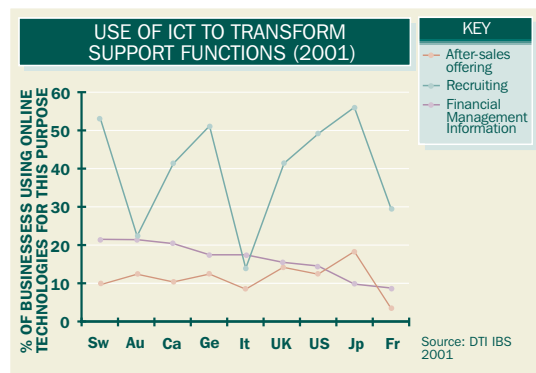


Fig. 96

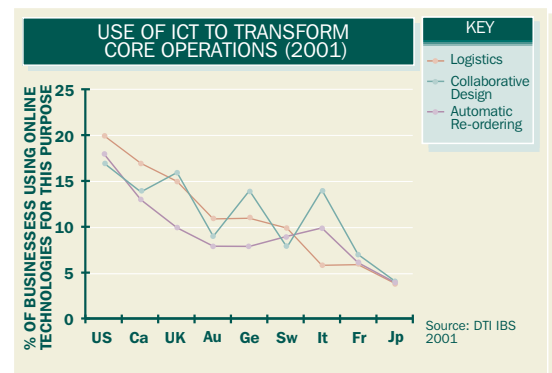


Fig. 97

Discussion of Drivers

- **Business uptake** is the most significant driver of Business Impact. In particular, those businesses which are most comfortable with the internet through experienced use are those who have most adopted technologies which have required process change. Furthermore, the more advanced technologies (shown on the right hand graph) also require a counterparty business to be online - this 'network effect' makes these technologies more feasible the more businesses are online. Businesses adopting less interactive technologies, such as on-line financial management information systems, require considerably less change in business processes, and thus general levels of business uptake are a less significant driver.
- **Government Policy:** Governments have, in some cases, been able to encourage this kind of transformation in businesses, for example, by mandating that businesses wishing to sell to them, do so online. The Australian government applied this principle to health service procurement, prompting significant process changes in the health industry to ensure suppliers could interface with government systems.

3.3 Business Impact

3.34 Case Study **SESAM-Vitale: Networking the health industry in France**

- Overall Objective**
- The Sesam-Vitale project sets out to fully replace the existing paper-based process for recording visits to doctors and other health professionals, with an electronic system based on the use of a card with an embedded micro-chip, "la carte Vitale".
 - The program was launched in 1996 and aims to get to the "medical control of the evolution of health expenditure" ("maîtrise médicalisée des dépenses de santé"), which represents around 10% of the country's GDP (and increasing at a higher rate) 2/3 of which is financed by public spending.
 - As such, the program is meant to serve three main objectives:
 - Better understanding of expenditures;
 - Higher efficiency in handling an increasing number of forms (around 1.3 billion forms per year, increasing by an average 5% p.a.);
 - Higher quality of health care: enhanced communication between health care professionals (HCPs), better access to information for HCPs, improved uptake of adapted software.

Principle

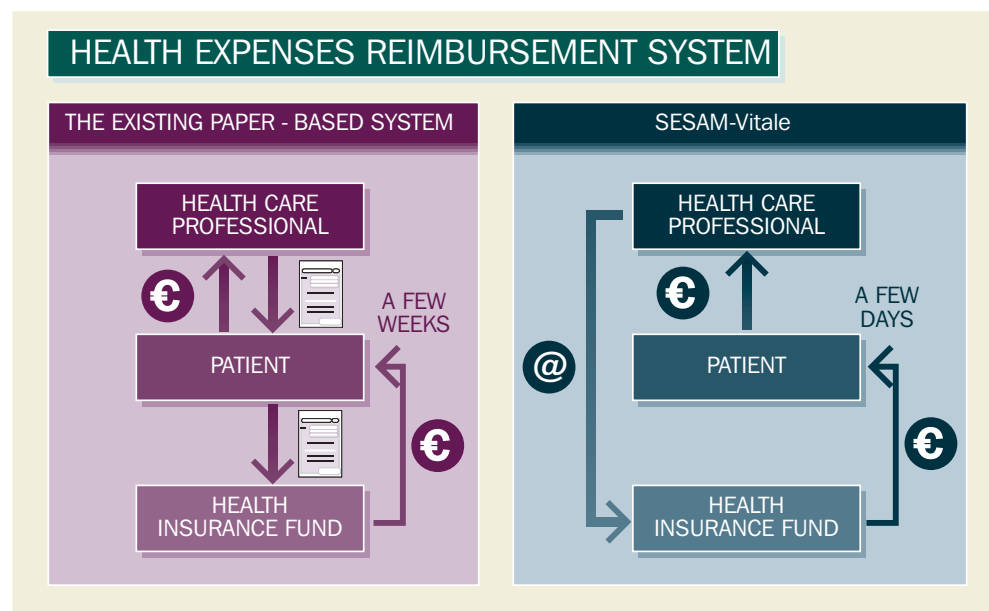
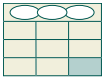


Fig. 98

Fig. 99

- Individuals covered by the insurance scheme received a card ("Carte Vitale") equipped with an embedded micro-chip which contains identification information: identity, health care insurance scheme, health insurance rights. 43 million cards have been handed out so far.
- At the same time, health care professionals (including pharmacists) received a special card (CPS, Carte de professionnel de santé) that allows for holder identification, digital signature and data encryption.
- Under the SESAM-Vitale program, when a patient goes to a HCP, he hands out his Carte Vitale to the doctor who inserts it in a dedicated terminal along with his CPS - no more paper forms.
- At the end of the day, HCPs automatically send visit recording information for all their patients of the day (one click operation) to the appropriate organizations.
- The transmission system used is open: Internet, with existing standards.



- Implementation**
- Since 1998, the law has stated that the 300,000 mobile health care professionals have to accept the Vitale card and transmit forms electronically. However, no sanction was set up.
 - Incentives were put in place to boost HCP's equipment uptake, which was very low back in 1998 (around 10-15%).
 - For a certain period of time, HCPs could receive grants for computerization equivalent to €1,370.
 - Grant now replaced with a fee paid to HCPs for each form transmitted electronically (€0.07 with a limit for doctors, €0.05 without limit for pharmacists - other agreements yet to be signed with other HCPs unions).
 - These fees are the main cost factor: estimated at €100-150 mn per year.
 - Conventions were signed with doctor and pharmacist unions. Conventions with other HCPs are yet to be signed - the adoption of the SESAM Vitale program is often used by HCPs as a powerful negotiating tool.
 - Estimated budget over 1997-2003 amounts to €800 mn.
- System take-up**
- The system is now picking up with 41% of all HCPs currently transmitting forms online with great difference between the professions with which conventions were signed (i.e. doctors 62% ⁽¹⁾, pharmacists (61%) and the remainder of HCPs (specialists (40%), Dentists (8%), Nurses (30%)...).
 - Ramp-up is slower than set in initial public targets - however, these initial targets appeared aggressive and served to push the different health insurance funds involved (around 1500 entities) to conduct necessary IT enhancements for personal data file management.
 - This back office integration was all the more complex as the CNIL (Computer and Civil Liberties National Commission), which is responsible for enforcing the data protection law ("Informatique et libertés"), ruled against the creation of a single common file.
- Results so far**
- The penetration rate of PCs amongst doctors has increased from 10-15% in 1998 up to around 80% today.
 - Around 33% of all forms (around 1.3 billion each year) now get transmitted electronically. Current target is to reach 80% by 2004.
 - Patients now get automatically reimbursed within 5 days vs. several weeks before - no need to send any paper forms to record the visit.
 - The electronic forms have a proof value - the transmission system is highly secure thanks to the use of a card with an embedded micro-chip.
 - Expected annual savings amount to €300 mn for an annual cost of €100-150 mn (HCPs incentives).
- Next Steps**
- The system will be extended to other HCPs, with enhanced features.
 - An enhanced version of the Vitale Card (Vitale 2) will be introduced in 2005/2006 to include urgent medical information as well as key medical contact names (usual doctor...) - this will require changing all existing cards.
- Key success factors**
- After the scheme was first established, it was not regarded as a success; very few doctors bothered to install the equipment.
 - Even the introduction of incentives; a grant for terminals and then a legal requirement to own one, failed to move HCPs to action.
 - The breakthrough appears to have been the move to a user-based incentive. Uptake has grown sharply since its introduction.

(1) Down from 68% in December 2001 due to a strike of online transmissions by certain doctors to claim an increase in the government-set consultation price

3.3 Business Impact

3.34 Government-backed Small Business Investment Companies (SBICs) have nurtured ICT businesses in the US

Case Study

- Objectives**
- US Congress created the Small Business Investment Company Act in 1958 to fill the gap between the availability of venture capital and the needs of small businesses in start-up and growth situations.
 - Aim is to nurture small businesses which cannot access capital markets in usual way - either because banks will not lend to them, or because they are too small for private venture capital funding. The role of small business in driving growth, particularly through the high-tech sector is stressed in budget submissions.
- Actions**
- SBICs are licenced by the Small Business Administration (SBA) if they can demonstrate:
 - \$5m in other funding
 - Experienced and capable management
 - A funding business case
 - Once funded, SBICs are able to borrow from the Federal Government at special rates (approx 2.5% above 10 yr bond rate) for long periods (5 years) which enables so-called "patient capital".
 - In 2001 alone 58% of funds went directly to ICT-related start-ups.
 - A sub-set of SBICs are SSBICs, Specialised SBICs, which have been aimed at getting supporting entrepreneurs who have been economically or socially disadvantaged.
- Results**
- SBIC financing has become the foundation for small business venture capital in the US - in 1997 alone they accounted for 45% of VC investments by number and 20% by value.
 - ICT success stories include: Intel, AOL, Apple, Sun Microsystems, Sage and Peoplesoft.
 - SBIC pays for itself through taxation of successful firms.
 - Several academic studies, including Colecchia & Schreyer (2002) point to both the role of small businesses in the growth of an ICT sector and to the importance of VC funding for those small businesses.
 - Changes to rules for SBIC funding in the mid-1990s combined with increased demand for VC funding to produce something of a boom in SBIC financing.
- Key success factors**
- The SBIC system pays for itself in the long run, and usually on a year-to-year basis, through taxation income and so escaped much of the pressure felt by many US government programs due to the annual budgetary process.
 - The US has a number of factors driving *demand* for small business funding more generally - some cultural: a very 'entrepreneurial' culture, the value of the American Dream, and others economic: generous bankruptcy laws, low corporate tax rates, low capital gains tax rates.
 - SBIC has been supported by a number of shrewd tax advantages; for example for banks; thus creating a financial incentive to divert funds into small business.
 - Though backed by government funds, SBICs remain private sector enterprises with a profit motive.
 - Small business is not attractive to mainstream finance because it requires too much information and involvement. SBIC loans are packaged and sold every 6 months by the SBA thus providing securities market participants with exposure to a sufficiently diversified portfolio of *small business*.

Chapter 4:

The e-Maturity of Governments

4.1 Government Readiness

- 4.11 Overall Findings and Outlook
- 4.12 Strategies: Change Programmes, Targets, Training
- 4.13 Standardisation: Co-ordination, Portals, Local e-government
- 4.14 Systems Readiness: Interoperability, Interface with Partners
- 4.15 Policy Overview: Common Themes and Successful Approaches
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4.2 Government Uptake and Use

- 4.21 Overall Findings and Outlook
- 4.22 Basic Use in Government
- 4.23 Interactive Use of e-Government Services
- 4.24 Policy Overview: Common Themes and Successful Approaches
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4.3 Government Impact

- 4.31 Overall Findings and Outlook
- 4.32 Impact on Working Practices: internal, e-democracy, e-voting, e-procurement, e-tendering
- 4.33 Policy Overview: Common Themes and Successful Approaches
- 4.34 Case Study: CONSIP, Italy's Central Procurement System

4.0 Governments and the e-Economy

Framework
Summary

All findings in this chapter are based on international comparative analysis of governments in the nine benchmark countries according to the framework, and the measurement indicators below

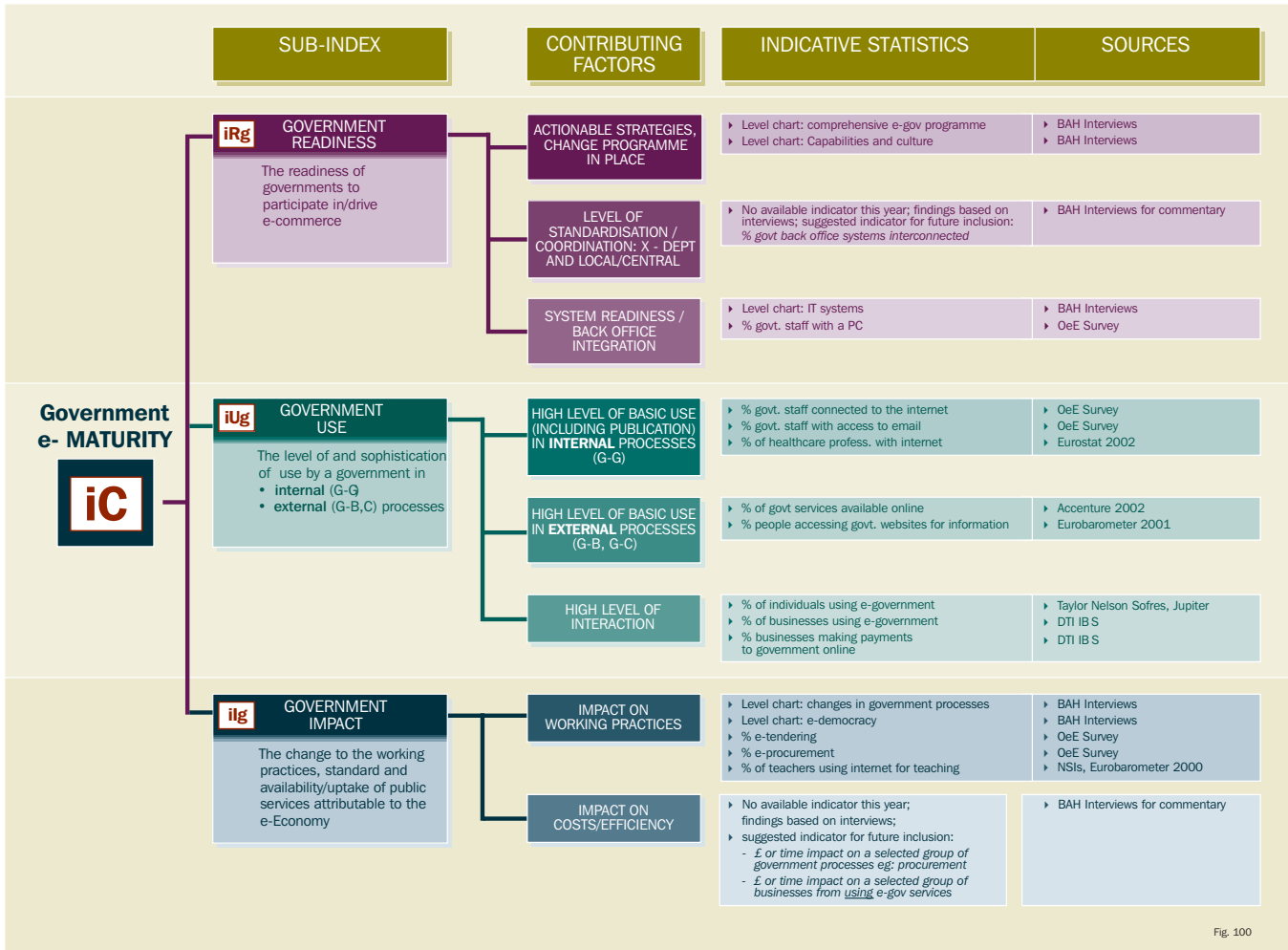
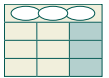
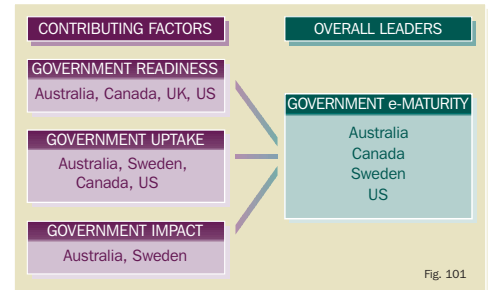


Fig. 100



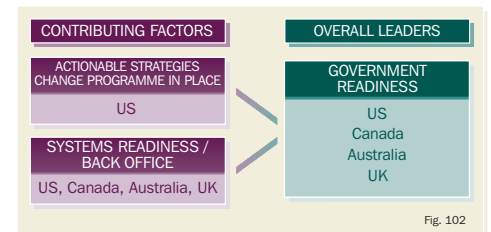
Summary Sweden, the US, Canada and Australia have the strongest e-Governments, driven by early programme starts, and sustained commitment

- The most advanced 'e-governments' are those of the US, Canada, Sweden, and Australia. All were early to take up the challenge, though the approach of each is quite different.
- There is a noticeable time dynamic here, as some of the early leaders have run into implementation hurdles, and some of the nations who started later, such as Germany, Italy and Japan, have been able to make rapid progress as a result of energetic programmes which build on the lessons learned by the early adopters.



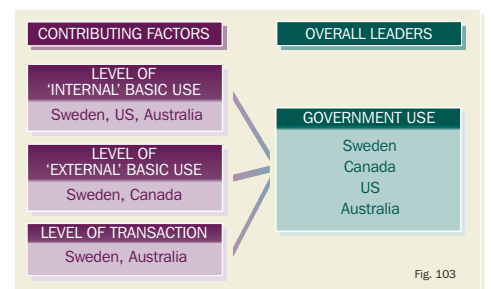
Government Readiness

- The most successful approaches are characterised by strong government leadership and a dual focus on back office integration and front office service delivery. The leading nation is the US, with Canada, Australia and the UK following.
- The US combines a clear, specific, comprehensive and actionable strategy with a high degree of systems readiness, particularly the prevalence of networked PCs in government and the supporting ICT infrastructure.
- Notable initiatives in this area include the UK's 'Government Gateway' – a secure interface between businesses, citizens and all government departments that choose to use it.



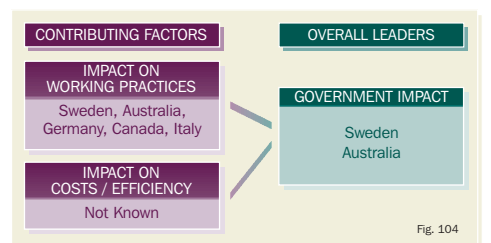
Government Usage

- There is also much dynamism in this area, with nations which previously lagged making decisive efforts to close on the leaders. German e-government policy 'BundOnline', is a good example. It has enabled Germany to make up some ground on the leaders in terms of government usage. It has a heavy focus on putting in place robust, scalable back office systems, over which services can be delivered.
- The leading country is Sweden, with Australia, the US and Canada closest behind:
 - These leading countries have a high level of basic use, as characterised by the number of staff and services online. They also have a high level of interaction with their citizens and businesses, with leading levels of payments from businesses and use of services by citizens and businesses.
 - High levels of use are not always driven by high availability of online services; for example Sweden leads for e-government use but has relatively limited offerings.



Government Impact

- Government impact is defined as the impact of on-line technology on government itself, rather than impact of government policy on third parties.
- Examples of impact are only now beginning to emerge. It is noticeable that few governments have particularly effective approaches to measure the impact of their policies. Australia is one of the few making significant progress to measure the impact of its initiatives.
- Sweden is again the leading nation with Australia closest behind.
 - The UK and Sweden are world-leading in e-participation, e.g. permitting online consultations or local authorities that allow public participation via the internet in council meetings.
 - The UK has progressed among the furthest towards e-voting.
 - Italy's e-procurement platform, Consip, is a leading example.



The e-Maturity of Governments

4.1 Government Readiness

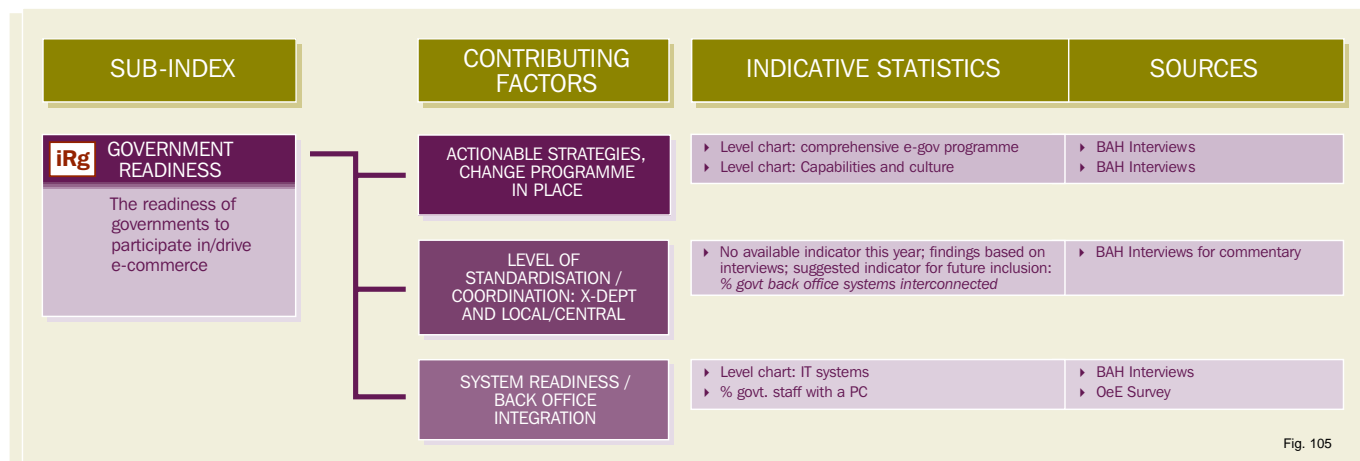
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4.2 Government Uptake and Use

4.3 Government Impact

4.1 Government Readiness

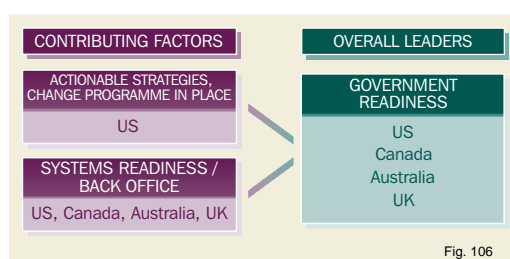
Definition Government Readiness describes the readiness of government to participate in and drive the e-agenda.



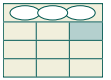
- Definition:**
- ▶ Government Readiness describes the readiness of government to participate in and drive the e-agenda.
 - ▶ Governments with a high degree of readiness have articulated a clear vision for the e-economy and e-government, and put in place delivery strategies with accountable government departments, a change programme to deliver improved government processes and well trained staff. This further requires a dedicated (e-government) organisation to drive and co-ordinate the programme across all parts of government, and to set targets and track progress.
 - ▶ The most ready governments will be progressing toward seamless integration of departmental systems across all government levels and agencies, and a coherent, secure interface with citizens and businesses. This in turn requires that plans for back office integration are in place and being actioned, and that interoperability frameworks have been adopted.
 - ▶ The level of systems readiness, defined as the readiness of a government's IT infrastructure and systems to support e-government, are also key. This refers specifically to having a high number of networked PCs for staff, a sound IT core infrastructure, and an effective and secure means of interacting with partners (e.g. Gateway, PKI, etc.).

4.11 Overall Findings **The governments with the highest readiness are the US, Canada, Australia, and the UK**

- The Leaders:**
- ▶ The leading nation in terms of *Government Readiness* is the US.
 - ▶ **Explanation of strengths:** The US combines a clear, specific, comprehensive and actionable strategy with a high degree of systems readiness, particularly the prevalence of networked PCs in government and the supporting ICT infrastructure.
 - ▶ **Successful approaches:** The most successful approaches are characterised by strong government leadership and a dual focus on back office integration and front office service delivery.



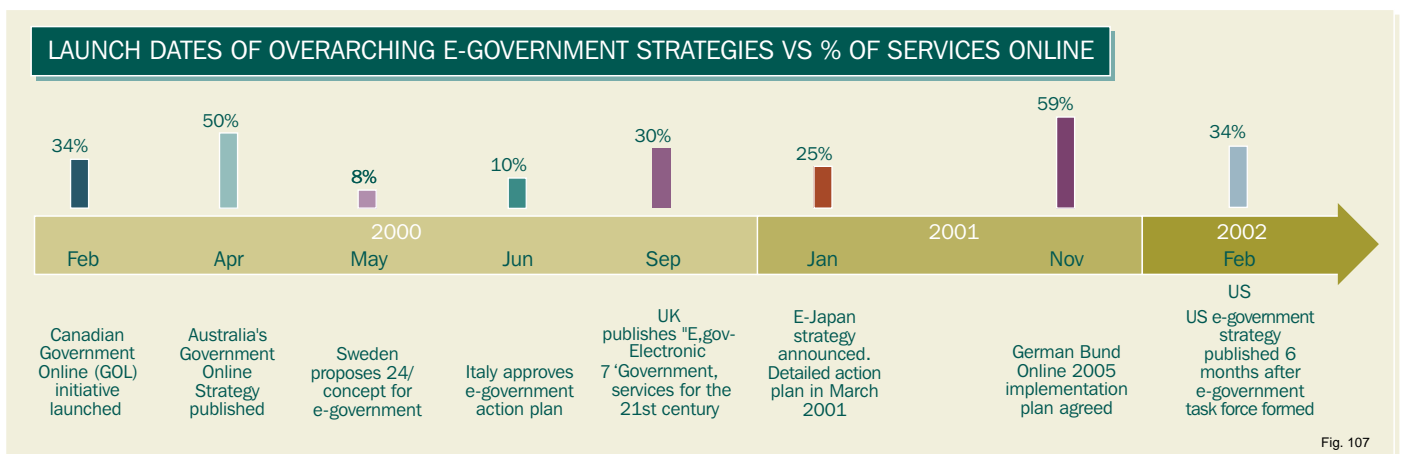
- Outlook:**
- ▶ All nations have prioritised e-government and so we can expect rapid progress across the benchmark group. However, those countries that are currently making the most strenuous efforts, and are the most likely to make up ground on the present leaders:
 - France and Italy are making concerted efforts to connect and train their government employees. Here they will make up ground as the leaders claim to already have near 100% PC penetration among government employees.
 - Japan is also fast making progress on e-government matters with a large push to get government services online.
 - ▶ In most benchmark countries, progress towards back office integration between governmental entities is throwing into relief issues with the law concerning protection of personal data. For example, Italy has passed a law which only allows central government to ask for a piece of information once. Departments must therefore share information, a practice which challenges existing data protection legislation.
 - ▶ Further progress on this dimension will depend on early rulings on amendment of data privacy provisions at national or supranational level.



Several countries have first-rate strategies, of which Canada, the UK and Germany are good examples

Overarching Strategy:

- Almost all the benchmark countries have published a single, overarching, e-government strategy. Whilst targets were announced some years ago (and often restated) and overall Information Society plans laid out even earlier (covering e-commerce and universal access objectives), the timeline below shows that e-government strategies only really began in earnest in 2000. Canada, which was the first, is considered to have the best e-government services. Australia and Sweden were also early to publish strategies. The US is the exception to the rule, having published their strategy only in 2002. Firstgov, the US portal, made significant strides in e-service delivery – even in the absence of such an overarching strategy.
- In most countries departments have published their own delivery strategies in line with the centrally established strategy framework. However, local government has tended to receive less attention (see ‘approach to local e-gov’ below).
- Canada is among the leading nations in terms of e-government strategies because:
 - A clear, specific, comprehensive and actionable strategy was laid out early
 - The strategy has been well rolled out to government departments
 - The strategy has been implemented, by a dedicated team
 - There has been a focus for over 2 years on breaking down government silos and taking a user-centric view (e.g. see the Canadian portal, canada.gc.ca)
- The UK and Germany also have leading edge e-government strategies, balancing the need to set up robust back office functions with the need for front office service delivery.
 - The UK has focused particularly on its portal and Gateway platforms, which are up and running, and which can be scaled up to accommodate the growing number of services online. It also was one of the first nations to publish an interoperability framework (eGIF), which other countries have since followed (e.g. SAGA in Germany).
 - Germany, unveiling its e-government transformation programme, "BundOnline" slightly later, appears to have applied some lessons learned by early leaders and out in place a particularly robust transformation process. BundOnline is a wholesale reform of Federal Administrative processes. As such it is potentially more resource intensive than other strategies, but aims to develop a robust platform which should have a tangible impact on costs and service delivery.
- France do have an overall information society strategy but appear not to have a specific e-government strategy. Current e-government efforts are dealt with at the ministry level (e.g. the e-Ministere project run by the Ministry of Economics, Finance and Industry), with the result that the approach is relatively fragmented.



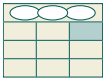
4.1 Government Readiness - Findings

4.12 There is widespread use of target setting, although the targets are often ambiguous

- Targets:**
- Almost all countries have set targets for e-government service provision with most deadlines in 2005, although only the UK and Japan have made specific commitments.
 - Japan has set a target of 98% of application/registration services available online by March 2004, and 100% of administrative information by central government provided through the internet by March 2004.
 - The UK aims to get all government services online by 2005.
 - Germany and Italy have used more flexible wording but backed this up by specifying exactly which services they will put online.
 - Germany: BundOnline 2005 aims to provide online access to all internet compatible services of the federal administration by 2005. However, they did identify 383 federal government services, of which 376 are considered suitable for the internet.
 - Italy will deliver priority services online by 2005. They defined 80 government services as priority services.
 - The remaining countries' targets are worded in a manner that is more open to interpretation:
 - Australia's federal agencies aimed to have 'relevant services' online by 2001.
 - Canada's target is to put the 'most frequently used services' online by 2005.
 - France recently committed to offering all the 'main government services' online by 2005.
 - The US has a Government Paperwork Elimination Act (1998) that requires Federal agencies to allow the option of submitting information or transacting business with an agency electronically, where practicable, by October 2003.
 - Sweden is the exception in having no specific, high-level targets.
 - Departments are then usually required to submit implementation plans against the overall target.
 - By and large the targets have been about the number of government services online and not about usage – although in the UK both the Inland Revenue (tax collection) and Customs and Excise (trade duties) have uptake targets.
 - There are sometimes also targets relating to e-procurement and e-tendering, although not all countries have set these out (at least not publicly). Typically the e-procurement targets are to move a certain proportion of government spend online, e.g.
 - Italy: 50% of public administration expenses (12bn Euro) to go through e-procurement by 2005
 - UK: 100% of procurement by central government to be e-tendered by 2002
 - Overall, targets have provided an effective device for generating momentum. They have generated problems of their own, however, by encouraging the wrong kind of activity in some cases.
 - In the UK, for example, the rush to hit targets to have 'all services' on-line by 2005 has led to insufficient consideration of how services can be re-designed and improved through the on-line medium.
 - Governments are beginning to take a more sophisticated approach to target setting, specifying targets more in terms of desired outcomes; in the case of government services, for example, through targets for uptake.

**Training
for govt
employees:**

- Training can help government employees realise the full benefits of e-government transformation. Training may cover:
 - Basic PC use / emailing / surfing
 - Use of online government facilities, e.g. internal projects, job postings, databases accessed via the internet, adherence to protocols and standards, etc.
 - Specialist skills, e.g. processing and working with government online services (such as tax returns and driving licence applications).
- All governments start from different starting points, but some are spending more than others:
 - In France, FrF 600m (~\$100m) was committed in 2001 for the training of civil servants. All civil servants will be offered the opportunity to get a "Computer Science and Internet Passport" by the end of 2002.
 - With BundOnline 2005, Germany is setting aside 150m Euro for IT training for civil servants. All civil servants have received at least one PC/internet training session.
 - Italy have set a target of all government employees having the European Computer Driving Licence by 2005 (60% by 2003) and have set aside 65m Euro for this programme. Currently 30% of government employees are computer literate.
 - 50% of the Swedish government's training budget is spent on enhancing the ICT skills of civil servants.
- The remaining countries' policies are lower key (e.g. Australia has training available on-demand).



- Portals:**
- Nearly all the benchmark countries have set up a single, one-stop government portal and most are moving towards a user-centred approach.
 - The best in class are the US and Canada, whose portals were established earlier than most of the benchmark group (the UK portal was established at about the same time as the US), and which have extensive content focused on specific user groups.
 - Canada: Government of Canada portal (canada.gc.ca), launched in 1995 but redesigned in June 1999 and again in January 2001.
 - US: FirstGov portal, launched in September 2000 (www.firstgov.gov).
 - The UK and Australia are following this approach but have less extensive portals, in terms of the breadth and depth of services. All have made progress in organising content around users' needs or life events, such as moving house.
 - UK: The UK Online portal, launched in September 2000 (www.ukonline.gov.uk).
 - Australia: Whole of government portal (australia.gov.au) linked to 18 portals based on customer groupings and topics, all launched over the last year.
 - In the latest e-government study by Accenture, the US and Canada get service breadth scores of 98.3% and 90.1% respectively, with the UK and Australia comparable to Canada and close behind the US with 93.8% and 89.6% respectively. However, the US and Canada significantly outperform on service breadth: the US scores 57.9%; Canada scores 65.7%; Australia scores 49.7%; and the UK 47.4%.
 - Another study by the World Markets Research Centre (WMRC) looks at the degree of functionality provided across a selection of government services or institutions (judiciary, parliament etc). Degree of functionality is graded on a standard framework from simple publication of information to offering fully transactional services (the "PITT" framework). WMRC awards Australia 50% overall, followed by the US and Canada on 34% each, and the UK just behind on 30%.
 - Of the remaining countries, only Italy have yet to launch a single portal (although this is a stated goal, and is due to be launched by the end of the year).

Approach to local e-gov:

- The majority of citizen and business interactions with government take place at a local government level (in the UK, some 4bn out of 5bn annual interactions with government are local rather than central). It is therefore crucial that local governments follow the lead of central government in putting services online. There are two contrasting approaches, typified by the UK and Sweden.
- The UK approach is centrally driven and local government is mandated to meet the same targets as set out for central government. Local authorities have been instructed to prepare their own plans for implementing e-government, in line with guidelines prepared by the office of the e-Envoy:
 - Central government sets targets and creates guidelines;
 - Local governments prepare strategies and implementation plans and submit them;
 - On approval, central government releases funding;
 - Progress against the plans is reviewed every 6 months.
- The UK has also launched 25 Pathfinder pilots, each a local government project that, if successful, can be rolled out across other local authorities (see Government Uptake section). The aim is to stimulate competition and innovation across local authorities and encourage the transfer of best practice.
- In Sweden, local authorities have a higher degree of tax-raising and policy autonomy. The central government cannot really mandate them to act in a certain way but instead is developing tools for e-government that are made available to local governments to use, but which are not compulsory. The intention is to incentivise local governments to act in a co-ordinated way by saving them money and eliminating duplication of effort.
- The Italians have a mixed approach with their e-procurement service, Consip, whereby it is mandatory for central government departments, optional for local government, and open to other public sector bodies, e.g. universities.
- The UK is alone in measuring local government progress in putting services online: a self-reporting survey of local authorities revealed that, as of July 2001, 29% of services were available online.

4.1 Government Readiness - Findings

4.14 Systems readiness **The UK leads in having an operational secure channel for G2B and G2C transactions**

Interoperability and Standards:

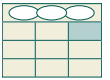
- Most governments have laid out standards in order to co-ordinate e-government efforts. These range from 'common look and feel' for web pages to plans for fully integrating back office infrastructures across all government levels and agencies.
- The approaches also differ in the level of authority granted to the relevant co-ordinating body and whether standards are made optional or mandatory.
- The US is the furthest along the line towards seamless back office integration, with stretching targets, transparent and regular tracking of progress, and most importantly strong leadership empowered by the President, (who called for greater homeland security after September 11th), and backed-up by legislation: - the Clinger-Cohen Act (1996). The e-government team uses the Clinger-Cohen Act to reallocate funding across departments when they are spending on substantially similar IT projects, thereby eliminating duplication.
- France, Germany and the UK form a following group, with mandatory interoperability frameworks in place (e.g. e-GIF in the UK, SAGA in Germany) but with integration plans under development or partially deployed. The UK's eGIF appears to have been the first of its kind, with others following its lead.
- Australia and Canada are developing interoperability frameworks and plans to migrate to a homogeneous architecture, but these have not yet been finalised.

PCs in government:

- Most of the central governments across the benchmark countries report a high number of their staff having PCs – well over 90%, although these self-reported survey-based responses should be treated with some care.

Effective channel for interacting with partners:

- Security in government interactions is crucial, and all of the benchmark group have or plan to put in place a channel for interfacing with external partners securely, e.g. Gateway or PKI.
- The UK leads in this aspect with the Government Gateway, a centralised authentication engine that ascertains users' identities online and enables secure online transactions with any government department offering a service through it. Currently there are 7 services on the Gateway.
- A number of other countries are planning similar initiatives:
 - Canada have developed a central Secure Channel akin to the Gateway which has not yet been deployed because of privacy issues that need to be resolved (e.g. sharing of information across government departments).
 - In Sweden the SHS infrastructure provides a secure channel for G2G transactions, but the intention is to roll it out to G2B and G2C interactions as well.
 - Italy and the US are both building similar infrastructures, having set aside 2m euro and \$2m respectively.
- In the remainder there are various PKI programmes at various stages of readiness, e.g. Japan has launched PKI infrastructure in three ministries (METI, MLIT and MPHPT).
- The Italian government is rolling out a 'smart-card' nationally in the form of an electronic ID card. The 'digital signature' contained on the card will constitute a single identity for all government interactions, ranging from tax payment to computer assisted voting.



Discussion of Drivers:

- **Government policy:** The level of systems readiness in government is driven by current and historical levels of government spend on ICT.
- Sweden, the US and the UK spend the most on IT in government per capita (see chart, right).
- Interviews revealed that Japan and Australia have a history of spending significantly on ICT. As a result, they have a high existing level of ICT infrastructure and actually throttled back in 2000-1, although rapid obsolescence rates mean this stock is at risk of being 'eroded' if IT spending does not increase.
- Italy on the other hand, has been one of the lowest spenders on IT and e-government per capita, which is reflected in the lower prevalence of PCs among its staff.
- France generally has a lower number of PCs per employee in central government, but has recently increased its spending in response. This already appears to be having a positive impact.

Approaches in the most successful countries:

- The most successful approaches are characterised by strong government leadership, and a dual focus on back office integration and front office service delivery.
- **Strong e-government leadership:** Most of the benchmark countries have published modernising government strategies in the last five years that have included e-government as one of their main pillars.
 - The Bush administration in the US has pushed e-government particularly hard, appointing strong leadership with rigorous programme management skills, placing them in the treasury function (Office of Management and Budget), encouraging them to use the power to redistribute department IT budgets under the Clinger-Cohen Act, and putting in place a conspicuous and transparent tracking mechanism (can be seen on the federal website).
 - e-Government is also one of the central pillars of the British Government's Modernising Government agenda.
- **Focus on back and front office developments:** In Germany, efforts have been made to ensure the platform for service delivery has been in place before putting services online, giving it a strong platform for growth. In the UK scalable back-office platforms such as the UK Online portal and Government Gateway function have been stressed as much as front office service delivery.

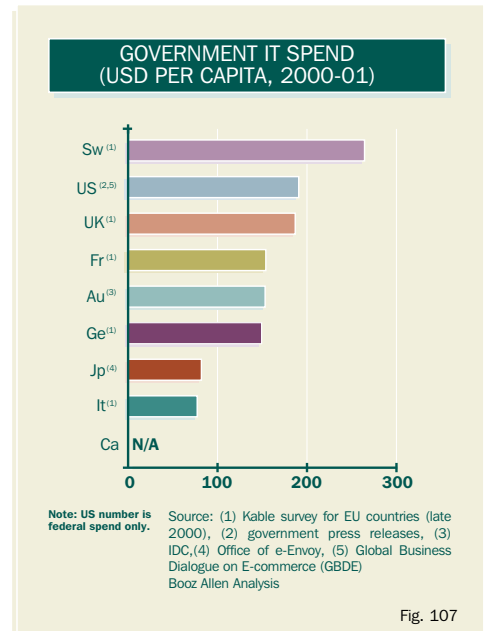


Fig. 107

4.1 Government Readiness

4.16 Case Study Germany: BundOnline 2005

- In 2000 Gerhard Schroder launched the BundOnline2005 initiative. As far as possible all Federal Administration services will be placed online.
- BundOnline2005 is more than just a portal: it is a broad reform process involving the whole of the Federal Administration.
- The programme requires consistent coordination of the implementation process of online service delivery across more than 100 federal agencies and a holistic view of the service portfolio and implementation requirements.
- As a basis for the implementation of this ambitious program, a comprehensive stock-take of the activities of Federal Administration – in the light of user-and transaction-oriented "service delivery" -- was carried out.
- As part of the implementation plan all services suitable for online delivery (> 350 in total) were assessed in the light of their usage potential. Technical and legal assessments were also carried out. The investment cost will total Euros 1.65bn by 2005.
- The implementation plan also provides for the establishment of a central infrastructure that is to be centrally coordinated but locally implemented. Some basic components will, however, be centrally planned.
- The potential for high usage rates has been demonstrated by role model projects (see table below).
- In all customer segments, such as other government agencies (at the federal level or the level of Länder /municipalities), the business or the citizen segments, uptake of these advanced services is already high.
- Moreover, examples below illustrate the contribution of e-government solutions to the modernization process of administration. Roughly 520,000 people a year are placed by the online services of the Federal Labor Office without mediation by a staff member. 4.5 mn Euro can be saved at the Federal Administration Office due to paperless working processes.

SAMPLE OF E-GOV ROLE MODEL PROJECTS

| | AGENCIES | IMPLEMENTATION | TYPE OF PROCEDURE | USAGE / IMPACT |
|---|-------------------------|----------------------------|---|---|
| BAföG online (online re-payment of student loans) | BMI/BVA | Running | Application-based with narrow structure | 12 000 users between 11/00 and 09/01 (8% of total # of applications); savings of 4.5 mn Euro p.a. |
| Arbeitsamt online (online job search and placement service) | BA | Running, relaunch planned | Information / research | 250 000 searches/day (database of 450 000 vacant situations, 390 000 school training places, 200 000 in-company; roughly 520 000 matches each year without personal intervention) |
| DEPATISnet (online search for patents and trademarks) | BMJ/DPMA | Running, extension planned | Information / research | Approx. 5 000 users/day (database of 25 mn patent documents, + 1mn new patents p.a.) |
| Öffentlicher Einkauf online (online procurement platform of fed. administration) | BMI/BeschA | First trial running | Complex transactions | Potential of 3 000 procurement transactions p.a. Total value of public spending is 250 bn Euro p.a. |
| DIGANT (electr. processing of citizen's ID / driving license applications by local authorities) | Bundesdruckerei | Running, extension ongoing | Application-based | Approx. 100 participating local authorities by the end of 01; the DIGANT procedure reduces costs and allows to provide cards to citizens one week earlier |
| ELSTER (online submission of income tax declarations) | BMF/ OFD Munich/ Erfurt | Running, extension planned | Application-based | Approx. 490 000 income tax declarations |
| Statistik Shop (online sales of statistical data) | BMI/StBA | Running | Ordering service | 13 000 registered customers since 03/00, turnover of > 150 000 Euro |

Agencies: BMI = Fed. Ministry of the Interior; BVA = Fed. Office of Administration; BA = Fed. Labor Office; BMJ = Fed. Ministry of Justice; DPMA = German Patent and Trademark Office; BeschA = Procurement Agency of the Fed. Ministry of the Interior; Bundesdruckerei = Fed. Printing Office; BMF = Fed. Ministry of Finance; OFD = Oberfinanzdirektion (Upper Finance Office); StBA = Fed. Statistical Office

Fig. 108

Chapter 2:

The e-Maturity of Governments

4.1 Government Readiness

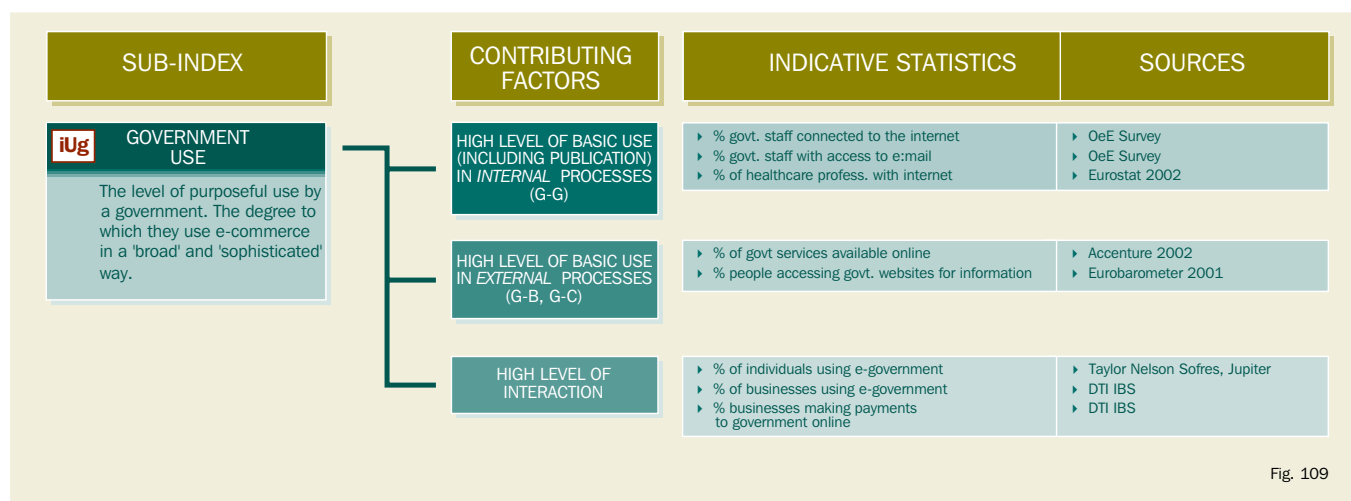
4.2 Government Uptake and Use

- 4.21 Overall Findings and Outlook
- 4.22 Basic Use in Government
- 4.23 Interactive Use of e-Government Services
- 4.24 Policy Overview: Common Themes and Successful Approaches
- 4.25 Case Study: Canada's Government Online Programme

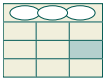
4.3 Government Impact

4.2 Government Uptake and Use

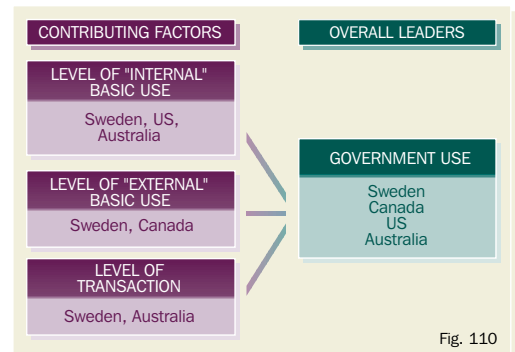
Findings **Government Uptake and Use describes the level of purposeful use by a government. That is to say, the degree to which they use ICT in a 'broad' and 'sophisticated' way**



- Definition:**
- ▶ *Government Uptake and Use* describes the level of purposeful use by a government. That is to say, the degree to which they use ICT in a 'broad' and 'sophisticated' way.
 - ▶ This requires that the internet is embedded into the daily work routine of civil servants and public sector staff.
 - ▶ It also requires that departments establish and maintain an online presence, including delivering relevant services. More sophisticated e-government offerings will include a full range of transactional services and be structured around user groups, rather than built on traditional departmental structures and delivery channels.
 - ▶ Countries strong in government use are characterised both by a high proportion of services available online and by high usage rates of those online services, by both citizens and businesses. Where transactional services are available online, citizens and businesses will be making significant proportions of payments to government online (e.g. tax).



- The Leaders**
- The leading countries are Sweden, Canada, the US and Australia.
 - **Explanation of strengths:** These countries have a high level basic use, as characterised by the number of staff and services online. They also have a high level of interaction with their citizens and businesses, with higher levels of payments from businesses and use of services by citizens and businesses.
 - **Environmental factors:** The broader level of internet uptake will also affect levels of demand for e-government services – this may lead to high uptake even where services may not be as extensive (e.g. Sweden).



- Central vs. Federal:**
- Federal governments differ from more centrally run administrations in two respects: they may deliver fewer services themselves (e.g. education may be locally administered), and consequently they may have fewer staff, and a potentially simpler structure.
 - These factors may give them an advantage in redesigning their services and pushing e-government (at least for the center).
 - Set against this, federal governments may have less tax raising power, hence lower resource and less influence to push through major programmes of e-government change – a factor which appears to be significant in Sweden, for example.

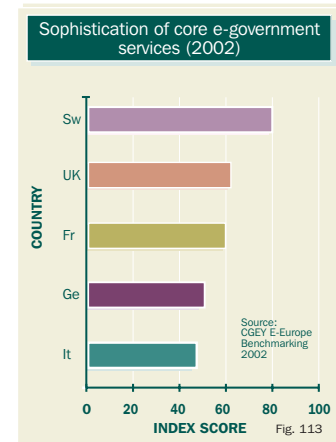
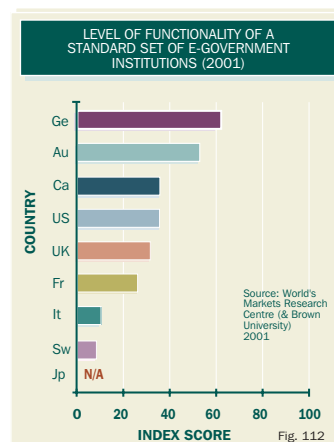
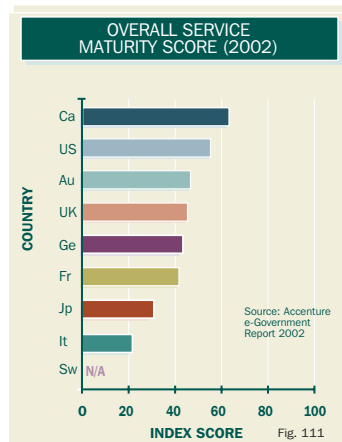
- Successful policies:**
- In fact, the success of decentralised governments likely owes more to competition between the stronger regional or local authorities in those countries, and the increased potential of best practice sharing. This has been key in Germany for example, and to an extent in Sweden.
 - The broader level of internet uptake will also affect levels of demand for e-government services.
 - One of the most successful e-government policies is Canada's Government Online (GOL), which has pioneered the user-centric approach and has achieved high levels of basic use and satisfaction. Moreover, GOL has begun to change processes to enable more advanced seamless services, such as simultaneous online business registration at both the federal and provincial level.

- Outlook:**
- All governments are making strides in this area and should show significant improvement.
 - Germany looks likely to sustain its strong recent momentum through its BundOnline programme. Crucially, it has invested in scalable back office systems to support rapid expansion, whereas some of the early leaders, have not done so to the same extent, and are now beginning to encounter problems.
 - Progress can be expected at the *local* level, where the majority of services are currently delivered. In most countries progress at this level has until now been slow, but momentum is beginning to build in the light of increasingly clear strategic plans from governments.
 - As pressure builds for e-government investments to deliver, usage targets for online services are likely to be set. In the UK, for example, the 2002 Spending Review saw an amendment to the online service target to include the aim that 'key services' should experience 'high rates of use'.

4.2 Government Uptake and Use - Findings

4.22 Level of basic use

Canada, the US and Australia lead. In Europe, the UK and Germany lead on breadth of e-gov services, Sweden on depth



- We distinguish between the uptake of on-line technology for INTERNAL government processes (G-G), and EXTERNAL, or customer facing services (G-C/G-B).
- Interestingly the leading nations in both aspects of uptake are the same: Sweden, Canada, the US and Australia.

INTERNAL: Internet use in government:

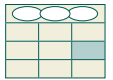
- Most governments report a significant majority of their staff having access to the internet at work, although, as with government PC penetration figures, this is based on survey responses which should be treated with caution.
- The incidence of the internet correlates extremely highly with the penetration of PCs in government (as it does with citizens and businesses).

EXTERNAL: Government services online:

- A dashboard of three commonly recognized e-government measures (above) shows that the UK is not *the* leader but always at or near the top of the chasing pack.
- Italy, Japan and Sweden have among the fewest services online, although Sweden performs well in CGEY's survey of 20 core services; as it has focused on delivering a relatively narrow set of services to a high level of sophistication.

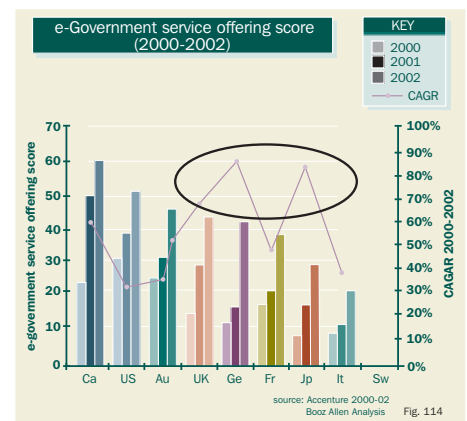
Discussion of Drivers:

- **Kick-off date/strategy launch** will probably not be a driver of e-government performance in the long term, though does offer some explanation for current levels of e-government service. Canada and the US, both leaders, were early to start their programmes (in 95 and 96 respectively, albeit under different names). Sweden put forward its 24x7 agency concept in May 2000, having had an e-government running since 1997, but its offer remains narrow.
- Germany on the other hand, shows how much progress can be made in a limited amount of time; the BundOnline programme was only launched in November 2001 yet Germany is now among the leading e-government providers. This suggests that market followers have an advantage in that they can learn lessons from the leaders.
- The market follower advantage is further illustrated by the slow recent progress of some countries that set up services early (such as Australia). E-government services were launched early, but based around the existing government silos. Integration across silos received less attention, and now the creation of 'pan-silo' user - centric services is proving complex.
- **E-government spend** also appears to have a mixed effect. The US is by far the biggest spender, yet Canada, with the most modest spend in 2000-01, achieves a similar result in terms of services online. It seems that in e-government, there is considerable scope to for 'smart spending', at least once the initial investments have been made.
- **Scale effects** are a factor worthy of note: the range and complexity of services that an administration must put on-line - and hence the likely required spend - does NOT vary much with country size. All countries face a similar challenge.
- On a per citizen basis, however, the more populous countries - or rather, those with larger *on-line* populations - are likely to achieve better value for money.



Discussion of Drivers, (cont.):

- One note of caution; since different proportions of the e-government spend are going into building foundation infrastructure for service delivery, a longer time frame would be more appropriate for assessing the impact of current levels of e-government spend. In future years, we recommend that time-lagged spending and service delivery indicators are analysed.
- Nonetheless, from this data it appears that small sums of money can be spent in smart, highly effective ways.
- **Structure of Government:** Interestingly, the top governments in terms of services online are all federal (Canada and the US - Germany also performs well considering its late start).
- This could reflect the effectiveness of devolving responsibility for e-government to local authorities: this encourages competition between local authorities, and is more likely to lead in innovation and best practices which, if shared effectively (as in Germany), can speed up introduction and effectiveness of services.
- Although on the 'vertical dimension' (central-local government) autonomy may seem to promote levels of service delivery, on the 'horizontal dimension' (department-department) centralisation may better support service delivery.
- Sweden's difficulty in rolling out broad government services online may owe something to the level of autonomy across the various departments. This makes it harder for e-government initiatives to be pushed through quickly.
- **e-Government Prioritisation:** The degree to which a government has prioritised e-government issues appears to be the most important determining factor in progress with getting services online.
- The greatest improvement in e-government service offering has come in Germany and Japan (as measured in a study by Accenture reviewing >100 key government services, chart right). Both countries were conscious of falling behind and have put significant resources into e-government. The UK has also made good progress.
- For the current leaders, continued progress will depend on overcoming the challenge of restructuring back office systems and re-engineering processes to focus on the end user. These challenges are slowing their growth.
- Interview findings suggest that the challenge of moving to a user-centric model is disproportionately affecting the traditional e-government leaders. Early starters of e-government services can be engrained in a department silo approach. In contrast, it has been easier for those that started late (e.g. Germany) to move directly to a user-centric model.

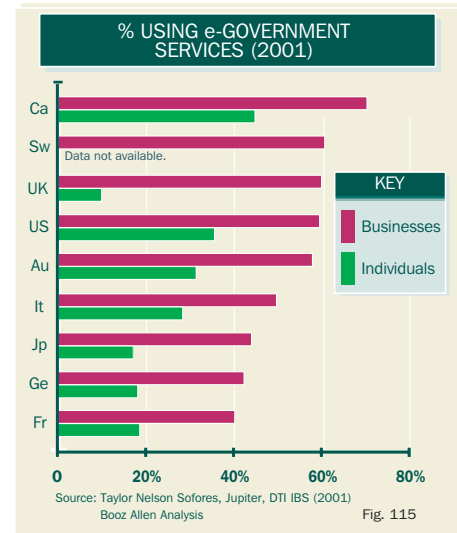


4.2 Government Uptake and Use - Findings

4.23 Level of Interaction

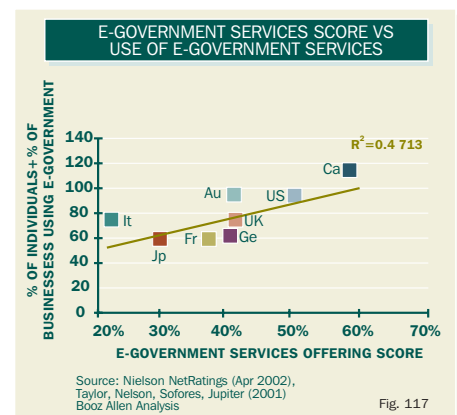
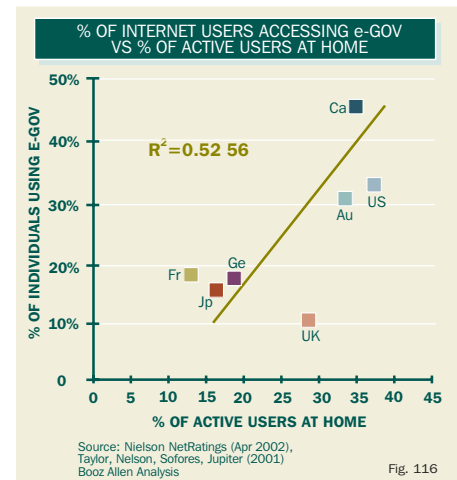
Canada, with its much acclaimed portal, leads in terms of individual and citizen use of its e-government services

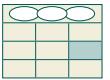
- Canada leads the way in terms of use of e-government services, both in terms of citizen and business use.
- In all countries, a significantly greater portion of businesses than citizens are making use of e-gov services.
- Also noticeable is the correlation between citizen and business use of e-government across countries. Higher using citizens generally go hand in hand with a higher using business community.
- The notable exception to this is the UK, which despite one of the highest proportions of businesses using e-government services, (60%), has one of the lowest proportions of citizen users (11%).



Discussion of Drivers:

- **Level of connectedness:** E-government services have been most popular in those nations that have most home users. (see chart, right).
- In fact, those countries with the most users also tend to have the highest *proportion* of users who engage in e-government.
- The implication is that uptake of e-government services is driven by the 'maturity' of a country's on-line population, much like other sophisticated online activities such as transactions. In both cases, levels of trust are required to commit information – be it personal or financial – over the internet. These levels of trust grow with experience of use.
- **Quality of e-government services:** The most used e-government services are those of the Canadian government, followed by the US (if adding the individual and business scores). Canada and the US also have the most advanced online presences, in terms of the portal: user-centric and extensive (see chart, right).
- Quality aside, there is also a correlation between the use of e-gov services and the 'maturity' of the services – ie how long they have been available. Those nations such as Canada and the US who launched early, lead on uptake, where as the later launching nations lag.
- The implication is that uptake simply takes time: services are improved as they are tested under real load, and user comfort and knowledge grows.



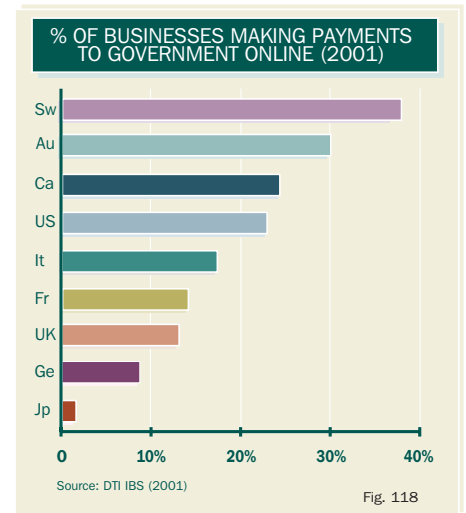


Those countries whose businesses use e-government services most, transact most with their businesses, although the UK underperforms

- Sweden, Australia, Canada and the US have the highest proportion of businesses making payments to government online. This is broadly in line with the countries where businesses use e-government the most (see previous page).
- The UK underperforms on this metric: given that a high percentage of businesses make use of at least one UK e-government service (60%, see previous page), it is surprising that only 12% are making payments.

Discussion of Drivers:

- The number of businesses making payments to government online is not necessarily an indication of high use of e-government services - provision and use of just one key service, e.g. corporate or sales tax (VAT), would be enough to generate a high score on this metric. Italy's mid table showing is driven by the strong uptake of its own on-line tax submission process.
- In the case of tax, the complexity of the tax code itself may determine how well it lends itself to being put and used online. Simplicity is a driver of uptake, and evidence shows that users make the switch where there is a clear benefit, in terms of either cost or convenience.
- There appears to be no single reason why Swedish business is so keen to make payments to government on line. The combination of sophisticated, user-friendly service(s), and high connectedness (and trust) amongst businesses seems to be contributing factors, though.



4.2 Government Uptake and Use - Policy Comparison

4.24 Policy Overview

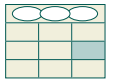
Successful governments have focused more on user needs ahead of pushing all services online

Common Challenges and Themes:

- Performing well in this area of the benchmarking framework presents government with a set of challenges:
 - The drive to make most relevant (or all) government services available on line
 - Encouraging use of those services by citizens and business
 - Enabling and fostering more sophisticated interactive or transactional use
- **Prioritisation of services:** Governments have differed in their approaches to putting services online, with most countries putting services online primarily in order of ease and often in order to hit demanding.
- Canada, Italy and Germany are putting services online according to a prioritisation based on use / popularity of the service. This has, to some extent, slowed roll-out, but helped to foster stronger uptake of those services. Canada's uptake levels are world-leading and Italy's - for the lower number of services available - extremely encouraging.
- Italy's prioritisation approach is particularly well structured. A starting set of 800 services to be put on line has been focused down to just 80, based on a 4-stage framework:
 - The likely frequency of use of the service by the end user
 - The value added to the end user of using the service on-line
 - The pre-disposition of the target group of the service to use the internet
 - The existence or non existence of better alternative channels for the service (e.g. telephone)
- **Incentives:** Interestingly, there is little evidence of governments offering incentives to users or businesses to go through the on-line learning curve.
 - UK taxpayers were offered a £10 reduction in income tax bill if filed over the internet.
 - Canada, Australia and the US all offer the non-financial incentive of faster processing.

Approaches in the most successful countries:

- Sweden has had difficulty putting services online because of the power of local authorities. However the attitude of citizens and businesses towards government (very open and trusting) and the internet has resulted in significant pent-up demand, such that the few services online are heavily used, e.g. 411,000 Swedes opted to use the new income tax service, far more than was anticipated (and high compared to other countries e.g. 75,000 submissions in the first year of the equivalent service in the UK). Environmental factors have in part contributed to Sweden's success.
- Canada's e-government achievements can be traced primarily to three factors:
 - a user-centric design in service delivery
 - the application of user feedback
 - the use of selective central funding to kick-start key e-government initiatives
- The success of this approach can be seen in the high levels of use and satisfaction, with over 46% of citizens using e-government services, 76% of users reporting a satisfactory experience, and over 1.4 million tax returns being filed online (See case study next page).



- Overview:**
- Canada was amongst the first to launch a centralised government portal in 1999 and is the leader in offering services through user-centric interfaces, rather than those corresponding to traditional departments.
 - A redesigned user-centric website was launched in Feb 2001 which allows Canadians to access 450 websites through 3 user-specific gateways and 35 service clusters. Canada has begun to move to the next stage of e-government, where internal processes are being redesigned around this customer centric delivery process.
 - In addition to service clusters, service integration is underway which enables an interaction through a single interface to provide services across multiple departments/organisations vertically and/or horizontally. One such example is the capability for businesses to register both federally and provincially through a single transaction on the federal government website.

- Measures of Success:**
- 90% of services are online as of 2001, and over 40% of individuals and 75% of businesses use Canada's e-government services.
 - In particular, online tax filing has been successful, with 1.4m tax returns were filed online 2000 and over 20% of businesses make online payments to the government.
 - 73% of Canadians who use the federal government portal were satisfied with the overall quality
 - Canada's e-government service has been ranked #1 in both 2001 and 2002 by Accenture's international survey, due to both extensiveness and sophistication of services.

- Key Success factors:**
- **User-Centric Design:** The Canadian government recognised early on the importance of online services being user-centric both in the front end interface to the client, as well in back-end processes and architecture.
 - **Application of Feedback:** The design builds on input from all users of government services, including businesses, individuals, educational institutions, NGO's and other government organisations. Prior to the re-launch of the portal in February 2001, 50 focus groups were used to determine which services were most useful and which web design were most desirable. Feedback from users is sought on a regular basis.
 - **Selective Central Funding:** While many online service offerings are funded by cross-departmental contributions, the government also uses central funding to ensure the rapid implementation of online services. Services are segmented into three categories:
 - **Key transactional services** - high volume, commonly used services that involve a transaction in some form, such as regulatory filing; an application and granting of a licence. To qualify, the applying department must demonstrate a significant volume of clients and transactions for the service and demonstrate that their clients are ready for and will benefit from on-line transactions.
 - **Subject clusters / information services** - a set of related information and services brought together from across organizational boundaries, or a service, which brings customized information together for a specific client through integrated and interactive databases that cross organizational boundaries. To receive funding, these proposals must demonstrate active partnerships among federal departments and agencies to organize, integrate, and provide user-friendly on-line access to information and interactive databases.
 - **Pilots** - such as a) cross-jurisdictional initiatives (across provincial / territorial, municipal, or international government organisations), b) cross-channel initiatives that improve the interaction between telephony and internet service delivery channels within or between departments, or c) innovative initiatives that help transform the way the Government of Canada delivers its services on-line, by testing new applications for external client service delivery and/or innovative public / private partnerships. For these proposals to receive funding, they must demonstrate their level of innovation as well as the potential benefits to external clients.
 - Central funding of CDN 160 million has already been committed and a further CDN 600 of central funding has been allocated over the next 4 years.

Chapter 2:

The e-Maturity of Governments

4.1 Government Readiness

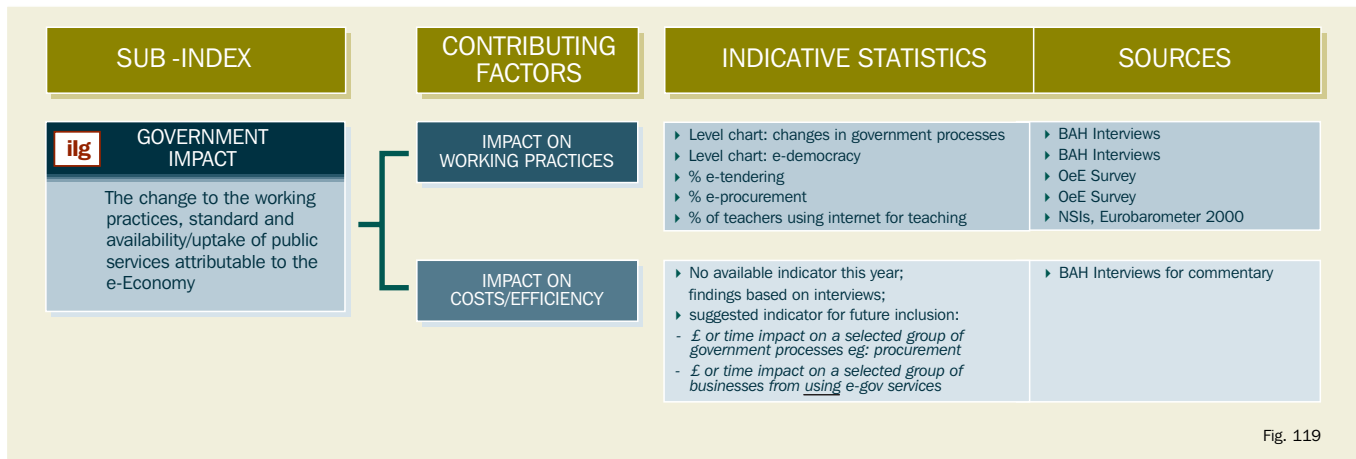
4.2 Government Uptake and Use

4.3 Government Impact

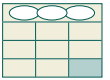
- 4.31 Overall Findings and Outlook
- 4.32 Impact on Working Practices: internal, e-democracy, e-voting, e-procurement, e-tendering
- 4.33 Policy Overview: Common Themes and Successful Approaches
- 4.34 Case Study: CONSIP, Italy's Central Procurement System

4.3 Government Impact

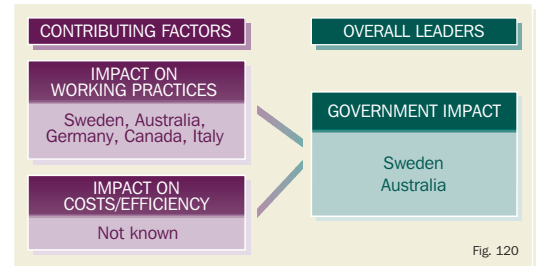
Definition Government Impact describes the changes to working practices within government, and improvements in the standard and availability of public services attributable to the e-Economy.



- Definition:**
- ▶ *Government Impact* describes the changes to working practices within government, and improvements in the standard and availability of public services attributable to the e-Economy.
 - ▶ High impact requires clear evidence of changing working practices *within* government.
 - ▶ As a result of such changes in processes, governments should realise significant improvements in terms of costs and efficiency. Leading governments have set targets for realising such improvements and track progress against them.
 - ▶ *Government Impact* extends beyond e-government and includes changes in the process of democracy enabled by the internet (e.g. interactive consultations and e-voting), and the use of ICT in the public sector (e.g. teachers using the internet for teaching).
 - ▶ *Note: Government Impact is defined as the impact of on-line technology on government itself and its interactions with citizens and businesses, rather than the impact of government policy on third parties.*



- The Leaders**
- The leading country is Sweden, with Australia and Germany the closest followers.
 - **Explanation of strengths:** Sweden is world-leading in e-participation, with local authorities that allow public participation via the internet in council meetings. The UK is also world leading in e-democracy.
 - **Environmental factors:** Cultural factors such as the mindset in government and how paper-based civil servants are, will affect the ability of government to best adapt to internet technologies.



- Most successful approaches:**
- Generally, delivery of services on the internet has been approached as an opportunity to automate services over an additional channel rather than opportunity for service innovation, and so comprehensive process redesign is only just beginning to emerge. Many innovative schemes (such as e-voting) remain at the pilot stage and as a result, evidence for real impact is scarce.
 - Furthermore, with currently low levels of uptake of e-government services compared to offline channels, even in the leading countries, tangible impact on costs and efficiency is yet to be felt.
 - A rare example of both process redesign and tangible efficiency gains is Italy's e-procurement platform, Consip. Another example is the German student loan authority, which has moved to paperless administration with savings of 4.5mn Euro annually.

- Outlook:**
- This is potentially an area that will see the most change in the near future. Countries are striving to realise benefits from e-government, more services are going online, problems are being identified and resolved, and more citizens and businesses are online to use e-government.
 - The differing foundations laid by the benchmark countries will continue to prove to be a differentiator in their relative progress and edibility to demonstrate an impact. Cultural differences may also affect how quickly they can redesign their processes around the internet to driver mass market take-up of services and yield significant efficiency savings.
 - Also, the lagging nations are closing the gap on the early leaders, demonstrably applying lessons learned from the pioneers and pushing through real change. We would expect this trend to continue and it is perhaps significant that evidence of impact is already emerging from those countries making rapid progress to catch up.

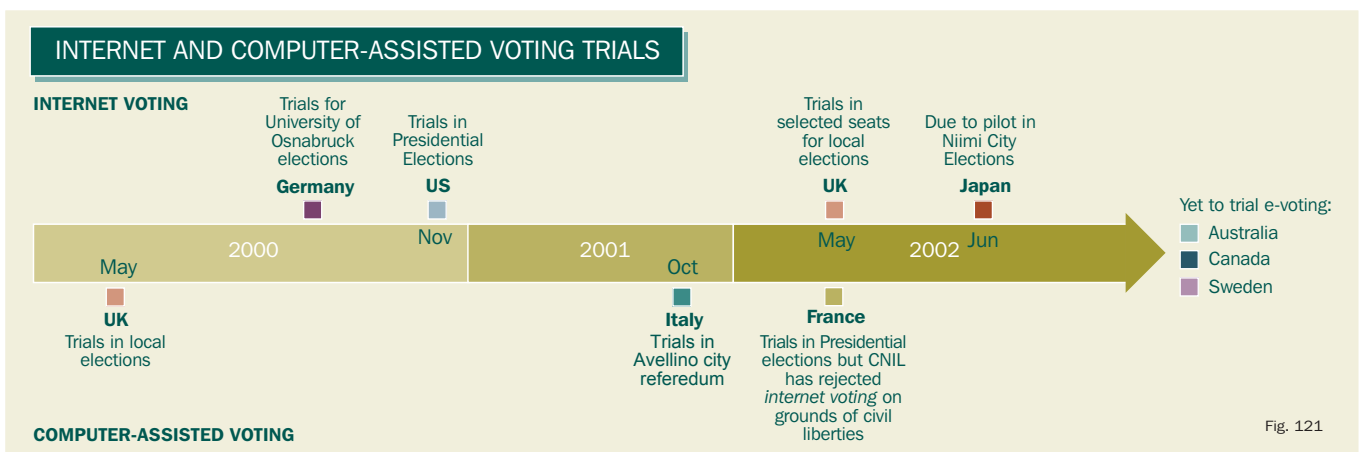
4.3 Government Impact - Findings

4.32 Impact on working practices **ICT is beginning to change public sector processes, such as teaching and e-participation, but there are few documented examples of this**

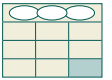
- Overall:**
- There are few concrete examples of changes in working practices in the public sector precipitated by the deployment of ICT.
 - Increasing use of **ICT in teaching** is a rare example, although this is happening in every country to varying degrees. France, Italy, Sweden and Germany are all leading, although the UK is poised to catch up with its comprehensive training programme for teachers. Surprisingly only 12% of teachers in the US report using ICT to teach.
 - Putting public services online is expected to have a significant **impact on efficiency**, but also on uptake through network effects on citizens and businesses wanting to interact with government. A good example of this the French government's initiative to network the health industry (SESAM-Vitale). As a result of this programme around 62% of physicians and 61% of pharmacists use a new electronic system for recording financial interactions with customers, accounting for one third of all transactions. This means that patients get refunded within 5 days, rather than several weeks on the paper-based format.
 - A third area of change in government is **e-democracy**, which can be split into participation and the voting process. The UK and Sweden are world leaders here, in e-voting and e-participation.

- e-Participation:**
- The internet is increasingly being used as a way to increase public participation in government on an ongoing basis. Trials have been most advanced in Sweden and the UK.
 - e-participation is particularly well developed in Sweden, at a local level, where towns like Kalix and Bollnas have set up virtual town halls which allow citizens to participate in council meetings. Two town councils in the UK, Newcastle and Newham, now webcast meetings.
 - Australia, Japan and the UK have made consultations available online, in the UK through the online forum 'CitizenSpace'. The US makes use of online "rule-making" to invite stakeholder input on potential legislation and regulation.
 - Canada, Italy and the UK have implemented fora for online discussion of policy areas.

- e-Voting:**
- The US was the first to trial e-voting in national elections with their trials in selected states during the US Presidential elections in 2000. It is planning to run e-voting pilots in the congressional elections of 2002.
 - The UK is also relatively advanced in this space, having run some of the world's most extensive online voting pilots during local elections in May 2002.
 - In some countries, such as France and Italy, computer-assisted voting is being pursued rather than remote internet voting as it better matches their requirements. In these countries, turnout is already high and issues of authentication and fraud are more salient.



Few impacts on costs and efficiency have been seen, although Italy's Consip e-procurement scheme illustrates the scale of potential savings



e-Procurement / e-Tendering:

- All governments have expressed their intention to implement e-tendering and e-procurement programmes, although they are all at varying stages.
- The most advanced countries are Australia and Italy:
 - At the end of 2001, overall spending through Italy's procurement body was 4.2bn Euro (15% of the total) with some 52,000 orders managed, 30% of them online. Savings over traditional procurement channels have been between 31% and 35%. There has also been a noticeable improvement in service levels with lead times reduced by around 5 months. Procuring through Consip is mandatory for central public administrations and voluntary for local administrations.
 - Australia has partly rolled-out its e-procurement system, with 30% of agencies implementing it. Over 111,753 purchases have been made with a value over AUD 2,000, coming to a total value of AUD 7.9bn. They are considering making it mandatory.
- Of the remaining countries, only Sweden has an operational e-procurement system. However, this has not yet been fully implemented and has been held back because the required legislation was not in place until 2001. Use is not mandatory and departments have been keen to maintain their autonomy.
- E-procurement does not depend on the development of a single central system, though it is unlikely that economies of scale will be optimised without one. The UK, for example, has managed to shift between 50 and 60% the procurement of low value goods and services to electronic channels without a central e-procurement system. The UK also has a successful Government Procurement Card scheme (over 35,000 cards issued and a throughput of £309m at the time of writing), which could form a springboard for e-procurement systems in the future.
- Moreover, several governments have set concrete e-procurement targets;
 - Japan intends to introduce e-tendering in all departments by 2004-05.
 - Italy: 50% of public administration expenses (12bn euros) to go through e-procurement by 2005.
 - UK: 100% of procurement by central government to be e-tendered by 2002.

Process redesign around ICT:

- Aside from e-procurement processes, examples of efficiency savings are rare. One example, however, is that the Germans cite 4.5mn Euro savings p.a. on the paperless processing of repayment applications of student loans.

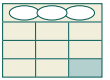
Governments are all faced with the challenge of generating and demonstrating impact, either in terms of efficiency gains or service improvements

Common Challenges and Themes:

- **Means of ensuring engagement:** Central government has the challenge of ensuring that departments, agencies and local government use the tools developed, such as e-procurement. Approaches have differed between countries making systems and policies mandatory or optional, or indeed mandatory only for parts of the public sector (e.g. central government).
 - Italy have made Consip mandatory across central government, and as a result uptake has been good.
 - Sweden's e-procurement system is optional and take-up has remained low.
- The approach taken by governments is often driven by constitutional provisions of power to different government bodies, or by norms of relations between these bodies.
- **Achieving and quantifying impact:** There is considerable political pressure in all countries to quantify the benefits of e-government, particularly in terms of efficiency savings. Germany and Italy appear to be the only countries with firm examples of impact thus far. Australia and the UK are alone in attempting to measure impact in a structured way, but are still only defining measures. This continues to be a challenge for governments worldwide.
- **Security and privacy in e-democracy:** In several countries, including the UK and the US, voter turnout has been falling and this has been the driving force behind e-voting and e-participation initiatives. However, elsewhere turnout is still high and civil liberties issues have taken precedence, e.g. in France CNIL has blocked moves for e-voting, and there are concerns in Germany. Countries that are still piloting e-voting systems are taking great care to ensure that if and when e-voting is rolled out, voter identification is reliable.

Approaches in the most successful countries:

- Good, robust service provision, backed by a solid systems architecture and process redesign, is essential to achieve impact, as highlighted by the Italy and Germany examples (e.g. 4.5m euro of savings by processing repayment applications for student loans electronically). The fact that some of the first examples of impact are emerging from countries who came later to the process, emphasises the importance of applying lessons learned in other countries, and of customer centric service delivery around joined-up processes.



- Objective**
- To reduce the cost of public sector procurement through procurement process efficiency.
 - To improve other aspects of public procurement efficiency - including speed of delivery.
- Actions**
- Centralisation of public administration procurement in Consip Spa, a private procurement agency entirely owned by Ministry of Economy and Finance.
 - Use of CONSIP is mandatory for central government, but it also forms an open platform for the wider public sector to use - from local government, through to health authorities and even universities.
 - CONSIP already receives 'orders' from government electronically. Launch of online procurement will occur in Q3 2002 following successful pilots. Digital signatures will facilitate the transactions. 80mn Euro has been invested in the e-procurement project.
- Initial Impacts**
- High levels of uptake, both in terms of a user base and volume of use. By April 2002 there were 14,100 registered agencies, and 52,000 orders had passed through CONSIP.
 - Spending of 4.2bn Euro passed through CONSIP by the end of 2001, out of a total public procurement spend of 33bn Euro.
 - 30% of orders to CONSIP were received electronically.
 - In pilots, average savings from electronic procurement were 35%.
- Key success factors:**
- Mandatory - the Italian constitution and high level political support for e-government enabled CONSIP to mandate that all central government bodies should direct procurement through them.
 - Step change - CONSIP represents something of a double win in terms of its potential for impact on costs and quality of service, since it represents not just the first e-procurement opportunity for departments, but also the first *centralised* procurement opportunity.

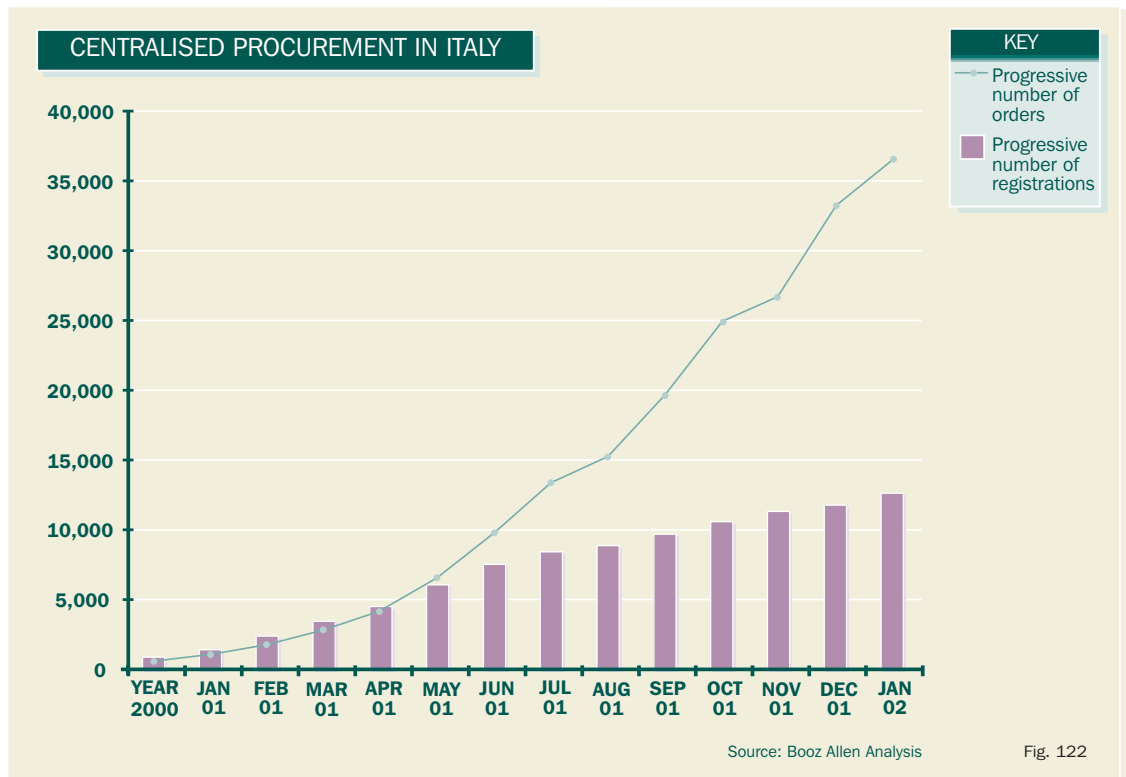


Fig. 122

Chapter 5:

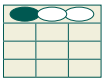
The World's Most Effective e-Economy Policies

Introduction **This Chapter draws together a 'dream team' of over 30 effective policies addressing all areas of the e-Economy framework**

- This Chapter draws together a 'dream team' of over 30 of the world's most effective policies addressing all areas of the Booz Allen Hamilton / Information Age Partnership e-Economy framework.
- Findings are based on over 150 face to face policy interviews conducted in 9 countries by Booz Allen Hamilton between March and June 2002.
- Policies are included on the basis of their success and impact in their home markets. Inclusion in this chapter indicates that policy makers may have something to learn from these policies and the reasons for their success.
- Inclusion does not imply that these policies can be transplanted piecemeal between countries.

Conditions for a policy to be considered to have had impact

1. Time series data shows a marked improvement in the target indicator after the policy was introduced (and in the absence of other explanations for such a jump). Unlikely this year, though increasingly possible in future as time series data build
2. There are direct, measurable impacts of the policy, e.g.
 - UK Online ad campaign resulted in increased brand awareness x%.
 - Teacher training programme in the UK has provided 190,000 teachers with ICT training.
 - UK Online Business centres have received x number of visits.
3. Circumstantial evidence suggests an indicator or index was (at least partly) influenced by the policy
 - High performance on associated indicator.
 - Associated policy is world-leading, either in terms of scale, timing or level of implementation.
 - Absence of environmental drivers.




Effective Policies in fostering a strong Market Environment: the UK, the US, Sweden, Canada

Fostering a strong market environment for e-commerce requires - building the skills of the population or 'brainpool' through promoting ICT in education, supporting cluster industries, and promoting low access cost for the internet.

- Canada, the UK, Sweden have best practice approaches to promoting ICT in education.
- The US has most successfully promoted cluster industries, such as venture capital.
- Approaches to creating low cost access vary with competitive conditions.

Canada, the UK, Sweden have best practice approaches to promoting ICT in education

| The UK: National Grid for Learning | Details of Policy Action | Impact |
|---|---|--|
|  | <ul style="list-style-type: none"> ➤ Funding for ICT equipment and internet connections in schools. ➤ ICT training for teachers (within New Opportunities Fund and NGfL). | <ul style="list-style-type: none"> ➤ 98% of schools linked to the internet, up from 28% in 1998 when NGf began. ➤ 355,000 (84%) teachers signed up for ICT training, with 190,000 having completed it. |
| Sweden: ITiS Programme | <ul style="list-style-type: none"> ➤ ITiS programme - National Action Programme to bring ICT to all Schools (all levels). Key targets: <ul style="list-style-type: none"> - Ensure that all pupils and teachers have e-mail addresses. - All schools should be able to have high speed internet access. - That internet should be accessible from every classroom. | <ul style="list-style-type: none"> ➤ 70-89% of municipalities achieved the goals that they set out to achieve. ➤ 50% of municipalities cite positive impact beyond schools, as many small communities have used grants to improve overall connectivity. ➤ The number of teachers per computer in 2002 is three instead of six 1999. ➤ Eight pupils share one computer compared to 1999 when the number was ten per computer. ➤ Internet connectivity increased to 78 % of all available computers (57 % in 1999). Almost two thirds of the pupils have their own e-mail address and 84 % of teachers. |
| Canada: Connecting Canadians | <ul style="list-style-type: none"> ➤ Connecting Canadians – ensuring all Canadians have access to the internet. ➤ The Canadian programme exemplifies the way in which the Canadian government has acted early. | <ul style="list-style-type: none"> ➤ 100% of schools and public libraries have been connected to the internet since 1999. ➤ Roughly 10,000 rural and remote communities have Community Access Points. ➤ 5,500 Voluntary organization have been connect to the internet. |

Effective Policies in fostering a strong Market Environment (cont.): The US has most successfully promoted cluster industries, such as venture capital

The US: Advanced Technology Program funds



Details of Policy Action

- Advanced Technology Program funds, in partnership with the private sector, high risk, high tech research which would not otherwise receive funding.
- Roughly USD 450 million has been spent on IT projects in the last 11 years.
- Funding is awarded on the basis of two main criteria –
 - 1) scientific and technological merit and
 - 2) potential for broad-based economic benefit.

Impact

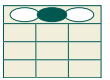
- Numerous breakthrough technologies have emerged from scheme funding e.g.
 - Genoa Corp – developed a semiconductor chip which brings the speed and capacity of fibre-optic networks dramatically closer to the individual consumer.
 - Cubic Videocomm - developed innovative wavelet-based video compression technology which allows compact video files to be sent via popular e-mail.
 - Cree Research - developed an innovative processes for growing silicon carbide (SiC) crystals and making them into high-quality wafers, which will bring improvements in communications systems.

The US: The SBIC Scheme



- US Congress created the Small Business Investment Company Act in 1958 to fill the gap between the availability of venture capital and the needs of small businesses in start-up and growth situations.
- SBICs are licenced by the Small Business Administration (SBA) if they can demonstrate:
 - \$55m in other funding.
 - Experienced and capable management.
 - A funding business case.
- Once funded, SBICs are able to borrow from the Federal Government at special rates (approx 2.5% above 10 yr bond rate) for long periods (5 years) which enables so-called "patient capital".

- SBIC financing has become the foundation for small business venture capital in the US – in 1997 alone they accounted for 45% of VC investments by number and 20% by value.
- ICT success stories include: Intel, AOL, Apple, Sun Microsystems, Sage and Peoplesoft.
- SBIC pays for itself through taxation of successful firms.
- Several academic studies, including Colecchia & Schreyer (2002) point to both the role of small businesses in the growth of an ICT sector and to the importance of VC funding for those small businesses.



Political leadership is now strong in most benchmark countries, and the regulatory environment generally open in all

Political/Regulatory Leadership describes the extent to which governments have driven the e-agenda effectively - providing strong, high profile political momentum, setting clear strategies and targets, establishing dedicated delivery organisations, and creating a regulatory framework that fosters e-commerce.

- Germany, the US, Canada and the UK all have strong leadership.
- Canada has established an especially effective interface with business stakeholders.

Germany, the US, the UK and Canada have strong and contrasting political leadership



- Three distinct styles of organising to drive the e-agenda emerge across the benchmark group. All three can be effective. Our finding is that the structure chosen is less important than the implementation.



1. Leadership from Treasury-based unit (US). Has the benefit of inherent influence through its closeness to funding decision makers.
2. Leadership from within cross-departmental group close to Prime Minister, such as Cabinet Office (UK, Japan, Italy, Australia).



3. Split leadership: e-commerce led from economics/industry ministry, e-government led from ministry for interior/home office (Germany, Sweden, France).

Canada has established an especially effective interface with business stakeholders

Canada: The e-Business Round Table

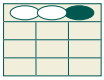


Details of Policy Action

- Private sector led initiative to improve Canada's environment for e-commerce
 - Included representatives from across many industries, leading to credibility and distancing itself from a "lobby" group.
 - Suggested politically safe, action able recommendations which could benefits the entire economy, but would likely have the largest impact on the ICT sector.
- **Key success factors: Facilitative Government Role**
 Importantly, government's role was 'facilitating' Roundtable is chaired by senior industrialist, and while each sub committee has a government counterpart, they do not attempt to control the agenda and content of discussion.

Impact

- Improved the environment for investment in Canada, and particularly in the ICT sector
 - Reduced capital gains tax inclusion rate from 75% to 66%.
 - Reduced overall federal corporate tax rate from 28% to 21%.



Canada, Japan, Australia and Italy have all taken best practice measures to enhance the extent and quality of national infrastructure

Policy making to promote the roll-out of infrastructure can encompass multiple approaches: setting the competitive market frame work to boost competition among private sector players, or leaning on a strong incumbent. Investing public funds to provide infrastructure as a necessary public good, or attempting to provide the private sector an incentive to lead.

Australia and Sweden have invested public funds to close the Urban/Rural Digital Divide

Australia: Networking the Nation



Details of Policy Action

- Key objectives
 - Enhance telecoms infrastructure and services in non-urban areas;
 - Increase access to, and promote use of, services available through telco networks; and
 - Reduce disparities in access to services/facilities
- Action: Funds committed and projects defined and being implemented / implemented; 10 rounds of funded projects executed with over AUD 200m spent.
- Extension of universal service obligation in 1997 to include a digital data service obligation (DDSO) – requiring the digital service provider to set out plans for how 100% of Australians will be served.

Impact

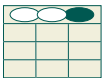
- Regional Internet connectivity has more than doubled to 36% in the past 2 years.
- The DDSO requires 96% of the population have access, and that the Universal Service Provider develops a plan to serve the remaining 4% of population in 'special digital data service obligation areas'.

Sweden: Broadband for Rural Areas Programme



- €0.89 Billion programme to support roll out of broadband infrastructure in remote areas (through grants, tax relief, Local Loop Unbundling).
- The local authorities have been given the role to ensure competition neutrality and diversity in the networks and they are responsible for the procurement. However they do not run the systems.
- Funds are released based on infrastructure plans drafted by the local authorities, after being scrutinised and approved by the county administrative board.
- Implementation is left to market players.

- Affects 30% of the population, but is only now hitting the market.
- Only 5 % of funds have been paid out. Local politicians' enthusiasm for promoting broadband has dampened since the end of the Internet boom and the process of taking up the initiative has been slow.
- Therefore, the programme has been extended to 2005.



Canada, Japan, Australia and Italy have all taken best practice measures to enhance the extent and quality of national infrastructure (cont.)

Canada: Stimulating competition in broadband access



Details of Policy Action

- Canada took actions repeated in other countries, but it did so earlier than most other benchmark nations.
- Beginning in 1998, cable companies were exposed to broadcast competition from telco's and broadband access competition from 3rd party ISPs.
- Similarly, beginning in 1997/98, telco's were exposed to competition from both cable companies and CLECS in the local loop.
- Prospect of increased competition drove investment by cable companies and telco's ahead of deregulation, in an effort to secure market share as a defensive measure, and cultivate a new revenue stream.

Impact

- Canada has amongst the lowest business and individual broadband prices in the benchmark group.
- Canada also has amongst the highest broadband availability in the benchmark group.

Japan: Broadband market evolution



- Government forced incumbent NTT to open up facilities to competitors through "local loop unbundling" (LLU) in August 1999, and followed with a series of regulatory actions:
 - Ministry forced NTT to upgrade exchanges beyond metropolitan areas in 2000 by revising the provision for NTT connectivity.
 - NTT forced to offer wholesale DSL in June 2001.
- Yahoo took advantage of open market to enter with competitive proposition.
- Key success factors: a) Attractive Market One driver of the decision to enforce LLU was intense lobbying from Tokyo Metallic, who saw the massive potential of the Japanese broadband market; b) Repeated action the regulator showed a willingness to act each time the incumbent presented an obstacle to DSL rollout.

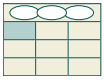
- A competitor, Tokyo Metallic, was the first to offer DSL services (before the incumbent NTT).
- NTT have revised strategy and now embrace DSL – ending previous attempts to protect the lucrative ISDN business.
- Japanese consumers now have the cheapest DSL service among the benchmark group.
- Uptake of broadband grew rapidly in the wake of regulatory action, especially the launch of wholesale DSL. Now 6.1% of households have a broadband connection.

Italy: Rationalising planning laws



- Strategic Infrastructure Law (Legge Obiettivo) rationalised planning procedures to accelerate and reduce costs of large scale infrastructure development.
- Backed by direct government spending to support broadband infrastructure development including tax exemptions, special rate loans and other funds (€0.5 billion).

- €31 billion private investments will use this preferential procedure including:
 - €4 billion for cable investments
 - €16 billion for 3G networks
- Estimates say that €2.5 billion of this investment is incremental - generated by the change in planning law.



Effective Policies in promoting Citizen Readiness: Sweden’s tax reform to increase PC uptake and Italy’s attempts to improve citizen IT skills

Policy making to boost Citizen Readiness encompasses measures to promote access device availability, measures to boost or encourage the development of skills, as well as measures to boost broader confidence in the medium of e-commerce.

- Sweden has high citizen readiness having acted to promote PC uptake for households.
- Italy is pushing the European Computer Driving Licence as a qualification to drive skills and common training standards.

Sweden’s PC tax reform has been a major driver of growth in household PC uptake

Sweden: PC Tax Reform



Details of Policy Action

- In 1998 the Swedish government reformed the tax system to enable employees to purchase PCs tax free from their employer.
- The employer administers the scheme, typically providing the machine to the employee who then repays over a period of 3 years. Payments are deducted from gross salary.
- All employees were eligible, even those who did not need a machine for work purposes.
- Financing for the initial capital outlay was provided by banks, who took advantage of the security afforded by a government guarantee.
- Key success factors: a) administered by companies, which has minimised government expense, b) high tax rates meant that tax-free benefits have a particularly high marginal value, c) guarantee. By offering a government guarantee on the loans, the risk was reduced and so cost for participating firms was controlled.

Impact

- PC penetration in Sweden increased the most of all European countries in 1997-1999, despite being at an already high level in Sweden.
- PC penetration is now the highest in our benchmark group.
- A new ‘wave’ of purchasing PCs is underway, presumably as householders update their equipment. PC sales are growing again in Sweden, having levelled off elsewhere.

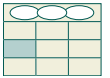
Italy has been prominent in supporting the ECDL as a common training standard

Italy: Promoting ECDL



- The European Computer Driving Licence (ECDL) is a common European qualification, but the government of Italy have done most to promote this qualification as a standard.
 - Public sector staff will be trained for ECDL.
 - e-milio: e-learning course to promote ECDL among teachers and students. PPP with RAI educational.
 - ECDL training will form part of military service.
 - Further initiatives are aimed at training unemployed people to ECDL standard.
- A fiscal bonus will be provided for companies employing staff with an ECDL.
- Key success factor: Leveraging scale; the public sector is a huge employer – using its weight as a player in the labour market the government can popularise the qualification within its employees. This should give critical mass in the wider labour market.

- 100% of public sector staff will hold ECDL by 2005, 60% by 2003.
- 7,000 schools equipped with equipment to provide e-learning (e-milio) programmes towards the ECDL.
- 80,000 licences distributed so far; 250,000 requests for ECDL outstanding.
- 2,000 training and test centres certified.



Effective Policies in boosting Citizen Uptake: Germany’s Women to the Web, Italy’s drive to put content online, and Canada’s scheme to support voluntary organisations

Promoting Citizen Uptake involves tackling issues of digital divide, potentially taking positive action among population groups less likely to use the Internet. It also involves taking action to increase the incentives for use, for example the quality of broadband content. It involves measures to encourage citizens up the ‘adoption ladder’ of usage sophistication, although few governments have been active in this area.

- Germany has targeted training at several groups who have been slow ‘uptakers’ – most successfully, women
- Italy has tried to entice citizens online with provision of content.
- Canada has provided the most significant support to voluntary groups to establish an online presence.

Germany’s Women to the Web campaign has reduced the digital divide between genders

Germany: "Women to the Web"



Details of Policy Action

- Part of a series of ‘Internet for All’ initiatives ‘Frauen ans Netz’ provided training for women in using the internet.
- Training was offered at over 200 sites across the country on a subsidised basis – the fee was 28EUR.
- The initiative was supported by Brigitte magazine, a popular women’s magazine.
- Key success factors: a) Cost. Women were willing to pay a little for training, enabling more to participate, b) PPP. By imaginatively leveraging the private sector, through exposure in magazines, the scheme’s impact was enhanced. Sponsorship from DTAG also extended the scheme’s reach c) Targeted. Each ‘Internet for All initiative’ targeted specific user groups with lower rates of internet uptake.

Impact

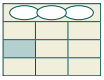
- Over 100,000 women received training through the programme.
- Further 200,000 women were enrolled for future courses at the end of 2001.
- The programme website received 13m hits during 2001.
- 98% of course attendees intend to continue using the internet.
- The difference between internet penetration among males and females fell from 18% in 1999 to just 4% in 2001.

Italy is hoping to attract citizens online through direct provision of content

Italy: Providing Content



- Government hopes to attract citizens online through online content production; digitalising Italy’s cultural wealth.
- Projects have included online museums, digitalisation of books, digitalisation of audio-visual resources.
- Total public spend is 20 million EUR, though private resources are also required.
- Key success factor: Rich cultural heritage provides the raw material for Italy’s online museums.
- 400 museums can now be accessed online and online ticket reservations made.
- Public libraries offer the new service of local book delivery following online requests.



Effective Policies in boosting Citizen Uptake: (cont.) Canada’s scheme to support voluntary organisations

The Canadian government has supported numerous voluntary organisations getting online

Canada: Volnet

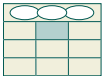
Details of Policy Action

Impact



- VolNet offered internet skills and equipment to voluntary organisations. The scheme makes available resources:
 - Basic internet account for 1 year.
 - 50% towards the cost of access devices.
 - Training in basic internet skills for use and website publishing.
- Additional support takes the form of applied learning such as online discussion groups, and support from IT volunteers.
- **Key success factors:** a) Outlay, The 50% discount on computer equipment acted as a substantial draw to organisations who are usually cash constrained. b) Comprehensiveness, The scheme represented the complete package for volunteer groups, including ongoing support.

- 10,000 voluntary organisations made use of the training and facilities to establish an on-line presence.
- 17,000 staff and volunteers have been trained.



Effective Policies in fostering strong Business Readiness: Germany for developing business IT skills, and UK for the most effective business support network

Policy making to promote Business Readiness involves the promotion of access device penetration among businesses, designing incentives for businesses to train their staff, and also addressing business concerns; for example over the security of the on-line medium. It can also potentially involve positive action to enhance the value for money of on-line versus off-line commerce.

- Germany has strong business readiness having concentrated on ensuring adequately trained staff are available.
- UK has focused on developing business confidence in IT applications, and on ongoing support for businesses.

Germany's action plan to close the IT skills gap has started well

Germany: Filling the IT skills gap



Details of Policy Action

- Government engaged industry and unions to agree an action plan "Innovation and Jobs for the Information Society" to attract 250,000 IT jobs by 2005 and eliminate skills shortage.
- Action plan included a short-term emergency measure to alleviate acute shortage – 20,000 Green cards for non-EU specialists over 2 years.
- Longer-term measures included 1 billion EUR for training courses from the Federal Labour Office, a commitment from industry to increase training places by 50%, and 50 million EUR extra to create new computer science courses.
- **Key success factors:** a) coherent plan provided short-term alleviation of problem and longer-term prospect of a solution, b) co-operation with industry and unions won concessions and crucial political support.

Impact

- Recent progress report suggests target of 250,000 specialists will be reached – 160,000 attracted by end of 2001 alone.
- 12,000 Green cards taken up by June 2002.
- Each green card has created 2-3 associated jobs.
- Additional uptake of Federal Labour Office training schemes of 30%.
- Industry created more than 50% increase of training places in IT and media.
- 100% increase since 1997 in number of computer science students enrolled.

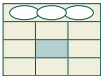
UK Online for Business is the most successful business support network model

The UK: UK Online for Business



- UK Online for business is a government-industry partnership to support businesses in making the best use of ICT.
- A budget of £67m and a network of 400 advisers in over 100 contact centres nationwide.
- Help and support are provided through a variety of contact points:
 - Internet portal with access to information and e-business planning tools.
 - Call centre and helpline.
 - Partnership programme to help spread best practice among SMEs.
 - Support network was promoted by marketing campaign in mass media (TV, radio, trade press).
- **Key success factors:** a) Multichannel support network.
 - provides flexibility businesses need, b) Marketing raised profile of support network and increases utilisation.

- Project supported UK performance in exceeding target of getting 1m SMEs online.
- More direct impacts include (in 2001 alone):
 - Adviser network helped 160,000 businesses.
 - Portal received >1m hits.
 - Call centre fielded 38,000 calls
 - 359 signed-up partners.
 - Awareness of scheme is 46% among UK SMEs.



Effective Policies in supporting Business Uptake: US for reducing the regulatory burden, Australia for brokering industry collaboration, and Canada for directly supplying IT staff

Business Uptake policy making promotes the general level of purposeful uptake and use of internet technologies by a nation's businesses. Strong uptake is characterised by high levels of use at several levels of sophistication, from basic use to trading online, and by high levels of use among smaller businesses as well as larger ones.

- US have encouraged businesses of all sizes to trade online with a moratorium on online sales tax, this has also encouraged potential spenders.
- Australia has used small amounts of seed capital to support the industry collaboration needed to get whole industries online.
- Canada has supported smaller businesses by actively providing them with trained IT staff.

US federal government has reduced the regulatory burden for online trading

The US: Internet Sales Tax Moratorium



Details of Policy Action

- The Internet Tax Freedom Act (2001) renewed a moratorium on states requiring businesses based in other states to collect sales tax from online purchases.
- The federal government recognised the burden which sales tax requirements would impose on smaller companies considering trading online – remitting tax to up to 50 authorities at different rates, and even identifying the location of the buyer.
- Key success factor: Constitutional Prerogative. Without the 'interstate commerce' clause, the federal government would not be able to control states' powers of taxation.

Impact

- The US has one of the highest proportions of SMEs selling online.
- Although not targeted at consumers, tax-free shopping has supported B2C e-commerce. 35% of US online shoppers cite the absence of sales tax as a reason for choosing that channel.
- Significant tax income is foregone – estimates show that around US\$1 billion in sales tax is lost through the moratorium.

Australia's ITOL grants have facilitated industry co-operation for a small outlay

Australia: ITOL Grants



- NOIE make Information Technology Online (ITOL) grants for projects which broker industry collaboration to either:
 - Develop common standards within and across industries.
 - Bring whole industries online through collaborative projects.
- Only 2 million AUD are available annually (a deliberately small amount to ensure NOIE plays facilitation only role).
- 81 awards with a total value of 7.3 million AUD have been made to at least 15 different sectors.
- Key success factor: Rigorous analysis of investments stretch ITOL funds to optimum.

- Australia has the highest proportion of small businesses trading online in our benchmarking group.
- Recently extended for another 5 years with 13 million AUD budget
- Examples:
 - SuperEC E-commerce in the super-annuation industry.
 - XBRL Development establish standard reporting language acceptable for ASX reporting.

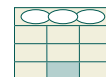
Canada's Student Connection Programme places students with small businesses needing IT support

Canada: Student Connection Programme



- Launched in 1996, the Student Connection Programme provides students interested in IT (though not necessarily studying it) with IT training. Students then provide training within the centre, or more intensively through a placement. Some students are subsequently taken-on permanently. The scheme operates from 15 centres within universities and colleges.
- Key success factors: a) Low risk/high return for businesses in taking a student or a course – they are virtually free, b) Trust/credibility. The government lends its brand and trusted status to students who would not otherwise be hired in an ICT role.

- Over 85,000 small businesses have used the scheme.
- Over 3,500 young people have been placed on the scheme.
- 97% of student business advisers think skills developed on the programme make them subsequently more employable.



Effective Policies in generating Business Impact: Australia and France for schemes to leverage the role of the public sector as a player in the health industry

Business Impact describes the impact of the Internet on the workings of a nation's businesses. Impact can take the form of changes to the working practices of businesses, or to the types of goods and services which the business delivers. Governments can influence business impact through their own market power as a buyer of businesses goods and services.

- Australia and France have both targeted the health industry to act as testing grounds for industry wide e-commerce solutions. In France the public sector are acting as the enforcer of standards, in Australia as the broker.

Australia has leveraged the role of government as a purchaser of health products to drive suppliers online

Australia: Networking the Health Industry



Details of Policy Action

- The Australian government has initiated an ambitious umbrella project called Project Electronic Commerce and Communication for Healthcare, charged with driving the industry to be Australia's first full e-commerce supply chain.
- Initiated in 1996, the most successful of several pilots is the Pharmaceuticals Extranet Gateway.
- Through consultation with the industry, government hoped to drive manufacturers and wholesalers to use common standards for both product cataloguing and internet transacting.
- Gradually, public sector purchasing will migrate onto the agreed internet standard, and then finally raw materials producers until the whole health value chain is using common standards.
- Competition is encouraged as the standards are open and the internet solution is cheaper than EDI predecessors – costing just \$12/week to operate.
- **Key success factor:** Public health sector. In this sector, the government is uniquely well placed to leverage its position and demand industry action, since it is the primary end purchaser it has almost monopsony power.

Impact

- All major pharmaceutical manufacturers (c.700) and competitive wholesalers (5) have moved to a common cataloguing system for their products, and to a common internet-based standard for transacting.

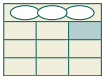
France - Paperless healthcare

France: The SESAM-Vitale programme



- Launched in 1996 the SESAM-Vitale programme is targeted at 'gaining control of healthcare spending'.
- The project involves replacing existing paper-based systems for reimbursing individuals following a visit to a healthcare professional (HCP).
- Individuals hold an electronic card which contains identification information.
- Professionals, including doctors and pharmacists, carry a different card.
- When receiving medical care the patient's and the doctor's ID cards are simultaneously entered into a dedicated terminal which then sends the information via the internet (once a day) to the appropriate healthcare insurance fund (of around 1500).
- Initially, slow take-up was improved by providing a fee to HCPs - initially a grant of €1,370 for equipment, then replaced with a fee per electronic form submission.
- Annual costs of around 150 million EUR.
- **Key success factor:** Incentives. Uptake of the cards and terminals increased dramatically when government support switched from a grant for buying the terminal to a fee per marginal submission.

- 41% of all HCPs currently make online submissions (incl. 68% of doctors).
- Around 33% of the 1.3 billion forms submitted annually are now submitted electronically.
- 43 million individual health cards have been distributed.
- Reimbursement times have been cut from a few weeks to within 5 days.
- Prompted increase in PC uptake among doctors – from 15% in 1995 to 80% in 2002.
- Expected annual savings of 300 million EUR.



Effective Policies in fostering strong Government Readiness: Germany and the UK for back-office interoperability, Italy for smartcards

Government Readiness policies foster a government's ability to deliver e-government and to participate in e-commerce. For a government to be ready, it must have the appropriate strategies in place, a sufficient level of equipment but must also have made progress towards establishing common standards and architectures for cross-departmental service delivery – such as a PKI.

- UK and Germany have been developing back-office interoperability to support customer-centric online service delivery.
- Italy has begun rolling out an national electronic ID card to be used as a 'key' for government services.

Germany and the UK have recognised the importance of common standards within government

Germany: BundOnline 2005



Details of Policy Action

- BundOnline 2005 aims to put all priority services of the federal government online by 2005.
- Project planning includes very definite linkages between development of back-office capability and front-end service delivery.
- **Key success factor:** Robust, Although services may take longer to get online, when delivered they will have robust back-office foundations, and will thus engender user confidence.

Impact

- Detailed implementation plan with clear timeline and prioritisation for services of over federal agencies.
- Fed. Cabinet agreed plan, funded with EUR 1.65 billion until 2005.
- Definition of federal e-gov architecture through implementation plan; first basic components online (form server, field trial with procurement platform).
- Progress in online delivery on schedule at last external review.

The UK: Government Gateway



- Government Gateway is a secure interface enabling any department to offer a service through it, and use it as an 'authentication engine'.
- Launched in Jan 2001 at a cost of £16 million, 5 pilots were complete by Dec 2001.
- **Key success factors:** Operational, The Gateway is far ahead of similar schemes in other countries is that it is operational. A transactional authentication engine is vital for customer centric service delivery.

- 4 million registered users of the Gateway.
- Comparatively low take-up of specific services operated over the gateway: 75,000 income tax submissions online, 1350 farmers using ICAS.

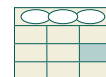
Italy is rolling out a national electronic ID card to act as a 'key' to services

Italy: National ID Card Scheme



- Electronic ID cards were first introduced in March 2001 – only Finland preceded this.
- ID card will act as a single secure key for users to access all government services at all levels (central and local). It will contain electronic information including tax code and healthcare number thus replacing several documents.
- Users will retain control over what additional information such as medical history, is contained on the card. The smart card does not replace paper ID cards.
- Cards will also be used for computer assisted voting; though not for internet voting which is not legal yet in Italy.
- 40m EUR are being spent, with another 320 million EUR available. 8 million cards will be issued by 2003, and 30 million by 2005.
- Key success factor: Flexibility, For citizens to use ID cards they need to trust them, allowing citizens to determine information on the card beyond a basic minimum will foster this.

- Several successful pilots (in 83 cities) preceded the full launch.
- Electronic voting trials using electronic cards have been successful, with voters enjoying the freedom of voting outside their ward.
- Uptake has been a little disappointing, (100,000 cards issued so far) the main reason cited being the lack of services which require the card.



Effective Policies in driving Government Uptake: Germany for an approach to local government, Australia for a best in class portal

Government Uptake policies promote purposeful uptake and use of internet technologies by a the government, and the public sector in general. Strong uptake is characterised by a large proportion of the services offered online, particularly those which are more transactional, and by a large proportion of the a nation’s citizens and businesses making use of them.

- Germany has adopted a three-pronged approach to encourage state and local government service delivery.
- Canada has a best in class trio of user-specific portals. Canada has allowed user input to substantially shape service delivery, and are now beginning to redesign services around the logic of user-centric delivery.

Germany has adopted a three-pronged approach to encourage state and local government service delivery

Germany: Supporting Local Service Delivery



Details of Policy Action

- Germany's federal government encourages local service delivery in three ways:
 - A) Competition to encourage innovation at a local level
 - An example is the Media@Komm initiative which provided the competition winner with financial backing for a local government smart card scheme.
 - B) Shared resources. Germany’s Federal government is creating procurement platforms and authentication engines, which will be open to local government.
 - Local governments are expected to use these common interfaces rather than develop their own bespoke solution, though participation will be optional
 - C) Direct co-operation. Where services allow federal government has driven direct co-operation.
 - Federal and state government co-operate through the ELSTER system to offer a single tax collection, declaration and submission process.
- **Key success factor:** Incentives. The German federal government has no authority over state and local government in determining the means of service.

Impact

- 140 entries were received for Media@Komm
- Leading solutions have been developed in the framework of Media@Komm, e.g.
 - OSCI standard
 - Court Summons solution developed by Bremen (currently being adopted by other cities including Bavaria and Hamburg)
- Taking local and federal together, Germany has made the most progress in getting services online over the last 2 years (according to the Accenture survey).

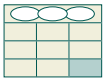
Canada has pioneered user-centric service delivery and has seen strong uptake as a result

Canada: Government Portals



- Canada was among the first government to offer services through user-centric interfaces rather than those corresponding to traditional departments. The redesigned website was launched in Feb 2001.
- Canadians can access 450 websites through 3 user-specific gateways and 35 service clusters..
- Canada have begun to move to the next stage of e government, where services are redesigned around this customer centric delivery process.
- **Key success factor:** Customer driven. Not only is the Canadian offering delivered through customer centric portals, the choice of services and the means of delivery are shaped by extensive customer research. For example, 50 focus groups were used in advance of the relaunch of the main website in 2001.

- Canada’s e-government service has been ranked #1 in both 2000 and 2001 an international survey, due to both extensiveness and sophistication of services.
- Uptake of services has been strong – for example 1.4 million tax returns were filed online in 2000.
- The first wave of redesigned services include simultaneous provincial and central registration of businesses.



Effective Policies in generating Government Impact: Italy for both central procurement system and online tax system, the UK for a quick rollout of simple e-procurement

Government Impact describes the impact of the Internet on the workings of government. Impacts can include changes in working practices, changes in spending behaviour, changes in the services they offer and particularly changes in the way governments interact with citizens and businesses – including interactions during the democratic process such as elections.

- Italy has completed much of the groundwork for delivering effective e-government in a way, which will have major impacts on the way Italian government operates.
- The UK government has gone for a more department by department approach to e-procurement, but it is also an operational common standard.

Italy is fast developing centralised online procurement as standard within central government, while the UK is operating e-procurement on a department-by-department basis

Italy: E-procurement system



Details of Policy Action

- Public procurement is being centralised through a new organisation – CONSIP.
- CONSIP is an open procurement system:
 - Mandatory for all central government departments as of April 2002.
 - Voluntary for all local government authorities and agencies–Open to wider public sector including universities, health authorities etc.
- CONSIP aims to use the internet both for supplier relationships (placing orders/receiving tender submissions) and for internal relationships with customers’ (online submission of orders).
- Online ordering already operates, online procurement will begin Q3 2002 following successful trials.
- Total project investment: 80 million EUR.
- **Key success factor:** Step change, Since Italy has no history of a single procurement system, the savings from CONSIP come from two sources: scale effects and process efficiency of centralised procurement, and process efficiency and increased supplier competition due to electronic.

Impact

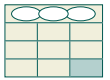
- A large number of users have signed up for the system (14,100 registered agencies by Apr 2002)...
- ... and they are using CONSIP – 52,000 orders had been handled by April 2002.
- CONSIP intermediated 4.2 billion EUR spending by Apr 2002 – around 15% of potential value.
- 30% of orders from government ‘customers’ are received electronically.
- In pilots, 35% savings were achieved through electronic procurement.
- Service improvements have been seen –with lead times on procurement reduced by up to 5 months.

The UK: E-procurement cards



- The UK government have issued The Government Procurement Card to departments to enable them to purchase low value items online since 1997.
- Although it offers none of the benefits of truly centralised e-procurement, it also avoids much of the cost and complexity.
- The scheme costs the government nothing as the cards are provided by Visa.
- **Key success factor:** Simplicity. The issuance of e-procurement cards offers the opportunity to launch e-procurement quickly, while a more suitable long term solution is sought.

- Throughput value of £245 million.
- Process efficiencies worth £43 million from just the 7 pilots in progress.
- Over 29,000 cards issued.



Effective Policies in generating Government Impact: Italy's online tax system

Italy: Tax Online



Details of Policy Action

- The Italian government have made online submission possible for a broad range of taxation.
- Online submission of taxes for companies and citizens earning over 25,000 EUR p.a. and with a VAT number is mandatory.
- Tax services available include:
 - Income tax declaration, payment and refunds.
 - Lease registration and tax payment.
 - Consultations with tax register and various informational data bases.
 - VAT declaration, payment and refunds.
 - Customs declarations.
 - Car tax payment.
- **Key success factor:** Intermediaries, The complex Italian personal taxation system means many Italians use accountants. These accountants have only to 'learn' the online submissions once, and numerous declarations can be made online.

Impact

- 81,000 registrations.
- 3.1 million declarations sent in 2001.
- 45 million documents sent 2001.
- Online payments value 350 million EUR in 2001.

Methodology Overview

This report represents the findings of a sixteen week study conducted in nine countries

Project Process

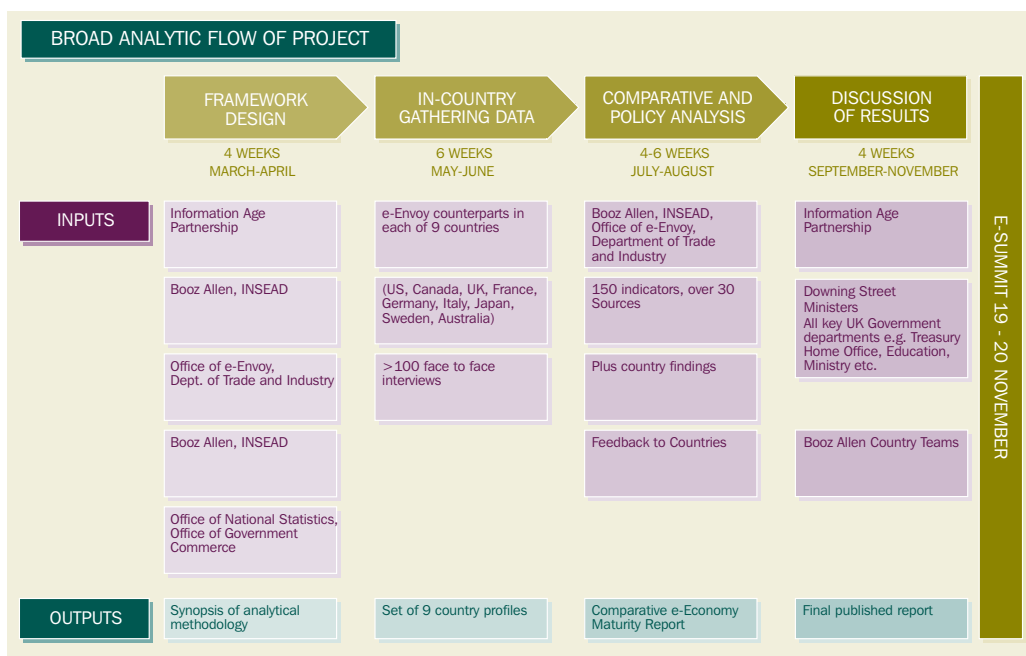


Fig. 123

Data Gathering

- The central research phase of the project involved the gathering of over 150 statistical indicators of performance, over 100 of which are incorporated in the performance model. Sources range from published reports to primary research through interviews by Booz Allen.
- Policy interviews were conducted in the nine countries with the departments and policy makers driving the e-agenda. Over 100 interviews were conducted in total.
- Booz Allen and INSEAD conducted research over a sixteen week period between March and July 2002. Work was conducted by local teams in the nine benchmark countries, coordinated from London. The project process comprised three principal phases.
- The first phase of work was detailed planning of the methodology for measuring the e-economies of Nations. The design of the framework builds on IAP and ONS work, and is in line with international best practice (see below). Input came from the IAP, ONS, OeE, DTI, OGC,, De Montfort University, INSEAD and Booz Allen.
- The output of this first phase was the project Methodology Report, of May 2002, which forms part of the appendix to this document.
- The in-country research phase delivered nine country reports, each of which includes:
 - An overview of each country's e-economy against the agreed framework, highlighting areas of strength and weakness.
 - Summary and detailed readouts of the country's e-economy fingerprint including all source data and findings.
 - Policy highlights and case studies.
 - Detailed policy maps against the same framework, highlighting the scale and impact of each initiative described.
 - An assessment of the environmental factors impacting e-economy development in that country

Comparative Policy Analysis

- Using the country reports as a basis, the policies and environmental factors of the 9 countries were compared to yield.
- An understanding of countries' ranking against each element of the framework, and the UK's position amongst the field.
- An assessment of the world's most effective e-economy policies, and their potential applicability to the UK.

The e-Economy Framework and methodology were developed in accordance with international best practice

| SUMMARY OF COMPARABLE INDICATOR FRAMEWORKS | | | | |
|--|----------------------------------|--------------------------------------|--|---|
| FRAMEWORK | CATEGORIES | INDICATORS | WEIGHTINGS | SOURCES USED |
| EIU 'E-Readiness Ranking' | 6 | -100 | Yes; set subjectively | <ul style="list-style-type: none"> EIU business rankings Pyramid research |
| WEF 'Networked Readiness Index' | 2 (one of which divides in 4) | 65 | No | <ul style="list-style-type: none"> World Bank International Telecommunications Union (ITU) Freedom House Business Software Alliance |
| UN 'Technology Achievement Index' | 4 | 8 | No | <ul style="list-style-type: none"> WIPO World Bank ITU UN Statistical Division UN Educational, Scientific |
| World Bank 'Knowledge Assessment Methodology' | 5 | 15 (but up to 66 can be selected) | No | <ul style="list-style-type: none"> UN IMD World Bank, incl SIMA & Cultural Org ILO IDC US Patent and Trademark Office |
| IDC 'Information Society Index' | 4 | 23 | Not known | <ul style="list-style-type: none"> IDC Others? |
| McConnell Int 'E-Readiness' | 5 | Qualitative | Qualitative | <ul style="list-style-type: none"> Extensive interviews (all qualitative) |
| APEC 'E-Commerce Readiness' | 6 | Survey: 100 questions | Results not intended to be scored D No | <ul style="list-style-type: none"> Survey data |
| Metricnet 'Global Technology Index' | 5 | 25 | No | <ul style="list-style-type: none"> IMD World Competitiveness Yearbook CIA World Factbook Nua Internet Surveys |
| IMD 'World Competitive Yearbook' | 4 (20 sub-categories) | 224 | No | <ul style="list-style-type: none"> Computer Industry Almanac ICAO OECD Phillips Tarifica Siemens World Bank World Intellectual Property Organisation World Trade Organisation |
| Metricnet 'World E-Commerce and Internet Market Report' | 5 | 25 | No | <ul style="list-style-type: none"> IMD UN Global New E-Economy Index CIA World Factbook Nua Internet Surveys |

Fig. 124

- In designing the e-economy measurement framework, Booz Allen built on the following inputs:
 - The work of the Information Age Partnership (IAP) and subsequent work of the Office of National Statistics
 - A comprehensive review of the 10 most comparable international measurement frameworks (see figure above)
 - Academic input from INSEAD

- Research into comparable international studies shows that they have some key features in common:
 - **Structure:** All studies propose a framework for measurement. Frameworks typically comprise a hierarchy of indices which may themselves be broken into sub-indices. Generally no more than 2-3 levels are used (i.e. index, sub-index, micro-index). Our proposed framework is a 3 level structure
 - **Definitions:** Most studies give explicit definitions for their indices at a high level. Not all of them develop clear definitions of the criteria by which indicators are chosen. We have used explicit definitions at every layer and for each sub-element, with indicators chosen on the basis of explicit criteria derived from the definitions
 - **Sub-indices:** indices are typically split into no more than 4-5 sub-indices. The maximum ratio of sub-indices per index in the proposed framework is 3
 - **Indicators:** great variety in the number used (8 to100), with an average of 65. The Booz Allen / INSEAD framework incorporated around 112 indicators, with a further 50 or so used for cross-checking, verification and quality control. This number of indicators reflects the broad scope of the assignment.

The chosen framework drives top down from definitions of each framework element - via explicit criteria - to the indicators chosen for measurement

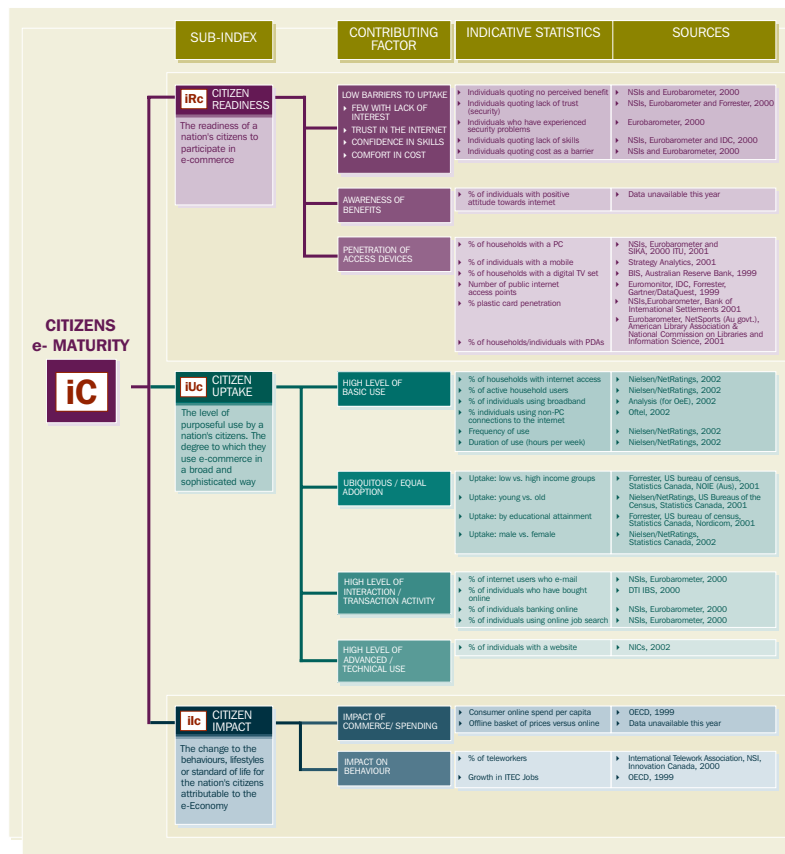


Fig. 125

- The figure above shows the structure of one of the four framework layers or indices - Readiness - one quarter of the full framework. Key features to note:
 - The Citizen Index is broken down into the three sub-indices: Readiness, Business, and Government
 - Each of these in turn is defined and described in terms of a limited set of criteria for success (central column)
 - These criteria – not data availability – drive the selection of the statistical indicators to be used. The indicators and their sources appear in the right hand columns
- Data sources have included over 30 published sources, plus primary interviews by Booz Allen
- Data integrity has been ensured through a six step approach:
 - **Comparability:** all data is the most recently available data *comparable across all nine countries* as at July 2002
 - **Limit data gaps:** for an source to be used, it should have no more than 3 data gaps and be no older than 2000
 - **Use of multiple sources:** where possible and where economical we have leveraged multiple sources to cross-check validity of data
 - **Restrict use data to trusted sources:** we have used, in preference, data from sources which have an established professional reputation, be they national statistics institutions, international organisations or market leading professional research firms
 - **Vetting and scrubbing the data:** where necessary we have contacted the source of the data to ensure the data is usable - for example, that the definition matches the rest of our data set, or that the data is from exactly the same period
 - **Sanity checking through domain knowledge:** all data was sanity checked with expert analysis, with most effort being focused on those data sets which rely on mixed, unusual or single sources.
- All data used is the most recently available data *available across all 9 countries*, as at 1 September 2002.

Index calculation algorithms are also based on best practice

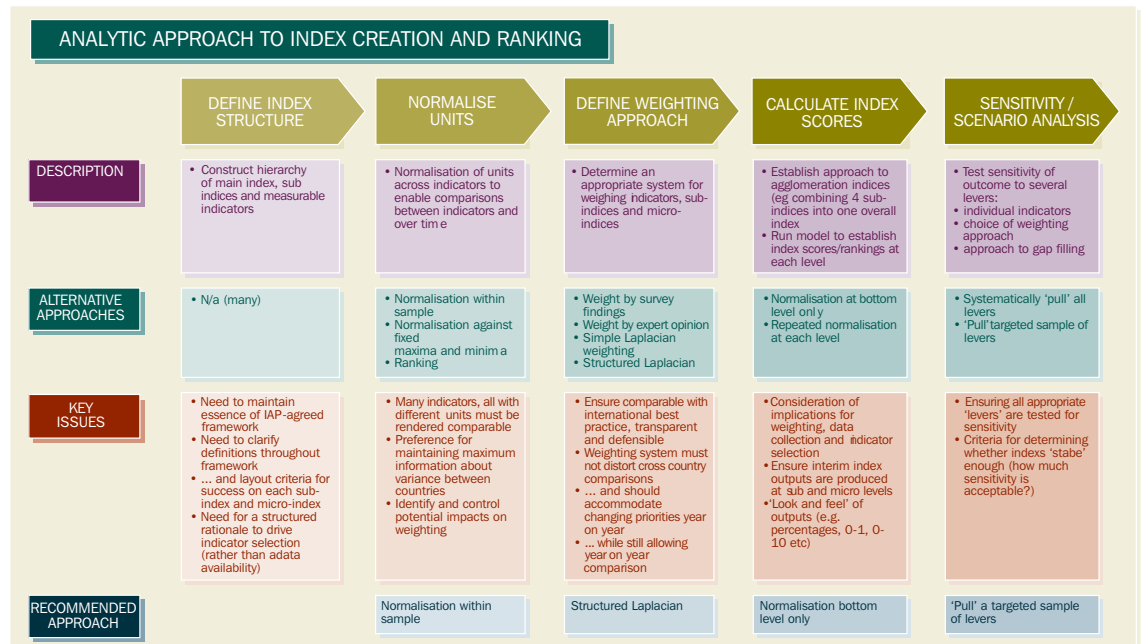


Fig. 126

- Moving from raw collected data to comparison indices for the Framework described previously requires several analytic approach decisions, summarised in Figure N , and detailed in full in the Methodology Report
- For each of these decisions, Booz Allen and INSEAD evaluated 3 to 4 alternative approaches and chose on the basis of fitness for purpose and international best practice. The key methodological decisions are described below:
 - **Structure:** a 4 layer hierarchy was chosen maintaining the essence of the IAP framework, and ensuring simplicity of understanding without losing the richness of findings. The possible levels are:
 - Overall Index (the overall e-maturity of a nation) - although not used in this study
 - Sub-indices (e-environment, e-citizen etc)
 - Micro-indices (citizen readiness, citizen uptake etc)
 - Indicators (eg % of households with a PC)
 - **Normalisation of data units:** All such indices must incorporate indicators with different units ranging from £/month to % of country covered. Data units have been normalised within the maxima and minima of the data set, to retain information about the distribution of the data as well as the ranking
 - **Weighting:** It is tempting to assign a system of weighting to the indicators or framework elements to reflect the perceived 'importance' of certain issues or indicators. This approach suffers from fundamental problems of practicality and robustness, outlined in our full methodology report, and only one international survey uses it. For example, what's most important will vary by country and also from year to year. We have selected a 'structured Laplacian' approach, effectively assigning each element of the framework a weighting of 1.
 - **Normalisation across layers:** in calculating index scores, data was normalised at the indicator level only, rather than at each micro-index and sub-index level, thus ensuring richness of findings
 - **Sensitivity/Scenario Analysis:** A targeted sample of inputs was chosen to test the sensitivity of the overall model

The framework provides a bridge between policies and indicators, allowing identification of effective policies and best practices

Policy Framework

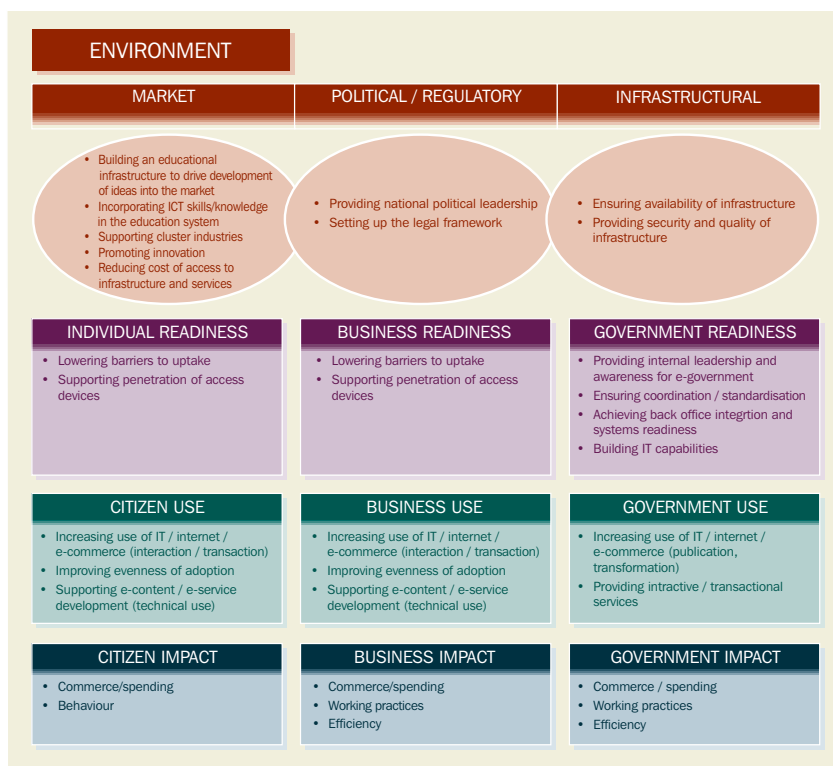


Fig. 127

- Having defined the framework, indices and indicators, a significant challenge lay in establishing causality between policies in each country and their respective e-economies. These links were determined through the extensive interviews with each countries e-Envoy department and other key policy makers.
- Our findings were captured in the nine Country Reports which accompany of this report. The Country Reports include analysis of key policies and environmental factors (for example favourable demographics, cultural inhibitors etc.), and their impact of the e-Economy. Detailed policy maps are also included in the Country reports, which capture the essence, scale, level of implementation and impact of each policy
- Through comparison of data, policies and environmental factors across the 9 countries, we established best practice policies to develop an e-Economy
- Best practice policies were chosen on the basis of 3 criteria:
 - 1) Time series data shows a marked improvement in the target indicator after the policy was introduced (and in the absence of other explanations for such a jump).
 - 2) There are direct, measurable impacts of the policy, e.g.
 - A Marketing campaign resulted in increased brand awareness x%
 - A Teacher training programme has provided 190,000 teachers with ICT training
 - Business support centres have received x number of visits
 - 3) Circumstantial evidence suggests an indicator or index was (at least partly) influenced by the policy
 - Indicator is a strong 'green' (ie world leading)
 - Associated policy is world-leading, either in terms of scale, timing or level of implementation
 - Absence of environmental drivers e.g. favourable demographics

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