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Working Party on the Information Economy

DIGITAL DELIVERY OF BUSINESS SERVICES

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FOREWORD

In December 2003, this report was presented to the Working Party on the Information Economy (IE). It was recommended to be made public by the Committee for Information, Computer and Communications Policy in October 2003.

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PREFACE

As part of its programme of work the Working Party on the Information Economy (WPIE) is undertaking scoping studies of economic activities where digital delivery of information-intensive goods and services is likely to be increasingly important (*i.e.* in health, business services, and other selected services). This paper focuses on business services, including: software and information services, R&D and technical services, advertising and marketing services, business consulting services, recruitment and human resource development services.

These business services provide well-known examples of digital delivery in areas such as:

- Software services (*e.g.* remote software development in India, extensive online availability and delivery of software products) and information services (*e.g.* remote advice and support to clients).
- R&D and technical testing services (*e.g.* global integration of laboratories allowing 24x7 project and development work).
- Consulting services (*e.g.* corporate knowledge bases supporting worldwide delivery of services through branch offices).
- Human resource development and labour supply services (*e.g.* distance and continuing education to raise qualifications and expand skill development, and online recruitment).

Business services are being reshaped by the application of information and communication technologies (ICTs) and the shift to more intensive online delivery. There are a number of drivers encouraging digital delivery, including:

- *Applicability* – the intangible nature of many business services makes them suitable for digital delivery.
- *Demand* – to meet new customer demands and expectations.
- *Quality* – to improve the quality and depth of customer relations.
- *Expansion* – to enhance market reach and expand markets.
- *Efficiency* – to increase operating efficiency and gain economies of scale and scope.
- *Cost reduction* – to improve and expand low-cost production and delivery options.

However, there are also barriers to digital delivery. This report provides a summary of the level of adoption of digital delivery among business services suppliers in OECD countries and an outline of some of the drivers, barriers and policy issues.

Recently, there is increasing attention to the growth and impacts of ICT-enabled international sourcing of information technology and business process services. This report provides insights into the drivers and impediments to international sourcing of these services and further analysis is being undertaken to better illuminate the growth, structure and impacts of international sourcing of services.

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SUMMARY

The business services examined in this study include software and information services, R&D and technical services, advertising and marketing, business consulting, recruitment and human resource development services. Digital delivery includes contracted out electronically mediated services supply (outsourcing) and digitally facilitated distributed work within firms, in which business services inputs are supplied electronically to support the business activities of firms. Digital delivery allows business services suppliers to combine *richness* and *reach* (*i.e.* to combine greater market reach with the ability to engage in richer interactions with clients).

Business services activities are a significant and growing part of all OECD economies. Services are often dominated by small firms, although there are large players in most market segments. Demand for business services is strongly pro-cyclical. Innovation and high levels of competition counter market dynamics leading to concentration. Hence, new players emerge and there is considerable churn among market leaders.

The most important characteristics affecting the suitability of business services to digital delivery are the centrality of information exchange, the level of standardisation, the complexity of the tasks involved, the nature of the knowledge involved, the nature of the problem addressed by the service and the context of delivery. Where the exchange of information is a central part of the business model, where there is more scope for standardisation, where the complexity of the tasks involved can be managed, where the knowledge involved either is or can be codified, where the nature of the problem addressed by the service can be specified and defined (*i.e.* is relatively tame) and where the contextuality of the work involved is relatively low there is more scope for digital delivery.

Drivers of the digital delivery of business services are a combination of demand side and supply side factors. On the demand side, the key drivers are a combination of those driving outsourcing and e-commerce, including access to the supply of specialist skills, competitive pressures and cost control and demand variability, all of which increase demand for digitally delivered business services. On the supply side, the key drivers relate to increasing richness and reach in relationships between suppliers and their customers; increasing project size and complexity requiring more frequent and efficient interaction between suppliers and customers; the globalisation of suppliers in parallel with globalisation of client businesses; increasing internal cost and efficiency considerations for suppliers; and competition among suppliers and downward pressure on prices. Proactively, business services suppliers may seek to increase their 'brand' visibility and reach new markets, enhance customer services and support, and improve the quality and reliability of their services.

Surveys of business services suggest that the use of digital delivery and related e-business support is already extensive when looked at in terms of the proportion of firms offering digital delivery options, but does not yet account for a very large share of business services revenue. Digital delivery is more often supplementary and supportive, than it is the main form of delivery. Nevertheless, there are an increasing number of business services firms that have adopted substantially and sometimes exclusively online business models. Hence, we find that the level of digital delivery of business services varies from country-to-country, from firm-to-firm, from service-to-service, between small, medium and large sized firms, between metropolitan, regional and rural locations, between different business and cultural milieux, and between provider business models. Digital delivery is relatively mature in some services (*e.g.* software development and IT services) while still emergent in others (*e.g.* R&D and technical testing and business consulting). Given the heterogeneity of business services activities, this variety is not surprising. Levels of

adoption and maturity of activities differ on an individual case-by-case basis. Therefore, it is extremely difficult to generalise, and one must examine the generic characteristics.

The impacts of digital delivery are also felt somewhat differently from country-to-country, service-to-service and firm-to-firm. At the national level, difference can be summarised in terms of readiness, diffusion and the impacts environment. The economy must be digital delivery 'ready' before the digital delivery of business services can take off. This will mean, *inter alia*, access to affordable bandwidth, skills and services. Diffusion will depend upon the convergence of the adoption of outsourcing and e-commerce on the demand side, and the development of sustainable digital delivery business models on the supply side. The scope and scale of the impacts will depend upon management and government capabilities in the realisation of potential benefits, and how the impacts are felt will depend upon such factors as industry structures and competition in ensuring the diffusion of benefits. Where these come together, the take up of digital delivery of business services will be faster, the diffusion of digital delivery more rapid and extensive, and the impacts of digital delivery greater and more widely felt.

At the industry level, the impacts of digital delivery are different for those industries with strong economies of scale (*e.g.* packaged software) and those without (*e.g.* consulting). The extension of distribution through digital delivery enables firms to grow and achieve lower average costs, which may lead to some concentration. This effect will be accentuated where there are network effects (*e.g.* standardised packaged software). Conversely, in such areas as management consulting the enhanced availability and accessibility of information via Internet enables small firms to compete more equally in some areas (*e.g.* market research) and to deliver certain types of services worldwide (*e.g.* research reports). There is potential in many areas for new or adapted digital-delivery-based business models and new firm entry to increase competition and put downward pressure on prices.

At the firm level, the financial and organisational impacts of digital delivery can be significant. Substantial cost savings and revenue increases are widely reported. These flow from increased sales, access to more customers and improved customer relationships. Internally, efficiency of business processes and reduction of costs are also widely observed. Some evidence suggests that those business services firms adopting digital delivery and Internet business solutions have increased revenues and decreased costs. Impacts on employment were not measured to any extent in the studies examined. Neither were impacts on international trade, although cross-border digital delivery is less common than might be expected. This may be due to the need for the communication of tacit knowledge and face-to-face contacts in many areas of business services, as well as a range of jurisdictional and regulatory factors.

There are many impediments to the digital delivery of business services. Among the more important are suitability of particular services to digital delivery, concerns over security and privacy, internal and external skills availability, infrastructure and implementation costs and regulatory barriers. In terms of digital delivery 'readiness', lack of necessary skills, both internally and externally, is widely cited, which can be addressed through improved education and training and increased adoption and learning. Other widely cited barriers are also likely to benefit from increased levels of adoption and consequent scale and learning opportunities (*e.g.* infrastructure costs, levels of online revenue and hesitancy of customers to buy online). Cost- and skills-related barriers are felt more acutely by small firms, of which there are many in business services. Again, however, as digital delivery options are developed there are likely to be more solutions available in the marketplace that are tailored to the needs of SMEs. There are a number of barriers relating to such things as standards, privacy, security and trust. Governments can contribute to the reduction of such barriers at both national and international levels. The potential barrier of communications costs can be addressed from the supply side through telecommunications reform and enhanced competition. Beyond all these things there remain a number of barriers that might be loosely described as cultural (*e.g.* management of remote work and international outsourcing contracts).

Table 1. **Digital delivery of business services**
current status, potential and major policy issues

<i>Service type</i>	<i>Potential</i>	<i>Current status</i>	<i>Major policy issues</i>
Software development	High	Mature	IPRs, bandwidth, congruence
IT services	Moderate	Mature	Trade regulation, congruence
Information retrieval services	High	Mature	IPRs, bandwidth, security/authentication
R&D services	Moderate	Emergent / developing	Congruence, bandwidth, IPRs, security
Design services	High	Emergent / developing	Congruence, bandwidth, IPRs, security
Technical testing services	High	Developing	Bandwidth, IPRs, security
Advertising	High	Developing / mature	Bandwidth, privacy, security
Marketing	Moderate	Emergent / developing	Congruence
Business consulting	Low	Emergent	Congruence
Human resources	Moderate	Emergent / developing	Congruence, bandwidth, privacy
Labour supply	High	Mature	Labour market regulation, congruence
Recruitment	High	Developing / mature	Congruence, privacy, security

Note: Congruence refers to the fit between supplier and customer in areas such as co-ordination and control systems, objectives and values, capabilities, processes, and information technology.

Source: Author.

From the perspective of governments, major policy issues relate to: strengthening the framework for the digital delivery of business services, enhancing the diffusion of digital delivery and ensuring that the business environment enables positive impacts to diffuse. Key policy areas include: network infrastructure (*e.g.* bandwidth availability, network latency and communications costs); standards (*e.g.* formal and informal messaging standards); quality certification and accreditation (*e.g.* recognition of professional qualifications and service provider quality accreditation); intellectual property (*e.g.* R&D, design, software development and technical testing); privacy, security and authentication (*e.g.* handling customer information, accounting and financial records); commercialisation of public sector activities (*e.g.* R&D and technical testing); public contracting for services and serving as a demanding user (*e.g.* outsourcing leading-edge activities); leading the way (*e.g.* e-government, procurement); education and training (*e.g.* equipping workers for change at both entry level and through lifelong learning); labour market flexibility (*e.g.* enabling contract and agency staffing); competition policy (*e.g.* ensuring that business services industries remain competitive); and harmonising and simplifying international regulations (*e.g.* investment, legal, reporting and physical presence requirements). While much has already been achieved in these areas, there are opportunities for governments to further enable the development of digital delivery in business services and thereby to enhance the positive impacts available through that development. A key to reaping the full benefits of digital delivery lies in integrating it into full e-business processes and solutions: business value chains, front and back office, and internal and external processes. Technical, organisational and business skills are crucial to success in gaining benefits from digital delivery.

Software and IT services sectors are the current business services leaders for digital delivery of digitised products and services, but all business services use digital delivery, particularly for document exchange and customer services. Digital delivery is driven by the potential to digitise business service inputs on the supply side and by outsourcing factors on the demand side. Technological factors play an important role, including broadband availability, and digital delivery is more advanced in countries with well-developed network infrastructure and a strong business services sector. Readiness for digital delivery, industry structure and competition, economies of scale and scope for business services, and firm-level capabilities to capture the business efficiency and productivity benefits on both demand and supply sides all play important roles. Policy issues range from infrastructure, including broadband availability, through services standards and accreditation to skills and employment issues. The lack of internationally comparable data makes it difficult to capture the extent, richness and impacts of digital delivery of business services.

INTRODUCTION

Focus of the study

This study begins by exploring economic structures and underlying business models in the business services sector – including software and information services, R&D and technical services, advertising and marketing services, business consulting services, recruitment, labour supply and human resource development services.¹ Key questions addressed include:

- What is the potential for digital delivery and what services are most amenable to digital delivery – covering such issues as ease of remote delivery, nature of content and relative importance of complementary face-to-face support.
- What are the drivers of digital delivery – covering such issues as new service possibilities, customer expectations and demands, market access and expansion, efficiency, cost reduction and regulatory changes.
- To what extent is digital delivery being adopted – covering such issues as the current level and rate of adoption in various business services, and the effects of broadband access and use on current and future development.
- What are the impacts of digital delivery – covering such issues as impacts on business models, performance and growth, efficiency and productivity, industry structure and competition.
- What are the major impediments to the digital delivery of business services – covering such issues as suitability of services to digital delivery, access to and cost of necessary infrastructure, skills and awareness, innovation by suppliers and users, market structures and regulatory barriers.
- What are the major policy issues relating to digital delivery – covering such issues as network infrastructure, security and trust, local presence and support, trade and investment, intellectual property and taxation.

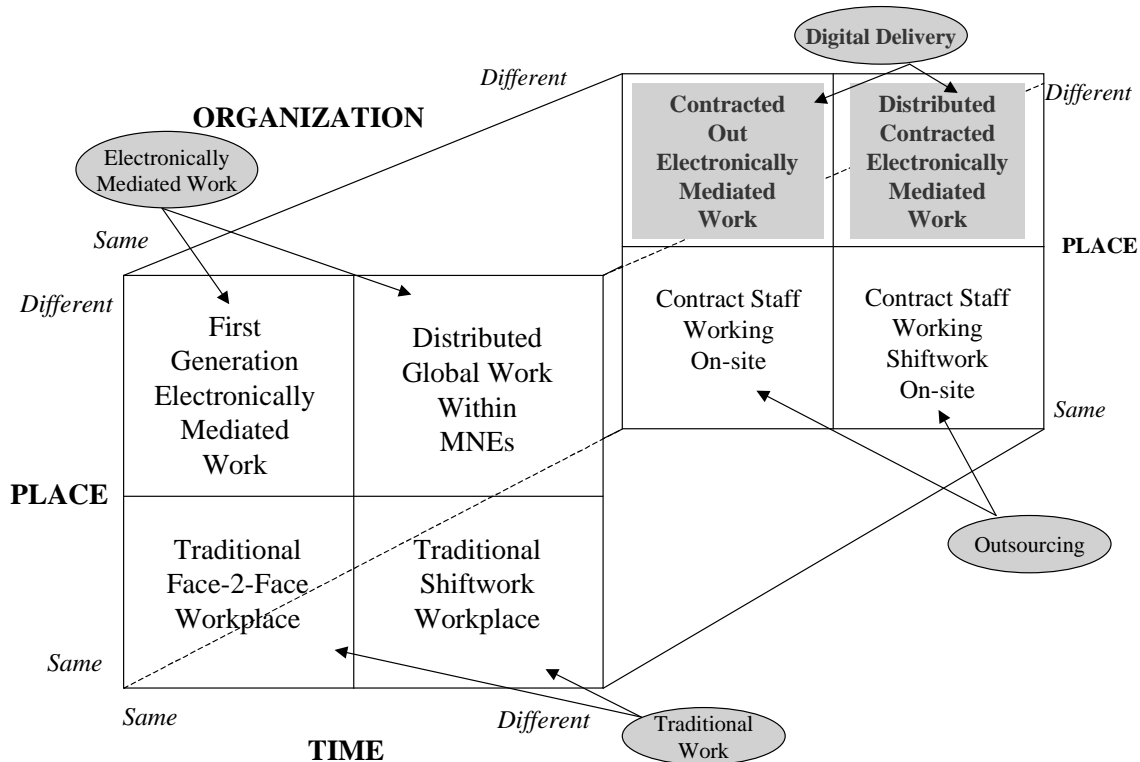
Framework for analysis

There are a range of concepts and definitions used in relation to the digital delivery of services, so it is important to situate the ‘digital delivery of business services’ in the wider context of e-commerce and electronically mediated work.² Morris (2000) outlined a useful framework for classifying the forms of distribution of work within and between organisations. He suggested a three-dimensional framework in which the dimensions were time, place and organisation, with the extreme positions on each being ‘same’ and ‘different’. This basic framework is developed below in order to bring out the distinctions between traditional work, electronically mediated work, outsourcing and *digital delivery*.

This framework (Figure 1) categorises forms of distributed work ranging from the traditional face-to-face workplace (same time, same place, same organisation) to digital delivery (time independent, different place, different organisation). Within this scheme the digital delivery of business services, strictly defined, would include contracted out electronically mediated work and distributed, global contracted electronically

mediated work (*i.e.* geographically distributed electronically mediated work across organisational boundaries) – *i.e.* ICT-enabled outsourcing. A somewhat broader definition might also include digitally facilitated delivery of business services, in which e-business activities³ are integrated into and support the digital delivery of services. This report focuses primarily upon the first set of activities, with some reference to the second.

Figure 1. **Characterising work by time, place and organisation**
 (Traditional work, electronically mediated work, outsourcing and digital delivery)



Sources: Derived from Morris, P. (2000) *World Wide Work: Globally Distributed Expert Business Services*, Emerging Industries Occasional paper 4, Department of Industry, Science and Resources, Canberra, p8. See also Bates, P., Bertin, I. & Huws, U. (2002) *E-work in Ireland*, Institute for Employment Studies, Brighton, p 10.

The digital delivery of business services is explored from both the demand side and the supply side. The demand for digitally delivered business services arises at the intersection of outsourcing and e-commerce among consumers of business services. Consequently, from the demand side, it is necessary to understand the drivers and inhibitors of outsourcing (*i.e.* what drives organisations to demand business services in the market, rather than produce them internally) and e-commerce (*i.e.* what drives organisations to adopt e-commerce in their supply chains, rather than continue operating on a physical/face-to-face basis). From the supply side, it is necessary to understand both drivers and inhibitors influencing the adoption of digital delivery and support by business services suppliers (*i.e.* what drives services suppliers to adopt ICT enabled systems and online business models).

KEY CHARACTERISTICS OF BUSINESS SERVICES

Business services considered in this study include software and information services, R&D and technical services, advertising and marketing, business consulting, recruitment, labour supply and human resource development services. Whether they are measured as industries or activities, these services are a large and growing part of all OECD economies.

Overview of business services

Enterprises in OECD countries supplying business services were reported to have generated turnover (sales revenue) of approximately USD 1.5 trillion in 1995, and they have been increasing by around 10% per annum.⁴ Computer services accounted for the largest share, at around USD 350 billion. Business organisation services generated turnover (sales revenue) of around USD 290 billion, of which USD 158 billion was generated by management consultancy services and USD 108 billion by labour recruitment services. Marketing services generated around USD 242 billion, and R&D and technical testing services around USD 192 billion.⁵

An estimated 11 million persons were employed by business services providers in OECD countries in 1995, around 2.4% of total OECD employment. Business organisation services accounted for the largest share, employing around 5.1 million – of which 3.6 million were employed in labour recruitment and a further 1.5 million in management consultancy services. Computer-related services employed just over 2.5 million, R&D and technical services almost 2 million, and marketing services just over 1 million.⁶

Box 1. U.S. Business services in the recent downturn

After nearly a decade of unparalleled growth, the number of jobs in business services in the United States peaked in September 2000. Over the subsequent two years, employment fell by 6.6% with the loss of 664 000 jobs.

Personnel services led the recent decline, shedding 714 000 jobs (17.6%) over the two years to September 2002, with greater declines in the supply of temporary workers than in employment agencies. A further 308 400 jobs were lost between September 2002 and April 2003.

Computer and data processing services employment continued to grow during the year to September 2001, but at a much slower rate than had been the case in previous years. It was not until July 2001 that the industry began to experience job losses. Since then more than 67 000 jobs have been lost (to April 2003).

Advertising accounts for only around 3% of business services employment in the United States, so its decline does not contribute much to the overall trend. Nevertheless, as advertising budgets were cut jobs were lost in the industry. Some 20 000 jobs were lost during the two years to September 2002, but employment subsequently stabilised.

Source: Bureau of Labor Statistics. Available www.bls.gov accessed May 2003.

European Union estimates put the European business services sector's turnover (sales revenue) at around EUR 863 billion (USD 918 billion) in 1999 and employment at over 11.6 million. Legal, accounting, market research and consulting was the largest segment, around EUR 317 billion (USD 337 billion), or 38% of the total sector turnover. Architectural and engineering services accounted for around EUR 160 billion (USD 170 billion) or 18%, advertising services for EUR 115 billion (USD 122 billion) or 13%, and labour recruitment and personnel services for EUR 62 billion

(USD 66 billion) or 7%. Partial data suggest that the telecommunications services sector's turnover was around EUR 287 billion (USD 256 billion) during 2001, and turnover in computer services around EUR 258 billion (USD 230 billion). Employment by these ICT services sectors was around 1 million and 2.1 million, respectively.⁷ In the United States, professional, scientific and technical services revenues reached USD 937 billion in 2001, of which IT related services accounted for USD 184 billion, management consulting services for USD 116 billion, advertising and related services for USD 72 billion, and scientific research and development services for USD 57 billion.⁸

Table 2. **Business services sector in EU by country**
(EUR millions and number employed)

	<i>Business Services</i> 1999		<i>Telecommunications</i> 2001		<i>IT Services</i> 2001	
	<i>Turnover</i> (millions)	<i>Employment</i> (persons)	<i>Turnover</i> (millions)	<i>Employment</i> (persons)	<i>Turnover</i> (millions)	<i>Employment</i> (persons)
Austria	13 653.9	182 953	6 863.8	23 812	4 831.0	34 368
Belgium	28 059.3	331 339	11 177.5	37 150	7 233.1	48 860
Denmark	13 724.6	181 426	4 652.3	22 188	6 489.5	49 680
Finland	8 352.5	108 815	5 651.0	21 004	3 948.0	36 195
France	159 287.4	1 749 310	47 812.7	169 669	42 211.5	334 655
Germany	246 471.4	3 139 000	36 651.5	196 960	44 396.6	307 400
Italy	87 596.0	1 306 086	38 745.5	105 957	31 920.2	331 166
Luxembourg	1 610.5	..	1 058.2	1 059	657.2	4 768
Netherlands	15 946.8	62 034	14 896.0	127 221
Portugal	13 870.3	212 518	6 603.5	19 428	1 302.9	15 494
Spain	50 429.5	1 307 213	25 450.5	76 948	12 174.4	145 649
Sweden	26 553.1	302 028	8 582.1	33 405	13 485.7	117 645
UK	213 393.7	2 824 663	78 118.3	262 143	74 023.1	583 417
<i>EU-13 (partial)</i>	<i>863 002.2</i>	<i>11 645 351</i>	<i>287 322.7</i>	<i>1 031 757</i>	<i>257 569.2</i>	<i>2 136 518</i>

Notes: Business services includes NACE Rev 1 74, Telecommunications includes NACE 64.2 and IT services includes NACE 72.

Sources: E-business Watch (2002) *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002. Available <http://www.ebusiness-watch.org/marketwatch/> accessed February 2003; and E-business Watch (2003) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6/III, July 2003. Available <http://www.ebusiness-watch.org/marketwatch/> accessed October 2003.

Because of the complex and shifting boundaries between market and in-house activities, and between specialist and secondary supply, these sectoral data may well understate the extent of business services activities in the economy. In an extensive survey of business services activities in Europe, Huws (2001) found that a wide range of industries were involved in the supply of business services to external clients. At the four digit NACE level, 150 different sectors were involved in the supply of customer services, 77 in the supply of telesales, 89 in the supply of data processing services, 109 in software supply, 102 in the supply of financial services, 94 in the supply of management, training and human resources services, and 127 in the supply of creative services (*e.g.* including marketing and advertising).⁹ Hence, 76% of the establishments surveyed that were supplying software development and support services were outside the software and computer services industry, and less than one-half of 1% of establishments selling data processing or data entry services were classified to the 'data processing' industry category. This suggests that market-based business services activities may be significantly larger than industry-based analyses reveal.

Business services are extremely diverse, with some very large firms in certain segments and many smaller firms with large multinational firms in most segments. However, in most services industries there is a higher proportion of smaller firms than is the case in manufacturing. An extensive survey undertaken across OECD countries in 1999 revealed that strategic business services were dominated by small firms.¹⁰ Similarly, the European Commission recently noted that the business services sector was dominated by small enterprises, with more than 99% of the enterprises in the sector in Europe employing less than 50 people.¹¹ Nevertheless, there are large multinational firms operating in most market segments. Large companies (with more than 250 employees) employed over 34% of the total sector workforce although accounting for fewer than 1% of the total number of enterprises.

Software and information services

The software and, to a lesser extent, IT services sectors are characterised by rapid technological change, the emergence of new entrants, alliances, mergers and acquisitions, and vigorous competition, all of which lead to rapidly changing industry structures. Network effects tend to encourage concentration, while technical change and the emergence of new entrants, mergers and acquisitions ensure that there is some churn among the leading firms. Hence competitive pressure is maintained.

In 2002, the worldwide IT services market was worth around USD 355 billion and the software market around USD 183 billion. The estimated combined revenues of the top 10 IT services firms during 2003 was around USD 100 billion and that of the top 10 software firms around USD 66 billion. Hence, in both IT services and software the top 10 firms account for around one-third of total sales. Microsoft's revenues alone are equivalent to more than 15% of the software market, with the packaged software market more concentrated than the IT services market (due to network effects).

Table 3. **Top 10 IT services firms**
(USD millions and number employed)

<i>Company</i>	<i>Country</i>	<i>Revenue 2000</i>	<i>Revenue 2003</i>	<i>Employees 2002</i>	<i>R&D 2002</i>	<i>Net Income 2002</i>	<i>Market Cap 2003</i>
EDS	USA	18 856	21 731	137 000	0	1 116	10 608
Tech Data	USA	16 992	15 739	8 000	..	111	1 900
Accenture	Bermuda	11 331	13 397	75 000	235	245	19 691
CSC	USA	9 345	11 347	90 000	..	334	7 979
First Data	USA	5 922	8 129	29 000	..	1 238	28 410
ADP	USA	6 168	7 147	40 000	475	1 101	23 123
CapGemini Ernst & Young	France	6 359	6 632	52 683	..	- 485	..
SAIC	USA	5 300	5 903	40 000	..	19	2 129
Unisys	USA	6 885	5 709	36 400	273	223	4 081
Affiliated Computer Services	USA	1 963	3 787	36 200	..	230	6 343
<i>Total top 10</i>		<i>89 120</i>	<i>99 520</i>	<i>544 283</i>	<i>983.</i>	<i>4 131</i>	<i>102 135</i>

Note: 2003 revenues based on financial year reported in 2003 or most recent four quarters.

Source: OECD, Compiled from annual reports, SEC filings and market financials.

The leading firms in software and services are a mixture of independent software vendors (*e.g.* Microsoft, Oracle and Computer Associates), hardware manufacturers (*e.g.* IBM, Hewlett-Packard, Hitachi and Sun Microsystems) and consulting firms (*e.g.* EDS, CSC and Accenture). Recent years have seen considerable consolidation among consulting and other IT services firms. US-based firms

predominate, with SAP AG, Cap Gemini Ernst & Young and Hitachi being the main exceptions. One of the areas in which new start-up ventures are emerging is Applications Service Provision.¹²

There are many difficulties in measuring trade in software and services (see *OECD IT Outlook 2002*). Nevertheless, trade is clearly extensive and growing. Major exporting countries of software products include the United States, Ireland, the Netherlands, the United Kingdom and Germany. Ireland, the United States, Germany and the United Kingdom are also major exporters of ICT services.¹³ While packaged software can be traded as a product, information services are often sold through foreign affiliates.¹⁴ Hence, many major vendors of software and services are global companies, with offices in most developed and developing countries.

Table 4. **Top 10 software firms**
(USD millions and number employed)

<i>Company</i>	<i>Country</i>	<i>Revenue 2000</i>	<i>Revenue 2003</i>	<i>Employees 2002</i>	<i>R&D 2002</i>	<i>Net Income 2002</i>	<i>Market Cap 2003</i>
Microsoft	USA	22 956	32 187	50 500	4 307	7 829	285 413
Oracle	USA	10 231	9 475	40 650	1 076	2 224	64 741
SAP	Germany	5 747	9 044	29 374	858	533	35 255
Softbank	Japan	3 927	3 449	6 865	..	- 708	9 937
Computer Associates	USA	6 094	3 116	17 500	678	- 1 102	14 334
Electronic Arts	USA	1 420	2 504	4 270	381	102	13 031
Peoplesoft	USA	1 772	1 941	8 293	341	183	6 188
Intuit	USA	1 037	1 651	6 500	204	140	9 339
Veritas Software	USA	1 187	1 579	5 647	273	57	13 946
Amdocs	USA	1 118	1 427	9 400	124	- 5	4 385
<i>Total</i>		<i>55 491</i>	<i>66 372</i>	<i>178 999</i>	<i>8 242</i>	<i>9 253</i>	<i>456 569</i>

Note: 2003 revenues based on financial year reported in 2003 or most recent four quarters.

Source: OECD, Compiled from annual reports, SEC filings and market financials.

R&D and technical services

As the pressure to innovate increases and the means of doing so become more complex there is a growing tendency to outsource research, development and technical testing activities. Nevertheless, there are limited data available on the activities of market-based research and development (R&D) and technical services activities. Some countries collect data on extramural R&D expenditure, which shows the proportion of expenditure on R&D that is performed outside the sector of funding. These data are indicative, although they understate the level of outsourced R&D activities because they do not include that expenditure outsourced within the sector.

From the supply side perspective, the technical services industry association in the United States (NTSA) is an association for companies which render a range of technical services, including: design, drafting, engineering, project management, computer programming, systems analysis, staff augmentation, and technical publications. Its members (more than 200 corporations operating throughout the United States) earned an estimated USD 5 billion in sales during 2001 and employed more than 280 000 technical services personnel.¹⁵

Howells and James (2001) noted that the growth in research and technological sourcing is reflected in a number of measures across a range of advanced industrial economies. In the United Kingdom, extramural R&D amounted to GBP 1 665 million (USD 2.5 billion) in 2000 or 4.5% of total R&D expenditure – GBP 428 million (USD 648 million) of which was undertaken within enterprises specialising in providing R&D services. The pharmaceuticals and motor vehicles industries accounted for almost 60% of all extramural R&D in the United Kingdom¹⁶ In Norway; extramural R&D expenditure amounted to USD 487 million in 1999, around 1.6% of total expenditure.¹⁷ In Australia, extramural R&D amounted to USD 240 million in 2000-01, or 0.8% of total business expenditure on R&D.¹⁸ Industry Canada (1995) reported that the total value of contract research carried out in Canada during 1995 was USD 460 million, or 8.2% of total intramural R&D expenditure. The majority (USD 443 million) was carried out by for-profit organisations (*i.e.* contract research services firms).¹⁹

There has been a substantial growth in this outsourced research work. Howells (1997) observed that extramural expenditures in the United Kingdom doubled in real terms over the decade to 1995.²⁰ In Germany an increasing proportion of company R&D budgets are spent externally – 3.5% in 1969 rising to 9.8% in 1983 and then levelling off to 9.2% in 1989.²¹

Box 2. Lateral Sands: Remote technical testing

Lateral Sands is located in Perth (Australia). The company's business is reviewing and checking microprocessor chip designs. It is highly specialised work that involves deep engineering skills. To get the work done and delivered to its customers Lateral Sands relies on the Internet. Lateral Sands does not have a single client within 10 000 kilometres.

In less than four years Lateral Sands has grown to 12 staff and built up an impressive client list. Some on the client list are confidential, others like Sun are industry leaders. Lateral Sands' engineers provide a very particular kind of second opinion on the original design work. As well as catching any shortcomings, team members are also employed because they have shown the capacity to enhance and 'fine tune' the designs they are asked to test.

At the beginning of every job the two or three staff who will be working on it travel to the client's premises. They stay for at least three weeks, possibly as long as six weeks, to ensure they have a good feel for the way the client operates and a sense of the personalities they will be working with – albeit at a distance. Once they have returned to Australia, there is a disciplined weekly routine of reporting to ensure good communication is maintained.

Source: Morris, P. (2003) *The Impact of Broadband on the Shape of Work*, Telesis Communications, Fremantle, Australia.

These data suggest that while relatively small, outsourced research and technical services activities are substantial and on trend increasing. A significant share of extra-mural R&D is undertaken by universities and public sector research organisations, and pressures on higher education and research funding are encouraging the expansion of these activities. At the same time, increasing demand and a range of skill and scale factors are encouraging the expansion of more specialist commercial R&D and technical services providers (*e.g.* in such areas as biotechnology and pharmaceuticals).

Marketing and advertising services

In 1998, worldwide advertising and marketing expenditures were estimated to have been around USD 200 billion, with the United States accounting for some 50% of the world market.²² Advertising industry turnover in European Union countries amounted to almost EUR 115 billion (USD 122 billion) during 1999.²³ In 2001, *Advertising Age* put the combined worldwide gross income of advertising agencies at USD 39 billion, of which USD 18.5 billion was realised in the United States. Corbett (2002) put global spending on *outsourced marketing services* at USD 125 billion in 2002, rising to USD 134 billion in 2003.²⁴

In 2002, three of the Top 10 advertising agencies in the world were based in the United States (Omnicom, Interpublic and Grey Global), three were based in Japan (Dentsu, Hakuhodo and Asatsu-DK) and there were two in the United Kingdom (WPP and Cordiant) and France (Publicis and Havas). The three largest advertising agencies, Omnicom, Interpublic and WPP Group, each accounted for around 15% of worldwide income from advertising and marketing, making the industry relatively concentrated. These 'Big Three' agencies also appear to be gaining market share, having accounted for a combined 43.7% of worldwide advertising and marketing services gross income in 2001, compared with 38% in 2000. Increasing concentration at the top is the result of some significant mergers, with WPP acquiring Young & Rubicam in late 2000, Interpublic acquiring True North Communications in 2001, and the Publicis Groupe acquiring Bcom3 during 2002.

Table 5. **Top 10 advertising agencies**
(USD millions and number employed)

<i>Organisation</i>	<i>Headquarters</i>	<i>Revenue 2002</i>	<i>Revenue 2001</i>	<i>Employees 2002</i>
Omnicom Group	USA	7 536.3	6 889.4	..
Interpublic Group	USA	6 203.6	6 791.3	..
WPP Group	UK	5 781.5	5 779.5	50 417
Publicis Groupe	France	2 711.9	2 181.5	..
Dentsu	Japan	2 060.9	2 238.9	10 300
Havas Advertising	France	1 841.6	2 042.5	..
Grey Global Group	USA	1 199.7	1 217.0	..
Hakuhodo	Japan	860.8	870.7	4 322
Cordiant Group	UK	788.5	872.4	..
Asatsu-DK	Japan	339.5	399.9	3 434

Source: *Advertising Age*, 2003.

During 2001, the top 200 agencies earned USD 2.3 billion providing interactive advertising services (*i.e. online advertising*) in the United States alone, 29% down from the USD 3.2 billion earned during 2000. For most of the leading US-based advertising agencies, online advertising revenues are a relatively small share of total advertising revenues (Table 6). The volatility of the interactive advertising market is reflected in changes in agency rankings between 2000 and 2001, and in the range of percentage growth rates experienced by even the largest industry players. For example, Scient experienced a 76% drop in revenue from 2000 to 2001, Razorfish a 64% drop and Organic a 60% drop, while some of the established agencies experienced more stable conditions (*e.g.* Grey Digital Media, and Euro RSCG (Havas)). Overall, the top 100 listed agencies experienced a 31% fall in online advertising revenues between 2000 and 2001.²⁵ Total Internet advertising revenue in the United States amounted to USD 8 billion during 2000, USD 7 billion during 2001 and USD 6 billion during 2002.²⁶

Aside from the cyclical nature of the business and the impact of the recent downturn, there are a number of other important dynamics operating within the global advertising and marketing industry. These include major shifts in revenue sources – driven by such things as regulation of tobacco advertising, the convergence of new media and new technologies (with both more media through which to advertise and new technologies allowing consumers to avoid advertisements). More and more multinational clients of marketing and advertising services are consolidating control of global advertising budgets and decisions at corporate headquarters, and consolidating their accounts with a smaller number of the largest agencies worldwide.²⁷ As in the software industry, however, there are new entrants generating innovation in such emerging areas as online marketing. As these markets mature the major firms tend to take over the markets, the firms or both. Hence there is extensive consolidation, but some churn providing competitive pressure.

Box 3. Online Marketing's Resurgence?

After falling 18% during 2002, online advertising experienced an upturn. Online advertising revenues were expected to increase 12% during 2003 to around USD 6.6 billion, with some of the largest brands increasing their online marketing budgets. Half of the top online advertisers in 2002 were Fortune 500 companies, compared with just two in 2000. This growth of interest from large corporations is considered a major step, as a small percentage shift in their advertising budgets can bring billions of dollars to online marketing.

During 2001, McDonald's is reported to have spent USD 1.2 billion on advertising, with around USD 590 million going to television advertising and just USD 900 000 going to online advertising. With younger consumers spending longer online and less time watching television, such companies are realising that they need to shift their marketing focus. Agency executives predict that online advertising expenditures will increase rapidly, from the single digit percentage levels of recent years to as much as 15% of total advertising expenditure.

During 2002, PepsiCo is reported to have been the largest online advertiser, spending USD 38 million. Other relatively large online advertising spenders during 2002 included: Procter & Gamble USD 17.3 million, Johnson & Johnson USD 9.1 million, Unilever USD 7.7 million, SABMiller USD 7.2 million and Anheuser-Busch USD 7 million. PepsiCo also spent the largest share of advertising spent online during 2002, at 3.4%, compared with SABMiller and Kimberly-Clark 1.6% and Campbell-Soup 1.5%.

Sources: Green, H. & Gogoi, P. (2003) 'Big Business Getting a Taste of Online Marketing', *Australian Financial Review*, 28 April 2003, p50; Olsen S. (2003) 'Online ad outlook brightens', *CNET news.com*, 21 April 2003; and *Advertising Age*, June 2003.

Table 6. **Top 20 US-based online advertising agencies**
(USD thousands and number employed)

<i>Agency (Affiliation)</i>	<i>Headquarters</i>	<i>Online revenue 2002</i>	<i>Online revenue 2001</i>	<i>Change %</i>	<i>Employees 2002</i>
Euro RSCG Interaction (Havas)	New York	239 000	230 000	3%	1 175
Grey Digital Marketing	New York	161 000	206 000	-22%	995
OgilvyInteractive (WPP)	New York	160 000	170 000	-6%	1 050
Agency.com (Seneca unit of Omnicom)	New York	80 000*	90 000*	-11%	500
SBI and Company	Salt Lake City	75 000	52 000	44%	503
Modem Media (45% owned by IPG)	Norwalk	72 000*	103 000	-30%	363
Digitas	Boston	72 000*	83 000*	-13%	416*
Zentropy Partners (IPG)	Los Angeles	69 500	62 000	12%	465
Divine	Chicago	60 800	57 000	7%	227
R/GA (IPG)	New York	56 500	55 000	3%	210
Digital@JWT (WPP)	New York	55 600	52 600	6%	400
Tribal DDB (Omnicom)	New York	52 000	65 000	-20%	409
Wunderman Interactive (WPP)	New York	49 198	46 488	6%	284*
Avenue A	Seattle	42 000	26 200	60%	167
Razorfish	New York	40 000	104 000	-62%	250
Nurun (Quebecor)	Montreal	40 000	44 756	-11%	485
DraftDigital (IPG)	New York	39 192	41 173	-5%	205
iDeutsch (IPG)	New York	38 056	28 400	34%	131
Organic (Seneca unit of Omnicom)	San Francisco	37 802	53 585	-29%	200
Tocquigny	Austin	37 000	24 000	54%	70

Note: * estimated.

Source: *AdWeek* (www.adweek.com).

Business consulting services²⁸

Management consulting and public relations services firms in the United States earned estimated receipts of around USD 170 billion in 2000 and employed just over 1 million people.²⁹ The top six management consulting firms in the United States accounted for around 8% of the total U.S. market. In Europe, approximately 260 000 consultants in 40 000 firms generated EUR 36 billion (USD 38 billion) turnover in 1999. Germany (32%), the United Kingdom (27%), France (9%) and the Nordic Region (8%) were the largest European markets. In Europe, the top 20 firms accounted for more than 47% of total turnover.³⁰

PricewaterhouseCoopers (2001) put the revenues derived from ‘management consulting’ in the United Kingdom at around USD 10 billion during 2000, of which IT related consulting accounted for 28%, outsourcing for 25%, operations management for 23%, strategy for 19% and human resources consulting for 5%. Total employment in management consulting in the United Kingdom was estimated to have been around 40 000. PricewaterhouseCoopers identified four characteristic types of management consulting firms operating in the sector – major accounting firms, large dedicated management consulting firms, IT hardware and software firms, and a vast number of smaller specialist and niche players. They estimated that the top 10 management consultancies account for around 60% of the United Kingdom market.³¹

Table 7. **Top 10 management consulting firms, 2001**

Company	Headquarters
IBM Business Innovation Services	Somers, NY, USA
Accenture (formerly Andersen Consulting)	Chicago, IL, USA
Cap Gemini Ernst & Young	Paris, France
PricewaterhouseCoopers (consulting now a part of IBM)	New York, NY, USA
Deloitte Consulting/Deloitte Touche Tohmatsu	New York, NY, USA
KPMG International (consulting now Bearing Point)	New York, NY, USA
CSC (Computer Sciences Corporation)	El Segundo, CA, USA
McKinsey & Company	New York, NY, USA
Mercer Consulting Group	New York, NY, USA
Andersen (formerly Arthur Andersen)	Chicago, IL, USA

Notes: KPMG has split off its consulting arm to form Bearing Point, IBM has taken over PricewaterhouseCoopers Consulting business.

Source: Consultants News (www.kennedyinfo.com).

While there are some very large multinational firms operating in the management consulting industry, there are also many thousands of smaller firms. Over the last decade, growth in their numbers has been driven by the combined forces of outsourcing and downsizing – creating both the demand for the services of external experts and a source of supply of skilled and experienced people into services firms. Smaller firms tend to serve specialist niches, while the largest firms seek to provide a single source of advice to multinational clients around the world. However, with expertise for the particular task or project the primary consideration of clients, the advantages of global presence are limited to branding and scale economies in collecting, distilling and using information.

Competition in management consulting is more talent than price based, being conducted primarily in terms of expertise for the job. Nevertheless, the continued influx of new firms and cyclical downturns in business contribute to price moderation. It has been noted that, after adjusting for inflation, management consulting fees have not risen significantly for 30 years.³² Competition from overseas services providers is increasing, further contributing to price moderation. The recent downturn in demand has also pushed fees

down. In Australia, Deloitte Consulting recently estimated that per hour fees charged for IT contractors in Australia fell 30% in the two years prior to September 2002.³³

Human resource development and labour supply services

The, so called, staffing industry offers a variety of services, including temporary help, permanent placement, long-term and contract help, managed services (*i.e.* outsourcing), training, human resources consulting and payroll and employment outsourcing arrangements in which a staffing firm assumes responsibility for payroll, benefits and other human resources functions.³⁴ The staffing industry experienced rapid growth during the 1990s, with considerable change in the composition of activities. Traditionally, labour supply focused on relatively low level office, clerical and manufacturing jobs. More recently, there has been significant growth in supplying skilled and professional occupations. In the United States, high-wage professionals in IT, management, health care and law now account for around 20% of staffing industry revenues.³⁵

Across the European Union, labour recruitment and the provision of personnel services generated more than EUR 62 billion (USD 66 billion) in turnover during 1999. At USD 56 billion in 2001, temporary staffing sales in the United States were 12% down on the USD 64 billion realised during 2000 – reflecting the cyclical nature of the business. Temporary staffing agencies employed 9.6 million people in the United States in 2001, and accounted for just over 2% of total employment. Higher levels of temporary staffing are reported in Europe, where levels of 4.5% were reported in the Netherlands in 1998, 3.2% in the United Kingdom and 2.5% in France.³⁶ The staffing industry in the United States generated some USD 66 billion in revenue in 2001 – USD 56 billion from temporary staffing services and USD 10 billion in permanent placement services.³⁷ The other major activity in the industry is that of human resources outsourcing, a part of the wider Business Processing Outsourcing (BPO) market. Worldwide spending on outsourced human resources services reached USD 47 billion during 2001, and was forecast to increase by 28% per annum through 2003.³⁸

Labour supply services firms are of two main types: employment agencies that place permanent employees, and help supply services, or temporary staffing agencies that provide employees on a contract basis. Employment agencies tend to be relatively small. In the United States, less than 7% of employment agency establishments have more than 50 permanent employees. In contrast, almost half of US temporary staffing agencies employ more than 50 people.³⁹ Human resources outsourcing services are provided by a mixture of these agencies and by many of the larger consulting and management services firms.

Recruitment agencies have been severely affected by the recent downturn. In the United Kingdom, recruitment industry turnover during 2002-03 was GBP 23 billion (USD 34 billion), down by 5% from the previous year.⁴⁰ It was reported that 53% of *online* recruitment firms made a loss during 2002.⁴¹ Nevertheless, online recruitment activities appear to be growing, with the number of United Kingdom vacancies advertised online increasing from 420 000 in 2000 to 900 000 in 2002, and the percentage of United Kingdom businesses using online recruitment increasing from 62% to 89%.⁴²

Key characteristics of business services

While highly diverse, there are a few characteristics that are common across the range of business services. These include: divergence of scale, with numerous small and a few large firms operating in many segments; strong competition; volatile, pro-cyclical demand; strong focus on local and national markets, with few truly multinational players; a tendency to ‘trade’ through affiliates; and increasing information or knowledge intensity and complexity in many areas of services delivery. Each of these is examined below.

Divergence of scale: Many business services sectors are comprised of a few large multinational players and a large number of small specialist, niche, locally focused and individual contractors. There is both consolidation at the top and technology, demand and supply driven churn below.⁴³

Strong competition: In many business services competition is strong. In most cases there are low barriers to entry, with relatively low levels of capital intensity – exceptions being in such areas as information services, where the provision of database services might require significant infrastructure investments. Economies of scale are typically limited to branding, reputation and experience. Price competition is strong in many areas, moderated to some extent in the knowledge intensive business services by the limited supply of highly skilled people (*i.e.* the, so called, war for talents).

Demand volatility: The demand for services and performance of many business services providers is strongly (pro)cyclical – linked to the fortunes of their customers, but accentuated because they often provide non-core functions that can, in the event of business downturn, be among the early casualties of cost cutting.

Importance of national and local markets: While heterogeneous, many business services firms operate within national and even smaller local markets. One of the impacts of e-business developments is to open up these markets to increased competition, which is both an opportunity and a threat – with increased market possibilities combined with increased competition coming from large internationalising services firms and other small firms from hitherto distinct geographic markets.

Internationalisation and trade in business services: The globalisation of clients is a major driver of international expansion in business services. Major services firms seek to service a particular client wherever they locate around the world, in order to ‘own’ the customer. This encourages them to set up shop in all major global city locations.⁴⁴ Hence, in many business services, sales are typically made through local affiliates rather than cross-border.

Information and knowledge intensity: Most business services activities are information and knowledge intensive. Business services invest heavily in information and communication technologies and in content, which together with skilled people are the most important direct inputs. However, given the large amount of information and knowledge that is now easily (and often freely) available on the Internet, the core competence of such services as management consultancy is shifting from ownership of, or access to knowledge, towards an ability to organise and manage available knowledge and deliver tailored solutions to clients efficiently and effectively. This is increasing the importance of ICT investments.

Complexity: A further factor encouraging clients to outsource business services functions and business services providers to invest in ICTs and skills is the increased complexity of activities. Many business services are becoming more complex – with increasing scale (*e.g.* designing and implementing a global supply chain), increasing regulation (*e.g.* Human Resource and Personnel Services in the United States facing an ever-increasing array of workplaces, health insurance and other regulations) and increasing internationalisation (*e.g.* different jurisdictions, such as different accounting and taxation rules, privacy requirements, etc.). Increasing complexity also drives growth of services firms as they try to contain within them all the expertise required for these more complex tasks.

Characteristic business models

There are various ways to think about business models,⁴⁵ but they can be summarised as strategies to recover costs (including the cost of capital) that mediate between the technical and economic domains.⁴⁶ In these terms, there are a number of notable features important to developing an understanding of the underlying economics of business services delivery.

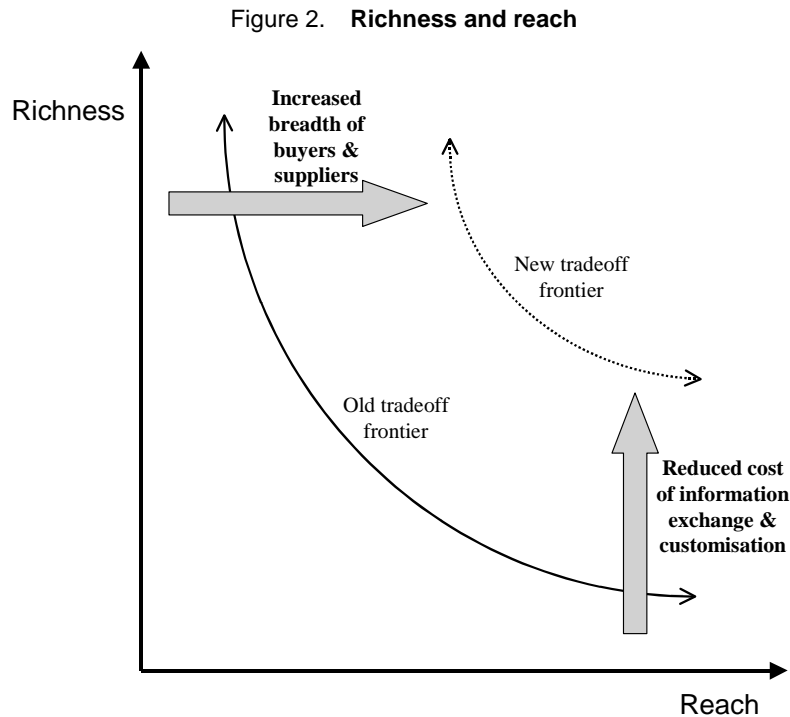
- *Software*: Software activities can be categorised into customised and packaged:
 - *Customised software* provision is based on the consulting model, with work typically commissioned by a single customer and delivered on a project basis. Customised software is very much like IT consulting, but with greater emphasis on the content (*i.e.* software). Therefore, document and knowledge management systems are somewhat more important.
 - *Packaged software* is a very different business, with standardised software products produced within the software firm and in isolation from specific customers, and distributed to many customers through a variety of distribution channels. Packaged software production has many of the characteristics of manufacturing and it is quite different from most other service industries. Where packages are produced for horizontal markets, production is more like manufacturing, and where they are produced for vertical markets there are more likely to be characteristic services elements involved (*e.g.* closer interaction between producers and users). Increased use of Internet-based software delivery and updating/upgrading means that there is increasing emphasis on individual sales and customer care, more than was the case in the traditional packaged software distribution business model, making it more like a service. In some cases, digital delivery of software fundamentally changes the software providers business model.
- *Application services*: Application service provision is an emerging area of activity in which services firms provide access to software and support on an “as needs” basis to customers who pay per use. Major inputs are ICT capital equipment and applications, which may or may not be developed internally. Fewer knowledge workers are involved in these businesses than is the case in software development. However, it is a one-to-many model, where one provider has many customers, rather than the characteristic one-to-one model of consulting services. Most application services providers are adopting a business model based almost entirely upon digital delivery.
- *Information and database services*: Providers of information and database services also tend to be more capital intensive and use a one to many business model. The relative importance of capital and knowledge workers in their operations will depend upon the extent to which they are the source of the database content (*e.g.* news media) or simply publishers (*e.g.* online scientific and professional publishing).
- *IT outsourcing services*: Outsourcing services and facilities management are an extension of the consulting model, in which scale, capital equipment and standardised operations play a much larger role. Outsourcing depends upon project management and contract management skills, as well as the necessary technical skills.
- *R&D and technical services*: Research and technical services are a mixture of consulting like services, in which single client projects are taken on the basis of specific skills and expertise, and ASP or outsourcing services, where access to specialist equipment is the core element of the service model (*e.g.* high throughput screening in pharmaceuticals). The mix of public and private sector players is more pronounced in R&D and technical services than it is elsewhere.
- *Marketing and advertising*: Services in this segment range from the highly creative development of global marketing strategies, which bears the characteristics of ‘top end’ management consulting services, to the day-to-day management of advertising accounts, with often quite low value adding and local activities involved.

- *Consulting services*: Management, business, organisational and IT consulting services are typically project-based and knowledge intensive. Each project tends to have a single customer and have unique features. The major input is skilled knowledge workers. Capital inputs are typically limited, but they are ICT intensive. Firms are often relatively small.
- *Human resources development and labour supply*: Contract placement services, especially those focused on temporary placements, are highly cyclical. They often simply take advantage of consolidating and matching vacancy listings with job seekers. Executive placement and outsourced human resources management require much greater expertise, with the latter being similar to IT outsourcing, but involving lower capital costs.

In short, the business models found in the business services sector are as diverse as the services themselves. This diversity is the key feature, and it makes it difficult to draw general conclusions about digital delivery developments and opportunities in business services.

THE POTENTIAL FOR DIGITAL DELIVERY

Evans and Wurster (2000) characterised the impact of the Internet as a movement out of the frontier of richness and reach. Richness refers to the depth and quality of information in an interaction, while reach refers to the number of entities that can be reached via Internet. In the past, it was only possible to share rich interactions with a limited number of suppliers or customers. A major impact of Internet-based commerce is that it has greatly increased reach *and* increased the number of potentially rich interactions. Firms can broaden their supplier or customer base (better reach) *and* make relationships more effective (greater richness). A similar point has been made by a number of analysts. For example, by Sundbo and Gallouj (1998) in their discussion of uniting the incommensurable (*i.e.* increased productivity and individual customer care).⁴⁷



Sources: Evans, P. and Wurster, T.S. (2000) *Blown to Bits: How the new economics of information transforms strategy*, Harvard Business School Press, Boston, pp23-38. See also Boston Consulting Group (2000) *After the Land Grab: B2B e-commerce in Australia and New Zealand*, December 2000.

While oversimplifying things, this highlights what is, perhaps, the basis for understanding the potential of digital delivery – namely, to combine greater market reach with the ability to engage in richer interactions with clients.

Implications for business services

Firms in the business services sector can use ICTs in procurement and a range of digital delivery processes – including the support of processes relating to the production and delivery of services, marketing, sales and customer care. True digital delivery, as distinct from digitally supported delivery, is limited to sales and customer care. However, there are two reasons to consider internal support processes as well. First, because it is widely believed that the real gains from digital delivery will only be realised within holistic e-businesses. Second, because operating through affiliates plays such an important role in many business services, such that there is often little difference between digitally supported and delivered internal processes between affiliates and external digital delivery directly to clients (bypassing affiliates).

All the opportunities for gains from e-commerce and online *procurement* are open to firms in the business services sector, be they in the procurement of direct inputs or office supplies (MRO). There are a number of core processes common to many businesses services operations which lend themselves to automation through partial or complete implementation of Professional Automation Systems (PSA). According to Berlecon Research (2002) these include:⁴⁸

- *Order and opportunity management*: Managing the flow of orders is vital in project-based services that rely on *ad hoc* projects for the majority of their business. The use of Internet-based tendering systems and tender alerting services by many government agencies and large firms provides would-be suppliers with more opportunities to identify and respond to requests for tender and to monitor the market on an ongoing basis. The Internet *also* allows business services firms to research their clients more thoroughly prior to tendering, helping them better tailor their offerings. Internal systems for customer management also allow service providers to better understand their clients and be in a position to make appropriate offerings in a timely manner, possibly pre-empting a call for tender and thereby reducing competition for that client.
- *Resource management*: Human resources are often the most important resource and cost factor for business services firms, making scheduling and optimum use of skilled people a key to competitiveness and profitability. Time tracking and scheduling systems can play a critical role, while such things as skills and resource databases can enable managers to find the optimal internal or external resource for particular tasks. In IT outsourcing, process and resource management are especially important, as it is in these areas that costs arise and margins can be determined.
- *Project management*: Whereas resource management manages resources across the firm, project management focuses on the management of resources for a particular project. Major elements include managing workflow (*e.g.* allocating tasks, tracking progress against deliverables and matching tasks and people), managing communications (*e.g.* managing access to common documents and providing alerts when deadlines are coming up), tracking time and expenses (*e.g.* tracking timesheets and expenses by project and client, and consolidating that information for management overview and customer billing) and performance analysis (*e.g.* aligning expenses and budgets, and reporting on performance).
- *Document and knowledge management*: Information management is at the heart of many of the knowledge intensive business services, and firms are increasingly using ICTs for storage and retrieval of documents and elements of codified knowledge and to support the sharing of tacit knowledge. Document management systems enable tracking, searching and retrieval of documents, as well as the management of such issues as copyright, privacy and security. Knowledge management systems provide a further development, adding a wider variety of material to the knowledge base than the formal documents of document management systems, as well as providing more sophisticated access, search and retrieval capabilities. Such systems are also important in maintaining corporate knowledge, despite the turnover of staff. Sharing tacit

knowledge relies primarily on communication between people, which can be effectively mediated using a range of ICT-based communications systems (e.g. e-mail and videoconferencing).

- *Billing and accounting*: When integrated with project and resource management systems, billing and accounting systems can greatly streamline billing and payment processes and engender a higher level of trust among clients through transparency and accountability.
- *Management of third party relationships*: As projects become larger, more international and more complex it is typical for there to be a greater range of third parties involved (e.g. government regulators, sub-contractors, suppliers, etc.). Consequently, the management of third party relationships is an increasingly important area of business service delivery.

When it comes to *marketing, sales and customer care* Web sites can provide an effective marketing vehicle that greatly enhances the reach of smaller firms into international markets. They can be used to build brand identity and reputation. Providing samples of work, inquiry and pricing information online can enable firms to capture new business. Traffic to Web sites can be enhanced by offering 'free' information and services, and by listing on various search, gateway and portal services. Customer relationship management (CRM) systems enable service providers to store information about the customers and track all forms of contact with them, which allows them to better manage their interactions, deliver services and understand the needs of their customers. Service providers can also allow clients access to project and service related information, allowing them to track progress, access accounts online and monitor accumulated charges. ICTs can also be used for relationship building, by such means as e-mail newsletters informing clients about new developments in their area of interest.

Box 4. **Business services e-marketplaces**

IDC defines an e-marketplace as an Internet-based broker of goods or services within a community of many buyers and sellers. Over recent years e-marketplace operators have struggled with unsustainable business models based on taking a small percentage commission on transactions. There have been many failures and widespread consolidation.

E-marketplaces are now shifting away from horizontal general markets towards vertically focused product and sector markets. Public e-marketplaces involving many players (often based on auction models) have declined rapidly. Private single- or few-firm markets for ICT-enabled or electronically mediated sourcing and procurement are, however, increasing in number. ICT-enabled sourcing and information brokerage models are the main growth areas. Business models are shifting away from commissions, because auction values are too low, and moving towards subscription-based models and the sale of related facilitative software and marketing services.

The shift to vertical markets has been complemented by an as yet less developed emergence of specialist horizontal e-marketplaces focusing on business services. For example, Smarterwork (www.smarterwork.com) specialises in bringing clients and qualified service providers together to carry out short, medium or long term projects. Smarterwork claims to be the world's first managed marketplace for business services and currently offers: Internet services, marketing and creative services, personal assistant services, research services, Web design services, writing services, software development services, business consulting services, legal services, tax services, and translation services.

In ICT services, the main e-marketplace areas are bandwidth marketplaces and those relating to software and software programming services and expertise. In March 2003, 8% of ICT services enterprises surveyed in Europe reported using B2B e-marketplaces and a further 5% expected to do so in the future. Use was higher among the larger enterprises (15% among those with more than 250 employees), and reported to be used by a higher share of surveyed enterprises in Spain (13%) than elsewhere (e.g. Germany and France 10%, United Kingdom 7% and Italy 5%).

Sources: Beaver, S. (2001) 'B2B E-Marketplace Predictions', *iQMagazine*, May/June 2001. Boston Consulting Group (2000) *The B2B Opportunity: Creating advantage through e-marketplaces*, Boston Consulting Group. E-business Watch (2003) *ICT & e-Business in the Telecommunications and Computer Services Sector*, Sector Report 6/III, July 2003, European Commission.

The evidence to date

Recent studies have suggested that e-commerce (computer mediated buying or selling transactions) was initially less successful as a transaction medium than many early observers thought it would be. This is based on the still relatively low share of transaction values accounted for by e-commerce – in either the business-to-consumer or business-to-business environments, following high expectations and underestimation of the difficulties of implementing and integrating e-commerce into businesses.⁴⁹

Varian *et al.* (2002) reported that, in the United States, expectations for productivity gains from the implementation of Internet business solutions remain high, but obstacles still exist.⁵⁰ In Europe, only 16% of business services enterprises surveyed by E-Business Watch in mid-2002 reported that e-business constituted a significant part of the way they operated. However, 22% suggested that e-business would constitute a significant part of the way they operated within the following 2 years (*i.e.* by mid 2004).⁵¹ This suggests that there is significant further potential for digital delivery.

PricewaterhouseCoopers (2001) reported that among United Kingdom-based management consultancy firms the main expected impacts of e-commerce were on innovation in relation to products, processes and client relations. Nevertheless, between 24% and 50% reported that they expected no impact from e-commerce implementation – 24% expected no impact in relation to information on their products or services, 35% expected no impact in relation to advertising, 42% expected no impact in relation to product or service offerings and 50% expected no impact on the negotiation of sales and purchases.⁵² Similarly, E-business Watch (2002a/2003b) found that 29% of firms in the ICT services sector and almost 55% of firms in the business services sector reported that e-business neither constituted a significant part of their operations in mid-2002, nor did they expect it do so within the next 2 years.⁵³

Discussion

These findings suggest that expectations among firms in the business services sector are less optimistic, perhaps more realistic, than are those of some industry analysts. Within businesses struggling towards business models based on digital delivery, the revolution is more of an evolution. As Buckley and Montes (2002) noted, the digital technology revolution has not ended, but the costs of change are now easier to see. The up-take of technologies has been slower and more uneven than many expected as businesses sift through many options to find the IT solutions and business models best suited to their needs.⁵⁴ The positive aspect of this situation is that much of the potential remains, especially in such areas as software development and information services, design and technical testing services, advertising, labour supply and recruitment.

Table 8. **Digital delivery of business services**
(potential and role)

<i>Service type</i>	<i>Potential</i>	<i>Role</i>
Software development	High	Full, depending on business model
IT services	Moderate	Supporting
Information retrieval services	High	Full, depending on business model
R&D services	Moderate	Supporting
Design services	High	Supporting
Technical testing services	High	Full, depending on business model
Advertising	High	Full, depending on business model
Marketing	Moderate	Supporting
Business consulting	Low	Supporting
Human resources	Moderate	Supporting
Labour supply	High	Full, depending on business model
Recruitment	High	Full, depending on business model

Source: Author.

BUSINESS SERVICES AMENABLE TO DIGITAL DELIVERY

One important factor influencing the amenability of services to digital delivery is the significance of the role of information exchange in the service concerned.⁵⁵ Where the exchange of information is a central part of the business model there is generally more scope for digital delivery. Aside from this, perhaps the most important characteristics making services more or less amenable to digital delivery are: the level of standardisation; the complexity of the tasks involved; the nature of the knowledge involved; the nature of the 'problem' addressed by the service; and the context of delivery. Each of these is explored below.

Standardisation

The level of *standardisation* of processes is an important determinant of the amenability of business services to digital delivery. Drucker (1998) suggested that those services that become most like manufacturing processes (*i.e.* standardised continuous services) have been most successful in realising productivity improvements and have tended to globalise most successfully.⁵⁶

Focusing on standardisation, E-business Watch (2002a) classified business services according to similarities in their business processes as follows:⁵⁷

- *Project-based services*, typically consist of conducting a well-specified knowledge-intensive task that requires the co-operation of a group of individuals and/or companies. Such project-based services make high knowledge demands on the companies and people involved. Consulting projects, writing a research study or designing an advertising campaign are examples of this kind of service. The projects are typically individualised, taking into account the client's specific needs and wants. Co-ordinating knowledge workers and managing the project are crucial activities for such services.
- *Standardised ad hoc services*, are fairly standardised and provided on a case-by-case basis. Conducting a direct mailing campaign or providing labour on a temporary basis are examples of standardised ad hoc services. The demands on the skills of employees are typically lower than for project-based services. Important success factors are efficient workflows, standardised processes and the ability to create a continuous stream of new business, either from new or repeat customers.
- *Standardised continuous services*, are typical of outsourcing services, such as office cleaning, security services or bookkeeping. The efficient organisation of processes and an efficient interaction between client and service provider are vital. In addition, enterprises offering standardised continuous services have to manage the trade-off between realising economies of scale by offering standardised services and realising higher profit margins by offering individualised services.

Flecker and Kirschenhofer (2002) also noted the importance of formalisation of project work for the relocation of services functions and digital delivery (ICT-enabled outsourcing).⁵⁸

Services that can be standardised and delivered in digital form (e.g. research reports, statistical updates, images, etc.) and services that can be standardised and ordered via the Internet (e.g. conference bookings, advertising space, airline tickets, etc.) are most amenable to digital delivery. Those that resist standardisation tend to be less amenable.

Complexity, nature and context

The *complexity of the tasks* involved in business services is one of the factors retarding standardisation and digital delivery. Morris (2000) pointed out that many have underestimated the complexity of the work environment, and noted two related concepts that shed light on these complexities: articulation and emergence. Articulation is the way in which people arrange and co-ordinate activities to mesh with colleagues. Emergence refers to actions that are often difficult to articulate too far in advance. Precisely what needs to be done often only becomes clear as time passes.

*A significant portion of people's work time is taken up with articulation and co-ordination... to deal with their work situations. All of this makes it difficult to write workflows, and convert knowledge work to assembly line processes... One of the key ways that people deal with these problems is through presence and awareness information. Awareness of what is happening around the office provides an enormous amount of information – often much of it held sub-consciously – that is critical to understanding the progress of the group's work. No amount of formal information – that contained in manuals or transferred in meetings – can match what an aware worker will pick up... Presence is the 'flip side' of awareness. It is concerned with how we let others know what we are doing.*⁵⁹

The *nature of the knowledge* involved also effects the amenability of services to digital delivery. It is common to make the distinction between codified and tacit knowledge. Codified knowledge is knowledge that can be written down and readily transmitted from one person to another (e.g. standard operating procedures, policy manuals, legislation, taxation formulae, etc.). Tacit knowledge tends to resist codification and remain a part of the knowledge and skills of individuals – it is more fluid and interpretive. Morris (2000) noted that:

*Any real-life work situation requires a mixture of both codified and tacit knowledge for work activities to proceed with any hope of success. Formal processes codified in some way can never hope to capture the richness required in most work situations. But systems are increasingly used to capture information in codified form, relying heavily on the tacit knowledge and the awareness of the worker. A hospital admissions worker is an excellent example of this process. They are required to ask standard questions of every patient – which are then codified, most often into a computer system – but the hospital's operation depends heavily on intelligent human interpretation of the answers, as well as the numerous other pieces of unspoken information, to make the correct decision.*⁶⁰

Clearly, knowledge that can be codified is more amenable to digital delivery than tacit knowledge. The transmission of tacit knowledge often requires face-to-face interaction in the negotiation of meaning and in learning. This makes digital delivery more difficult, but not impossible. In such areas as education and health the richness of interaction required for the transmission of tacit knowledge can sometimes be achieved, or at least enhanced electronically, such that digital delivery is supplementing and extending traditional face-to-face delivery, but despite large potential most applications remain pilot projects except in narrow specialisations and in administrative tasks. Similar extensions can be achieved in business services. The contribution that high bandwidth networks can make to enhancing the richness of mediated communications makes such networks a key enabler of the extension of digital delivery in business services.

The *nature of the problem* involved also affects amenability to digital delivery. Rittel (1973) noted that there are major differences between different kinds of problems and hence strategies to solve them.⁶¹ A *tame problem* can be expressed independently of its solution. In engineering for example, you can specify what needs to be designed independent of any particular design solution. There are clear stopping rules, you can reason logically that you are finished. Solutions are, arguably, ‘right’ or ‘wrong’. A *wicked problem* cannot be explained without its solution. To understand the problem, you have to try to understand a solution. In working out a solution you understand the problem more clearly and can redefine it if necessary, which in turn leads to a better solution, and so on. The problem and solution become clearer with each step. There is no way to say that you have finished, because there is no right or wrong answer. A solution is considered good enough, and so work stops. Solutions are ‘better’ or ‘worse’ (defined subjectively) rather than right or wrong.

Tame problems are a lot easier to distribute in space and time, because they can be more accurately specified, and worked on independently, drawing on known codified knowledge bases. Wicked problems require much more interaction and negotiation between players in the generation of both problem specifications and alternative ‘solutions’ and are less likely to be distributed for solution.⁶²

The *context of delivery* also affects amenability. In high context work, significant (informal) interaction is needed between co-workers to get the job done, whereas in a low context activity workers can proceed relatively independently. High context work tends to require a high degree of awareness of co-workers and of clients. Assembly line work is a low context, with activity co-ordinated by the assembly line which provides all the context the workers need. An example of high-context work is a medical ward, where intimate, detailed awareness of the activities of other clinicians is often crucial to successful treatment.⁶³ Clearly, low context work is more amenable to digital delivery than high context work.

Discussion

In real world business services these characteristics are mixed, with elements of codified and tacit knowledge, degrees of tameness and wickedness, and various levels of complexity and context involved. Determining how problems can be broken down is one of the most important elements of specifying services for outsourcing and developing business models for digital delivery. Generally speaking, however, people dealing with “wicked” problems, needing to draw on tacit knowledge and working with high context will do better co-located than distributed, unless they have extremely sophisticated technologies to overcome distance effects. Those working on “tame” problems with clear problem specifications are able to handle distance effects comparatively easily.⁶⁴

In an in depth study of the development of the Indian software industry, Heeks *et al.* (2000) noted that it is critical to deal with the three overlapping issues of tacit knowledge, informal information and culture. Failure to do so will limit the success of global software outsourcing.⁶⁵ Examining the relocation of work and digital delivery in Europe, Flecker and Kirschenhofer (2002) noted that:

*...most relocations create or intensify cooperation over distance, which triggers organisational and technological change processes leading to higher levels of formalisation and digitisation of information and communication. The core aspects of this change relate to the transformation of tacit experiential knowledge into explicit [codified] knowledge and a shift towards comprehensive documentation and digitisation of information...*⁶⁶

In these examples, the impacts of codified versus tacit knowledge, tameness versus wickedness, levels of complexity and context are evident. Where the exchange of information is a central part of the business model; where there is more scope for standardisation; where the complexity of the tasks involved can be managed; where the knowledge involved either is, or can be codified; where the nature of the problem

addressed by the service can be specified and defined (*i.e.* is relatively tame); and where the contextuality of the work involved is relatively low, there is more scope for digital delivery.

In addition to these 'internal' factors the take up of digital delivery will depend on the existing level of ICT use, access to the necessary ICT infrastructure and skills and the levels of sophistication and propensity to use ICTs among customer groups and major markets. Preissl (2003) employed the following criteria to evaluate e-business affinity among services sectors – the information intensity of the service, customer interface, main customer groups, market form and competition, functions in which ICTs are mainly used and potential for digitisation and electronic tradability.⁶⁷ These are taken up in the section on barriers (below).

DRIVERS OF DIGITAL DELIVERY

The drivers of digital delivery include customer expectations and demands, market access and expansion, efficiency and cost reduction, the emergence of new product or service possibilities, the drive to focus on core competencies and outsource non-core functions, globalisation, increasing complexity and regulatory changes. Many of these combine to propel both buyers and suppliers to adopt e-business solutions and digital delivery options.

Drivers of digital delivery

The drivers of digital delivery depend upon both demand side and supply side factors. Demand for digitally delivered business services arises at the intersection of outsourcing (demand for business services) and e-commerce (demand for digital delivery).

Potential purchasers of business services are encouraged to outsource functions for a variety of reasons. These include such things as: seeking to better control costs by entering into fixed, or at least known price contracts for the delivery of certain services; seeking to access skills and expertise not available internally; and seeking to focus on core business and contract out non-core functions to specialists in those areas. Outsourcing things for which demand is relatively intermittent or variable (*e.g.* software development, marketing, etc.) is also a means of managing demand variability. To the extent that these can be achieved more effectively and/or efficiently by means of digital delivery, or enhanced with supplementary digital delivery, they create demand for such delivery.

On the supply side, potential suppliers may move to digital delivery and digitally supported delivery as a responsive or a proactive business strategy. Business services suppliers may adopt digital support and delivery in response to: increasing project size and complexity; the globalisation of their own and their clients' businesses; increasing competition and downward pressure on prices. Proactively, business services suppliers may seek to increase their 'brand' visibility and reach new markets, enhance customer services and support, and improve the quality and reliability of their services. Hence, within business services we see:

- Price pressure and cost control driving the implementation of various tracking and management systems.
- Complexity driving integration, resource, project and customer management systems, collaborative support systems, etc.
- Globalisation driving the adoption of knowledge management and document management systems.
- Competition driving the adoption of a range of customer services and relationship management systems.
- The desire to increase visibility and market reach, driving online marketing and advertising, and the adoption of a range of online content and service delivery systems.

While each of the specific business services under consideration has unique features, similar broad factors can be seen. For example, in the specialised area of contract research and technical services (CRT) key drivers on the demand side include:

- Increasing capital costs (*e.g.* equipment for high throughput screening in pharmaceuticals) encouraging smaller firms to outsource to specialists who are able to consolidate demand and offer access to specialist equipment at lower cost.
- Increasing complexity, such that individual firms can no longer expect to contain all the necessary knowledge and skills required in many fields of research.
- Increasing interdisciplinarity, driven, in turn, by the tendency for more multi-technology products and services (*e.g.* electronics in automotive) forcing organisations with different but complimentary knowledge and skills to collaborate.

On the supply side, corporate and government spin-offs of large R&D facilities and pressures on universities encouraging them to establish contract research arms in order to supplement central funding are among the factors creating the entities to respond to emerging demand. Government policies encouraging collaboration are also a driver.⁶⁸

Evidence from industry

In an extensive survey of e-commerce activities in Europe, the United States, Japan, South Africa and India, Accenture (2001) found that services innovation and enhancement are a major driver of e-commerce adoption, with 77% of those firms using e-commerce reporting doing so to offer new services to existing customers.⁶⁹ In the United States, Varian *et al.* (2002) found that across all industries firms had adopted customer facing applications first, suggesting that the richness of customer relationships and market reach are indeed major drivers in the adoption of Internet business solutions.⁷⁰ They suggested that customer service and support applications were the most commonly adopted, reflecting attempts to get closer to their customers. E-marketing was also widely adopted. The lower adoption level of back-office solutions, such as finance and accounting, human resources and supply chain management, reflects priorities with respect to improving relationships with customers.

In the United Kingdom, France and Germany, Varian *et al.* (2002) found a similar focus on customer facing applications.⁷¹ In Scandinavia, SIKA (2003) reported that the most common reason for firms having their own Web sites was for marketing.⁷² Ninety-four per cent of firms in Denmark reported using their Web site for marketing, as did 92% in Norway, 87% in Sweden and 73% in Finland. Around one-quarter to one-third of companies in Scandinavia reported using their Web sites for taking orders and customer service, with other non-customer oriented uses significantly lower. Hence, it would seem that improved customer relationships and enhanced market reach have been major drivers of the adoption of Internet-based solutions and digital delivery.

A number of surveys of e-commerce activities have included analyses of the reasons for choosing particular suppliers, locations and services. These shed light on the drivers of adoption. For example, Huws *et al.* (2001) suggested that from the demand side (the buyers' perspective) technical expertise (cited by 23%), cost (cited by 13%), supplier reputation (cited by just over 12%), and quality, reliability and creativity (cited by 12%) were the major factors influencing the choice of an outsourced digitally delivered services supplier.⁷³ This would suggest that accessing technical skills and creativity, and cost savings are key drivers. Within this, the importance of particular factors varies from service-to-service – with access to technical expertise more often cited in such areas as software development, creativity more often cited in

such areas as marketing, reputation more often cited in such areas as accounting and financial services, and cost more often cited in such areas as routine data processing and data entry services.

From the supply side (the service providers' perspective) more emphasis is placed on reputation, quality and reliability than either cost or expertise. In a survey of large European companies (*i.e.* companies with more than 50 employees) Huws *et al.* (2001) found that reputation was cited as the reason for their winning business by almost 21% of the companies supplying digitally delivered services surveyed, while reliability, quality and creativity was cited by 18%. By comparison, cost was cited by 10% and skills and technical expertise was cited by just less than 10%.⁷⁴ PricewaterhouseCoopers (2001) reported that the implementation of e-commerce in United Kingdom-based management consultancies had been driven by the need to improve knowledge management and meet changing customer needs. Recruitment and procurement were also areas in which adopters expected to gain advantages. Relatively few, less than 30%, identified cost reduction as a motivator.⁷⁵ Hence, there is evidence of a variety of drivers operating variously in different business services sectors. Again, the diversity of business services is evident.

LEVEL OF ADOPTION OF DIGITAL DELIVERY

Surveys of business services suggest that the use of digital delivery and support is already extensive when looked at in terms of the proportion of firms offering digital delivery options, but does not yet account for a very large share of business services revenue. Digital delivery is more often supplementary and supportive than it is the main form of delivery. Nevertheless, there are an increasing number of business services firms that have adopted substantially, even exclusively, online business models. Hence, we find that the level of digital delivery of business services varies from country-to-country, from firm-to-firm, from service-to-services, between small, medium and large sized firms, between metropolitan and regional and rural locations and between business models. These variations must be borne in mind when interpreting aggregated data on the extent to which digital delivery has been adopted.

The demand side

Organisations already using e-commerce and outsourcing business services are digital delivery 'ready'. This section looks at the intersection of e-commerce and outsourcing - the point of emergence of demand for the digital delivery of business services.

E-commerce and e-business support

Eurostat (2002) reported that across the European Union an average of 19% of enterprises were using e-commerce for sales in 2001, with 42% of large enterprises using e-commerce and 17% of SMEs doing so.⁷⁶ OECD (2003) reported that, for the 16 countries for which both Internet purchasing and Internet sales data were available, online purchasing is more common than selling. On average, only one in eight businesses reported making Internet sales. Twice as many use Internet for purchases. Among firms that use the Internet, only a few distribute goods and services online or offer interactive electronic payment capability. The propensity to carry out Internet purchases and sales is higher in services than in manufacturing and financial services, business services and wholesale trades are generally the most intensive users. Internet orders are most frequent in the finance and insurance industry in Australia, Norway, Spain, Sweden and the United Kingdom, and the business services industry also has high rates of Internet commerce. In Denmark and Finland, the business services industry reported approximately every second order to be an Internet order. In Australia, Canada, the Netherlands and New Zealand, the propensity to buy or sell over the Internet seems to be more equally distributed across sectors.⁷⁷

In Scandinavia, 81% of commercial Internet users in Finland conducted financial transactions online during 2000, as did 73% in Denmark, 57% in Sweden and 55% in Norway.⁷⁸ Thirty-nine per cent of firms in Sweden used the Internet for personnel recruitment during 2000, as did 37% in Denmark and 34% in both Finland and Norway. Sixty-one per cent of firms in Sweden reported ordering goods and services online during 2000, as did 40% in Denmark, 38% in Finland and 36% in Norway. Fifty-five per cent of Swedish firms made electronic payments, as did 20% of firms in Denmark, 15% in Norway and 11% in Finland. Around 75% to 85% of Scandinavian firms reported seeking information about suppliers on Internet during 2000 and around 50% to 60% reported receiving digital products online.

The e-commerce market in Korea was reported to have been worth USD 44.3 billion in 2000, around 4.5% of all transactions. More than 90%, by value, was business-to-business, and business-to-business e-commerce in Korea was growing rapidly - increasing from USD 7.7 billion in the first quarter of 2000 to more than USD 40 billion in the fourth quarter. At that time, more than 70% of the market was in electronic document interchange, but firms were beginning to turn to the Internet for e-commerce in increasing numbers.⁷⁹ Less than 1% of business-to-business e-commerce in Korea was conducted by the business services sector.⁸⁰ The e-commerce market in Japan was worth around USD 400 billion during 2001, of which more than USD 280 billion was business-to-business e-commerce.⁸¹ EAU (2002) reported that Internet commerce was worth around USD 8.4 billion in Korea in 2001, of which almost USD 6 billion was business-to-business; USD 7.5 billion in Taiwan, of which some USD 5.6 billion was business-to-business; USD 5.7 billion in China; USD 2.4 billion in Singapore; USD 1.9 billion in Hong Kong, China; and just less than USD 1 billion in Malaysia.⁸²

Varian *et al.* (2002) focused on the adoption of e-business solutions *within* firms in the United States. At the end of 2001, 71% of firms had adopted Internet-based customer service and support activities, 68% had adopted ICT-enabled marketing and customer development, 52% had adopted e-commerce, 37% had adopted Internet-based human resources solutions, 36% had adopted Internet-based finance and accounting solutions, 33% had adopted online procurement and 30% had adopted sales force automation and supply chain management. The same study noted that 26% of all firms were employing e-business solutions in relation to R&D functions.⁸³

Table 9. **Percentage of companies to have adopted Internet-based business solutions by function, 2001**
(Percentage of firms surveyed)

	UK	France	Germany	US	Canada*
Marketing	57	56	43	68	55
Customer service & support	54	39	67	71	57
E-commerce	43	37	44	52	49
Finance & accounting	28	23	25	36	40
Human resources	21	28	29	37	24
Procurement/MRO	36	19	24	33	25
Sales force automation	19	9	15	30	25
Supply chain management	14	11	8	30	21

Note: * Canadian study included SMEs only.

Source: Varian, H., Litan R.E., Elder, A. and Shutter, J. (2002) *The Net Impact Study*, January 2002, V2.0. p39; and Canadian e-Business Initiative (CEBI) (2002) *Net Impact Study Canada: The SME Experience*, CEBI. Available www.netimpactstudy.com accessed January 2003.

Varian *et al.* (2002) also found that companies in Germany, France and the United Kingdom started deploying Internet-based business solutions after those in the United States, but expect to complete implementations in a similar timeframe (*i.e.* during 2003). European businesses appear to have a greater focus on customer-facing applications.

- In the United Kingdom, 57% of firms surveyed had adopted Internet-based marketing, 54% had adopted Internet-based customer service and support activities, 43% had adopted e-commerce, 36% had adopted online procurement, 28% had adopted Internet-based finance and accounting solutions, 21% had adopted Internet-based human resources solutions, 19% had adopted sales force automation and 14% supply chain management.

- In France, 56% had adopted Internet-based marketing and customer development, 39% had adopted Internet-based customer service and support activities, 37% had adopted e-commerce, 28% had adopted Internet-based human resources solutions, 23% had adopted Internet-based finance and accounting solutions, 19% had adopted online procurement, 11% had adopted supply chain management and 9% sales force automation.
- In Germany, 67% of firms had adopted Internet-based customer service and support activities, 44% had adopted e-commerce, 43% had adopted Internet-based marketing and customer development, 29% had adopted Internet-based human resources solutions, 25% had adopted Internet-based finance and accounting solutions, 24% had adopted online procurement, 15% had adopted sales force automation and 8% supply chain management.⁸⁴

In Canada, a similar study found that 57% of firms had adopted Internet-based customer service and support activities, 55% had adopted Internet-based marketing and customer development, 49% had adopted e-commerce, 40% had adopted Internet-based finance and accounting solutions, 25% had adopted online procurement, 25% had adopted sales force automation, 24% had adopted Internet-based human resources solutions and 21% supply chain management.⁸⁵

Table 10. **E-commerce activities, mid 2001**
(Percentage of firms & percentage of firms using e-commerce)

	<i>Buy or Sell Online</i>	<i>E-commerce is significant part of operations</i>	<i>Sales & Marketing</i>	<i>Purchasing</i>	<i>Logistics</i>	<i>Human Resources</i>
	<i>% of firms</i>	<i>% of firms</i>	<i>% using EC</i>	<i>% using EC</i>	<i>% using EC</i>	<i>% using EC</i>
Austria	66	13	88	66	41	63
Belgium	33	20	70	47	43	60
Czech Republic	60	67	93	60	43	57
Denmark	73	40	93	73	40	33
Finland	44	25	75	72	56	47
France	70	7	67	67	57	57
Germany	31	31	74	49	34	34
Greece	32	26	81	58	39	42
Hungary	47	17	47	30	27	17
India	44	60	79	45	60	56
Ireland	61	13	81	58	45	48
Italy	40	20	87	43	33	50
Japan	23	18	60	32	33	72
Netherlands	50	19	97	44	38	38
Norway	53	37	90	80	70	50
Poland	23	47	93	53	40	40
Portugal	27	60	83	23	47	43
Russia	47	37	77	60	60	67
Slovak Republic	43	43	73	60	40	53
South Africa	33	67	93	50	50	53
Spain	40	17	93	37	30	27
Sweden	77	33	77	67	30	37
Switzerland	40	17	80	70	67	67
United Kingdom	53	37	93	70	63	67
United States	62	23	70	73	53	57
<i>Europe</i>	<i>48</i>	<i>29</i>	<i>82</i>	<i>56</i>	<i>44</i>	<i>46</i>
<i>Total</i>	<i>46</i>	<i>32</i>	<i>79</i>	<i>55</i>	<i>46</i>	<i>51</i>

Source: Accenture (2001), *The Unexpected eEurope: The surprising success of European eCommerce*, Accenture. Compiled from Appendix Tables.

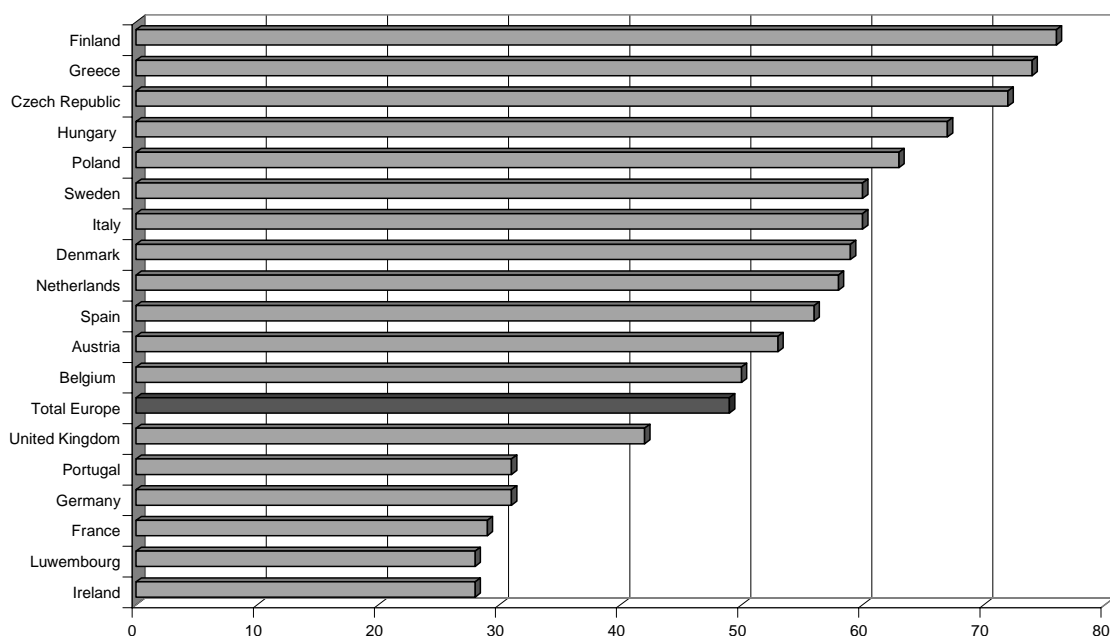
Similarly, Accenture (2001) reported that across Europe, the United States, Japan, South Africa and India, 32% of firms reported that e-commerce was a significant part of the way they did business and 46% said that they had bought and/or sold online. Some 79% of those firms using e-commerce in mid 2001 were doing so in sales and marketing functions, 55% in purchasing, 51% in human resources and 46% in logistics.⁸⁶ There was considerable variation from country-to-country (See Table 10).

Hence, there is a widespread focus on customer facing solutions, such as customer service and support, marketing, etc. To the extent that these are deployed in the business services sector they constitute the digital delivery of business services (*i.e.* the supply side) and to the extent that firms in other industries outsource these activities they represent the potential growth for the digital delivery of business services (*i.e.* the demand side).

Digital delivery demand

Remote or distance electronically mediated (ICT-enabled) work can be internal (same organisation) or outsourced (different organisation). Where it is outsourced organisations are digital delivery 'ready'. Huws *et al.* (2001) found that countries with a high level of remote or distance work (both internal and outsourced) are a mixture of advanced high-technology economies, such as Finland, Sweden and the Netherlands, and economies from southern, central and eastern Europe, such as Greece, Poland, Hungary and Italy, which have high levels of outsourcing. The authors noted a number of possible explanations for the apparently high levels of distance work in eastern and southern European states, such as: rapid development and rapidly accelerating demand, and possible lack of local skills; the role of multinational enterprises in these economies and their impact on local skills supply and/or their demand for relatively low-cost skills; distribution of firm sizes, which tend to feature a few very large enterprises and many micro-enterprises; and a range of possible cultural factors.⁸⁷

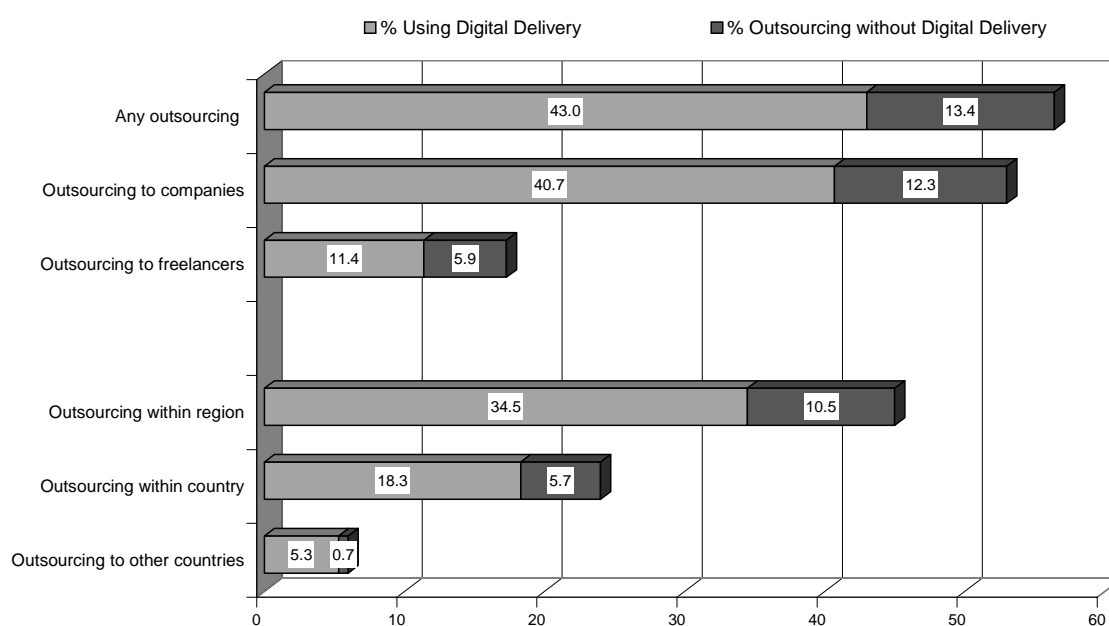
Figure 3. **Distance electronically mediated work by country (demand side), 2000**
(Percentage of establishments with >50 employees using)



Source: Derived from Huws, U. & O'Regan, S. (2001) *E-work in Europe: Results from the 18-Country Employer Survey*, Institute for Employment Studies, IES Report 380, p18.

In a European survey of establishments with more than 50 employees, Huws *et al.* (2001) found that in 2000 43% of establishments outsourced at least one business service, 41% engaged in ICT-enabled outsourcing (*i.e.* business-to-business digital delivery), 11.4% engaged freelancers using digital delivery, 34.5% used ICT-enabled outsourcing within their own region, 18.3% to other regions within their own countries and 5.3% to companies in other countries.⁸⁸ Mako and Keszi (2003) found that in the Czech Republic, Hungary and Poland ICT-enabled outsourcing was more prevalent than was the case in the EU-15, although such outsourcing of core functions was practiced by less than 10%.⁸⁹ Similarly, Altieri *et al.* (2003) found that ICT-enabled outsourcing was more widely adopted in Mediterranean Europe (Italy, Spain and Greece) than was the case in central Europe, which they attribute to a range of development stage, firm size and skills availability factors.⁹⁰ In both studies, the levels of outsourcing reported in Eastern and Southern Europe seem higher than might be expected, although possible explanations are suggested. In Australia, where the survey also included small firms, 19% of establishments engaged in ICT-enabled outsourcing – 15.8% to other businesses and 5.9% to individual ICT-enabled freelancers. However, if the small firms are excluded e-outsourcing levels are closer to European averages, with around 25% of establishments engaged in ICT-enabled outsourcing (24% using contractors and 7% using freelancers).⁹¹

Figure 4. **Outsourcing and digital delivery in Europe (demand side), 2000**
(Percentage of establishments with > 50 employees)

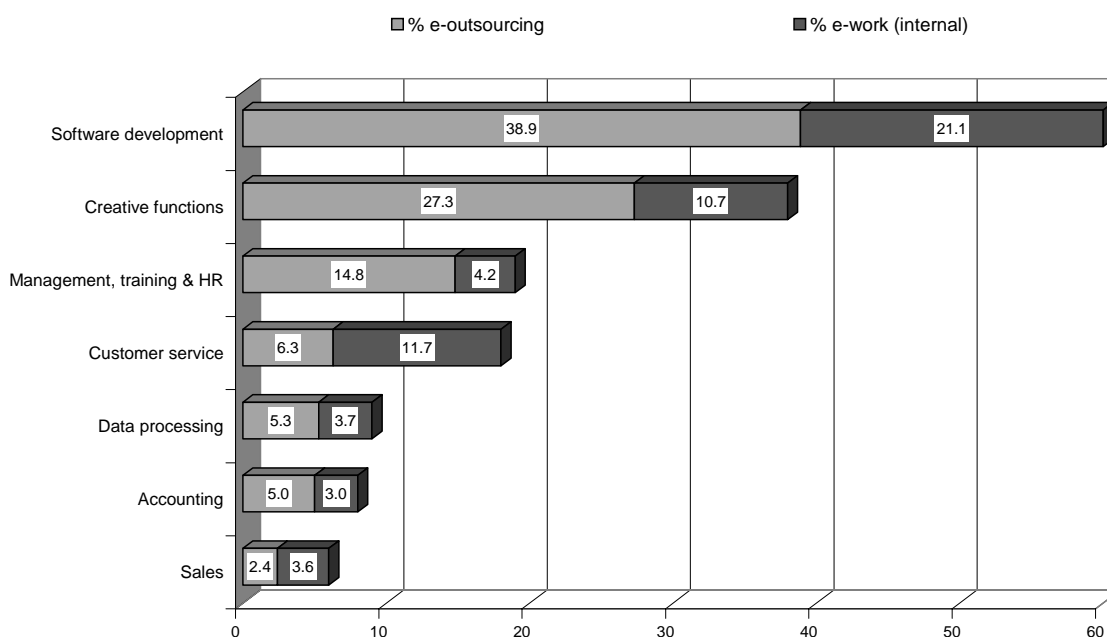


Source: Derived from Huws, U. & O'Regan, S. (2001) *E-work in Europe: Results from the 18-Country Employer Survey*, Institute for Employment Studies, IES Report 380.

Looking at distance electronically mediated work (both in-house and outsourced) by business function, Huws *et al.* (2001) found that: 60% of establishments were using it for software development and support; 38% were using it for creative functions (including marketing, advertising and R&D); 19% for management, training and human resources functions; 18% were for customer services and 6% for sales.⁹² These findings suggest active demand for digitally delivered business services in Europe.

Huws *et al.* (2001) also gave some indication of the level of adoption and use of digital delivery in relative terms (*i.e.* the proportion of outsourced services providers using digital delivery). Again, the digital delivery of outsourced business services appears widespread, with more than 75% of those establishments outsourcing (the demand side) receiving digital delivery. Within these, almost 77% of those outsourcing to other establishments received digital delivery, compared with 66% of those outsourcing to individual ICT-enabled freelancers. Perhaps not surprisingly, digital delivery is more popular where services are delivered from a distance. No fewer than 88% of those establishments outsourcing business services to a supplier in a different country received digital delivery, compared with 76% of those outsourcing to another region within the same country or within their own region.

Figure 5. **Outsourcing and digital delivery in Europe by function (demand side), 2000**
(Percentage of establishments with > 50 employees)



Source: Huws, U. & O'Regan, S. (2001) *E-work in Europe: Results from the 18-Country Employer Survey*, Institute for Employment Studies, IES Report 380.

Software development and creative functions (including marketing, advertising and R&D) are among the most common digitally delivered outsourced business services. Huws *et al.* (2001) reported that: 38.9% of establishments surveyed across Europe were using ICT-enabled outsourcing for software development, 27.3% for creative functions, and 14.8% for management, training and human resources. In Australia, software development and support was by far the most commonly ICT-enabled outsourced business function, followed by creative functions (including editorial, design and R&D). However, firm size makes a significant difference to the functions e-outsourced, with larger establishments more likely to use ICT-enabled outsourcing of customer services, DP/typing and software development and support functions, and less likely to outsource creative, accounting and human resources functions.⁹³

Again, light is shed on the relative level of adoption of digital delivery of outsourced business functions. Of the 60% of surveyed establishments in Europe using electronically mediated work (*i.e.* digital delivery) in software development, 39% outsourced it and 21% did not. Similarly, of the 38% of surveyed establishments using digital delivery in creative functions (including marketing, advertising and R&D) 27.3% outsourced it and 10.7% did not, while of the 19% of surveyed establishments using digital delivery

in management, training and human resources 14.8% outsourced it and 4.2% did not, and of the 18% of surveyed establishments using digital delivery in customer services 6.3% outsourced it and 11.7% did not. Clearly, outsourced digital delivery from the demand side is more common within management, training and human resources (78%), software development (65%), accounting (62%) and data processing (59%) than it is within customer service (35%).⁹⁴

The supply side

There are various estimates of online sales, but one regular series is that published as the *Interactive 500*, which ranks US-based firms by online revenue and classifies them into broad industry sectors. In the year to end June 2001, 32 among the top 200 listed firms were in one or more of the business services sectors (as defined by *Interact 500*). The largest group identified by online sales was software and services, with 10 firms listed among the top 200 interactive 500, sharing a combined online revenue in 2001 of USD 6.65 billion. There were 13 business services firms listed in the top 200 with combined online revenues of USD 2.4 billion, four advertising firms with a combined online revenue of USD 782 million, three marketing firms with a combined online revenue of USD 272 million and two specialist recruitment firms with a combined online revenue of USD 192 million (Table 11).⁹⁵

In the United States, e-commerce revenues for selected services industries amounted to USD 37.3 billion during 2002, approximately 0.8% of total revenues. Of this total, computer systems design and related services realised USD 3.5 billion in e-commerce revenues (2.1% of total) and other information services realised USD 2 billion (5.7% of total).⁹⁶ The Boston Consulting Group (2000a) reported that in Australia and New Zealand business-to-business e-commerce transactions were worth USD 10 billion in 2000, or around 2% of all business purchasing. They estimated that this would rise to USD 30 billion by 2002. It was also estimated that 3.1% of business-to-business e-commerce was in the business services sector – approximately USD 300 million.⁹⁷

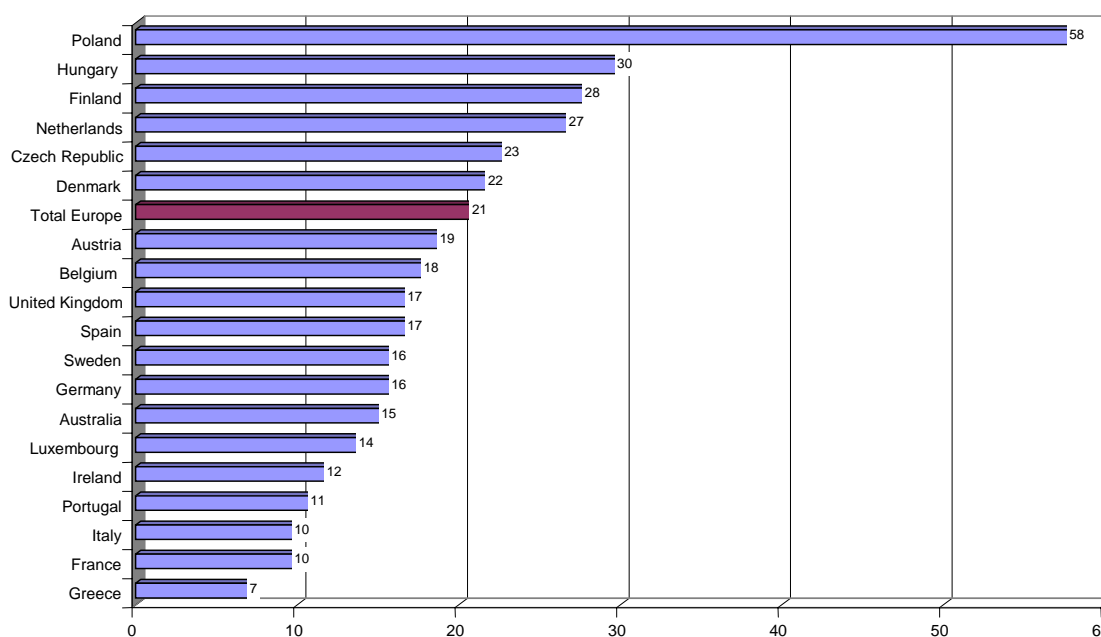
In a survey spanning 18 European countries, Huws *et al.* (2001) found that 21% of establishments with more than 50 employees supplied business services electronically (*i.e.* digital delivery).⁹⁸ However there were marked national differences, with high levels of supply in Poland, Hungary, Finland and the Netherlands and much lower levels in Italy, France and Greece. In offering potential explanations for the high levels of ICT-enabled services supply in the three Eastern European states the authors noted that the practice of outsourcing is more widespread there, which is reflected in both demand and supply, and speculated that that may be due to such factors as: entering the information economy without the encumbrance of legacy in-house systems; rapid development and rapidly accelerating demand for skills; the role of multinational enterprises in these economies; firm size characteristics; and a range of possible cultural factors. They also noted the contrast between eastern European states and Mediterranean states, which appear to be ICT-enabled services importers. There is clearly a need for further research in order to shed light on these initial findings, but cross-border trade and firm size differences appear significant. Emergence (2002) found that 15.4% of establishments surveyed in Australia in early 2002 supplied ICT-enabled services, with the inclusion of small firms in the sample making relatively little difference to the overall level of such services supply reported.⁹⁹ This suggests that digital delivery of business services in Australia is lower than the European average, but on a par with such countries as Sweden and Germany.

Table 11. **Business services firms' online sales, 2001**
 (Business services firms in the top 200 of the Interactive 500)

<i>Rank</i>	<i>Company</i>	<i>Online Revenue USD millions</i>	<i>Industry Sector</i>
17	Oracle	3 630.0	Software & Services
27	Microsoft	1 954.0	Software & Services
46	TMP Worldwide	592.7	Business Services
54	DoubleClick	484.3	Advertising
73	W.W. Grainger	307.0	Business Services
74	Rowecom	301.6	Business Services
75	Intuit	293.5	Software & Services
79	Merisel	289.0	Software & Services
93	Agency.com	202.0	Business Services
103	Engage Technologies	161.2	Marketing Services
105	Entrust	151.5	Software & Services
106	Standard Register	147.8	Business Services
108	Modem Media	144.2	Business Services
111	USInternetworking	134.2	Business Services
115	Freemarkets	128.9	Business Services
117	24/7 Media	125.4	Advertising
118	Avenue A	125.3	Advertising
119	Hot Jobs	125.3	Recruitment
121	Register Com	114.0	Software & Services
124	Onvia	110.8	Business Services
134	Beyond Com	96.6	Business Services
135	Intrawave	95.7	Business Services
151	Colinx	80.0	Business Services
152	Kwlogistics	80.0	Business Services
168	Headhunter	66.6	Recruitment
173	Netcentives	61.4	Marketing Services
176	Selectica	60.5	Software & Services
181	Sciquest	52.5	Software & Services
182	Mcafee	51.8	Software & Services
185	L 90	49.9	Marketing Services
187	Verticalnet	48.7	Software & Services
193	ValueClick	47.2	Advertising

Source: Interactive 500. *Interactive Week*, November 5, 2001. Available www.eweek.com accessed March 2003.

Figure 6. **Supply of ICT-enabled services by country, 2000**
(Per cent of establishments with >50 employees surveyed)

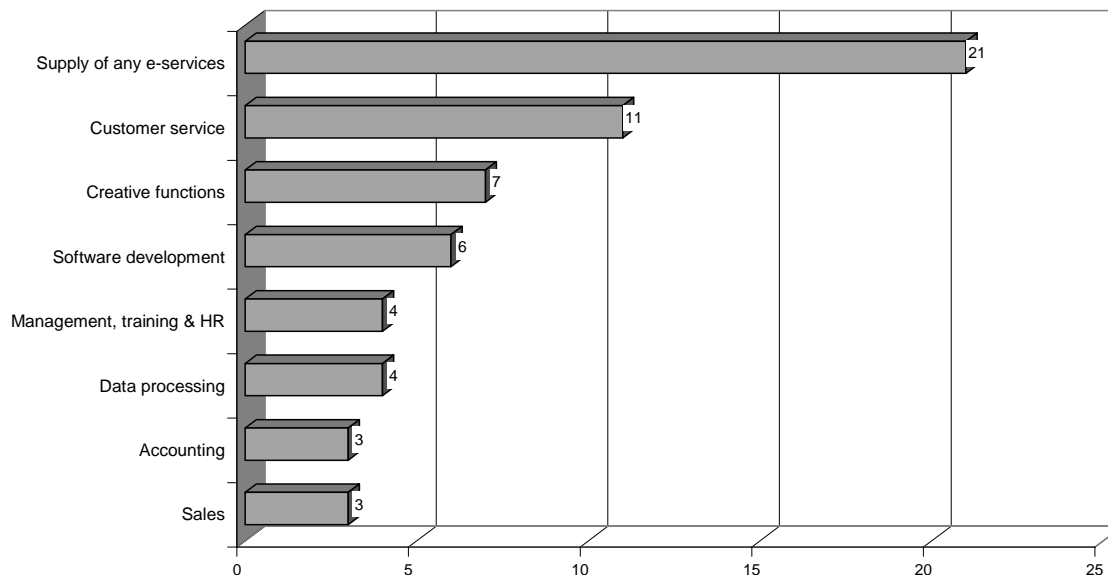


Note: European countries 2000, Australia 2002.

Source: Derived from Huws, U. & O'Regan, S. (2001) *E-work in Europe: Results from the 18-Country Employer Survey*, Institute for Employment Studies, IES Report 380, p40; and Emergence (2002) *eWork in Australia: the Employer Survey*, Edith Cowan University, Perth, p39.

Huws *et al.* (2001) reported that the services most commonly involved were: customer services, supplied by 11% of establishments surveyed; design, editorial and creative functions (including advertising, marketing and R&D), supplied by 7% of establishments surveyed; and software development and support services, supplied by 6% of establishments surveyed.¹⁰⁰ As noted above, business services were supplied by establishments in a wide range of industry sectors, suggesting that a high proportion of business services are supplied by non-specialist organisations. For example, specialist software consultancy and supply businesses accounted for less than 15% of the establishments reporting that they supplied software development and support ICT-enabled services, and other computer related firms accounted for no more than a further 9%. Hence, more than 75% of the establishments reporting that they supplied software development and support ICT-enabled services were not in the IT industries.¹⁰¹ Similar findings were noted in other business service categories.

Figure 7. **Supply of outsourced ICT-enabled services in Europe, 2000**
(Per cent of establishments with >50 employees surveyed)



Source: Derived from Huws, U. & O'Regan, S. (2001) *E-work in Europe: Results from the 18-Country Employer Survey*, Institute for Employment Studies, IES Report 380, p39.

In Australia, the most common business delivered digitally in early 2002 were customer services and creative functions (including editorial, design, marketing and R&D). Among medium and large establishments, human resources, software development and support and accounting and financial services were the services most commonly digitally delivered, while among smaller establishments, human resources services were less commonly supplied.¹⁰² It is notable that ICT-enabled outsourcing of human resources management and training functions was three to four times less common in Australia than it is across Europe. ICT-enabled outsourced call centres were also much less common in Australia than in Europe.¹⁰³ These differences are likely to be due to a range of regulatory factors and firm size differences.

Bates *et al.* (2002) reported that in Europe 39% of large establishments (with more than 50 employees) in the knowledge sector (including all the business services covered in this study) supplied at least one business service to customers on an ICT-enabled outsourcing basis in 2000, compared with 17% of large establishments not in the knowledge sector. Among these large establishments in the knowledge sector: 19% supplied customer services; 17% supplied design, editorial and other 'creative' services; 15% supplied software development and IT support services; 8% supplied management training and human resources services, and data processing and data entry/typing services; 5% supplied accounting services and 4% supplied telesales services. In all cases, more establishments in the knowledge sector supplied these services than did establishments not in the knowledge sector.¹⁰⁴

ICT services

Surprisingly little is known about the level of digital delivery in the ICT industries. One source including data on the adoption of various Internet-based business solutions in the group of industries 'service providers and telecommunications' (SIC 4812, 4813 and 4841) found that, in the United States, 50% of enterprises had adopted sales force automation by late 2001, 69% had adopted e-commerce, 74%

had adopted Internet-based marketing and 86% had adopted Internet-based customer service and support. In Canada, the rates were: 26% for sales force automation, 46% for e-commerce, 64% for Internet-based marketing and 54% for Internet-based customer service and support. Across the United Kingdom, France and Germany the rates were: 27% for sales force automation, 39% for e-commerce, 47% for Internet-based marketing and 74% for Internet-based customer service and support.¹⁰⁵

Table 12. **Percentage of enterprises using Internet-based business solutions in the service provider and telecommunications sector, late 2001**

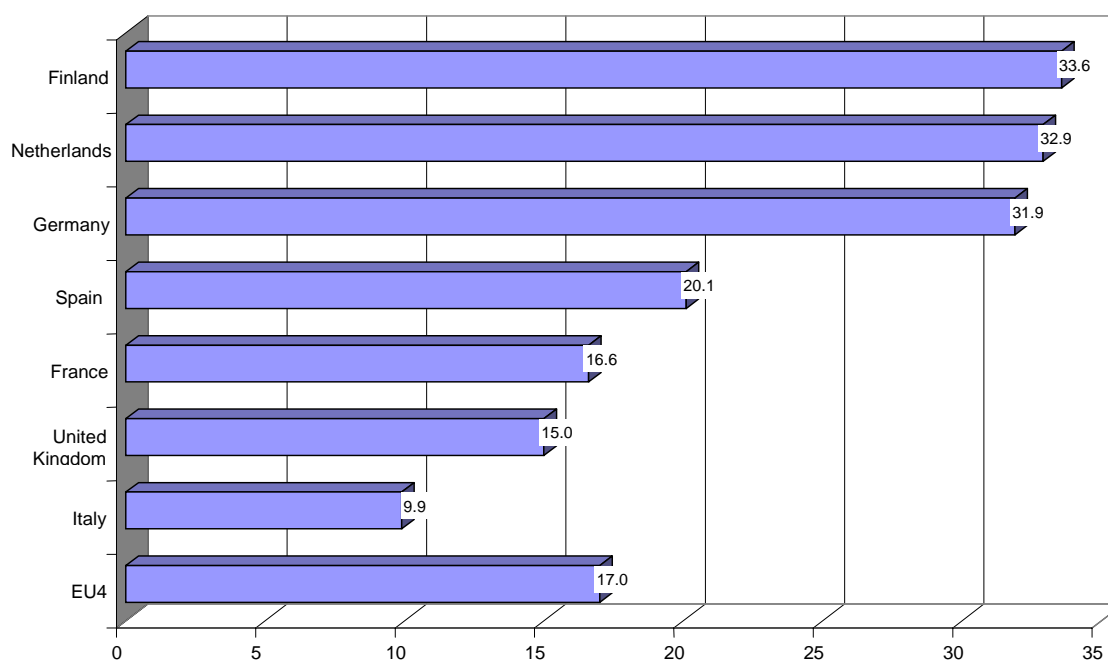
	<i>US</i>	<i>Canada</i>	<i>UK, France & Germany</i>
Marketing	74	64	47
Customer service & support	86	54	74
E-commerce	69	46	39
Finance & accounting	42	36	26
Human resources	37	44	29
Procurement/MRO	44	20	31
Sales force automation	50	26	27
Supply chain management	27	25	17

Source: Varian, H., Litan R.E., Elder, A. and Shutter, J. (2002) *The Net Impact Study*, January 2002, V2.0. and Canadian e-Business Initiative (CEBI) (2002) *Net Impact Study Canada: The SME Experience*, CEBI. Available www.netimpactstudy.com accessed January 2003.

Statistics Canada reported that just over 10% of private sector businesses sold goods or services online during 1999. Online sales were more common in the information and cultural industries (including computer services), with more than 20.5% of businesses selling on line. The value of those sales was around USD 370 million, or 1.0% of operating revenues.¹⁰⁶

In March 2003, 17% of enterprises surveyed in the telecommunications and computer (ICT) services sector in the EU-4 countries (France, Germany, Italy and the United Kingdom) were selling online, although in 33% of cases online sales accounted for less than 5% of total sales. More than 80% of enterprises were reported to have been procuring online. Of those ICT services enterprises selling online, around 65% were taking payments for those sales online and around 70% were providing an online after-sales-service. There was some variation from country-to-country. The highest levels of online selling within the ICT services sector were reported in Finland and the Netherlands (around 33% of enterprises), compared with a low 10% in Italy. Those also taking payments online varied less, from highs of more than 75% in the United Kingdom and France to a low of 50% in Spain. The majority also provided after-sales service online.¹⁰⁷

Figure 8. Percentage of enterprises in ICT services selling online, Europe 2002/2003



Source: E-business Watch (2002) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6, July 2002; and E-business Watch (2003) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6/III, July 2003. Enterprise weighted.

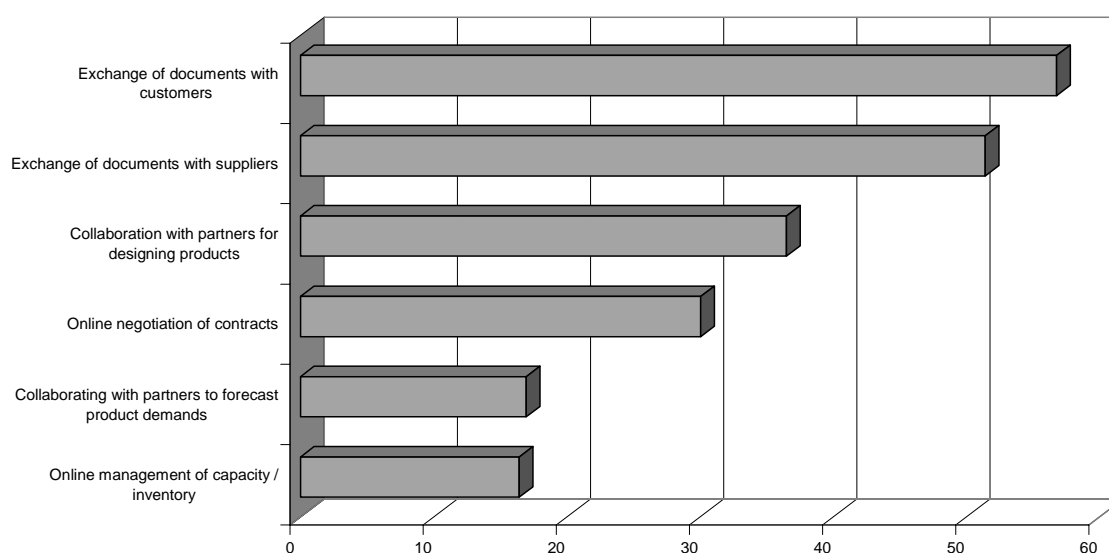
Table 13. ICT services enterprises: Online sales and support, Europe 2002/2003

	<i>Selling online</i> (% all enterprises)	<i>Taking payments online</i> (% enterprises selling online)	<i>Providing after-sales service online</i> (% enterprises selling online)
EU-4	17.0	64.6	70.3
Finland (2002)	33.6	60.1	79.9
France	16.6	49.0	79.1
Germany	31.9	46.8	59.0
Italy	9.9	33.4	66.6
Netherlands (2002)	32.9	36.3	52.0
Spain	20.1	33.9	50.5
United Kingdom	15.0	88.7	77.8

Source: E-business Watch (2002) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6, July 2002; and E-business Watch (2003) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6/III, July 2003. Enterprise weighted.

In the EU-4 countries (France, Germany, Italy and the United Kingdom), in March 2003, around 37% of enterprises in the ICT services sector were collaborating with business partners online in the design of products and 17% were doing so to forecast demand. Some 16% of enterprises in the sector were using online techniques to manage capacity and/or inventory, while around 30% were reported to be negotiating contracts online. Fifty-one per cent reported exchanging documents with suppliers online, while 57% were exchanging documents with customers online.¹⁰⁸

Figure 9. **Use of online technologies in ICT services in EU-4, 2003**
(Per cent of enterprises surveyed)



Source: E-business Watch (2003) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6/III, July 2003.

Table 14. **Use of online technologies in ICT services, Europe 2002/2003**
(Percentage of enterprises with Internet access)

	<i>Collaboration with business partners for designing products</i>	<i>Collaboration with business partners to forecast product demands</i>	<i>Online management of capacity / inventory</i>	<i>Electronic exchange of documents with suppliers</i>	<i>Electronic exchange of documents with customers</i>	<i>Online negotiation of contracts</i>
EU-4	36.5	17.0	16.4	51.4	56.8	30.1
Finland (2002)	53.3	53.2	20.5	59.9	66.6	46.4
France	26.0	19.1	2.4	66.6	68.3	33.8
Germany	32.3	12.1	15.0	36.8	40.5	20.1
Italy	36.7	23.4	25.0	56.5	53.3	18.3
Netherlands (2002)	24.2	15.4	27.8	59.4	62.4	37.1
Spain	21.5	24.7	21.1	77.0	71.8	29.8
United Kingdom	39.7	15.6	15.6	51.8	62.1	38.0

Source: E-business Watch (2002) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6, July 2002; and E-business Watch (2003) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6/III, July 2003. Enterprise weighted.

Levels of online collaboration and service vary from country-to-country. For example, 67% of ICT services enterprises in Finland, 68% in France and 62% in the United Kingdom exchanged documents with customers online, compared with 40% in Germany.¹⁰⁹ Looking at the use of internal support processes, just

7.1% of all ICT services enterprises in Italy used knowledge management systems to support digital delivery, compared with more than 20% in the United Kingdom and Finland. Similarly, the use of online technologies to support human resources management varied from 12.9% of ICT services enterprises in Italy to more than 40% in Finland, and the use of online technologies in core project management functions (*e.g.* to track working hours and production time) varied from 8.8% in Italy to more than 50% in Finland.¹¹⁰

Table 15. **Use of supporting online technologies in ICT services, Europe 2002/2003**
(Percentage of enterprises with Internet access)

	<i>Using a Knowledge Management Solution</i>	<i>Using online technologies to share documents or to perform collaborative work</i>	<i>Using online technologies to automate travel reimbursement of employees</i>	<i>Using online technologies to track working hours and production time</i>	<i>Using online technologies to support human resources management</i>	<i>Using online technologies for learning</i>	<i>Posting job vacancies on special boards on Internet</i>
EU-4	17.5	60.1	12.3	21.8	16.2	30.2	24.5
Finland	20.7	73.7	20.9	53.9	41.4	59.8	54.2
France	12.0	62.3	15.3	26.7	20.5	13.7	40.8
Germany	15.6	57.4	19.3	30.8	16.0	30.0	24.8
Italy	7.1	45.7	3.0	8.8	12.9	21.4	8.6
Netherlands	17.0	47.3	9.0	30.2	19.1	15.9	26.6
Spain (2003)	11.9	55.2	6.9	10.4	18.6	26.7	..
United Kingdom	23.4	66.7	13.4	23.4	16.9	36.7	28.4

Source: E-business Watch (2002) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6, July 2002; and E-business Watch (2003) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6/III, July 2003. Enterprise weighted.

Other business services

E-business Watch has also undertaken a survey of business services, including: professional services (*e.g.* legal and tax consultancies as well as business consultancies); technical services (*e.g.* architectural and engineering activities as well as technical testing and analysis); marketing services (*e.g.* advertising and public relations); labour recruitment (including the provision of personnel); operational services (*e.g.* investigation and security activities and industrial cleaning); and other services (*e.g.* photographers, packaging and direct mailing services, fairs and exhibitions).¹¹¹ This grouping of business services varies a little from that used for this report, but covers most of those services not captured in ICT services (above). Where they are available, more disaggregated data are presented in the following sections.

E-business Watch (2002a) found that, in mid-2002, an average of around 47% of business services enterprises in Europe were *procuring online*, with 46% of those online procurers procuring direct inputs and 69% procuring MRO goods (*i.e.* maintenance, repair and operations supplies). Among their direct inputs, recruitment (dealt with from a supply side perspective elsewhere in this report), and things that can be standardised and digitalised (*e.g.* media advertising space, images for advertising and marketing, etc.) were most widely procured online.¹¹²

Because of the tacit and face-to-face nature of many services, *online sales* are still not very common in some areas of business services. In the EU-4 countries (France, Germany, Italy and the United Kingdom), only around 10% of business services enterprises were reported to be selling online as at mid-2002, and in almost 60% of cases online sales accounted for less than 5% of total sales by value. Of

those enterprises selling online, just over 30% were taking customer payments online and around 67% were providing after-sales service online.¹¹³

There was considerable variation between countries in the levels of online sales and related support activities reported by business services enterprises (*i.e.* of digital delivery in business services). The proportion of enterprises selling online in mid-2002 varied from 21.5% in Ireland to just 3.5% in France. Sixty seven per cent of the business services enterprises selling online in Italy accepted payments online, compared with none of those selling online in Germany – suggesting high variations in the levels of trust in online payments systems. There was also considerable, though less marked, variation in the proportion of those enterprises providing after-sales service online. Almost all of those business services enterprises selling online in France offered online after-sales-services, while only around 49% of those in Germany and the Netherlands did so.

Table 16. **Business services enterprises: Online sales and support, Europe mid-2002**

	<i>Selling online</i>	<i>Taking payments online</i>	<i>Providing after-sales-service online</i>
	<i>(% all enterprises)</i>	<i>(% enterprises selling online)</i>	<i>(% enterprises selling online)</i>
<i>Total</i>	9.9	30.7	66.9
EU-4	9.9	30.2	67.2
Denmark	13.2	61.9	74.8
Germany	10.0	0.0	49.3
France	3.5	2.3	96.2
Ireland	21.5	36.7	72.3
Italy	4.9	66.9	66.9
Netherlands	6.4	23.9	49.4
United Kingdom	18.3	36.3	72.7

Source: E-business Watch (2002) *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002. Enterprise weighted.

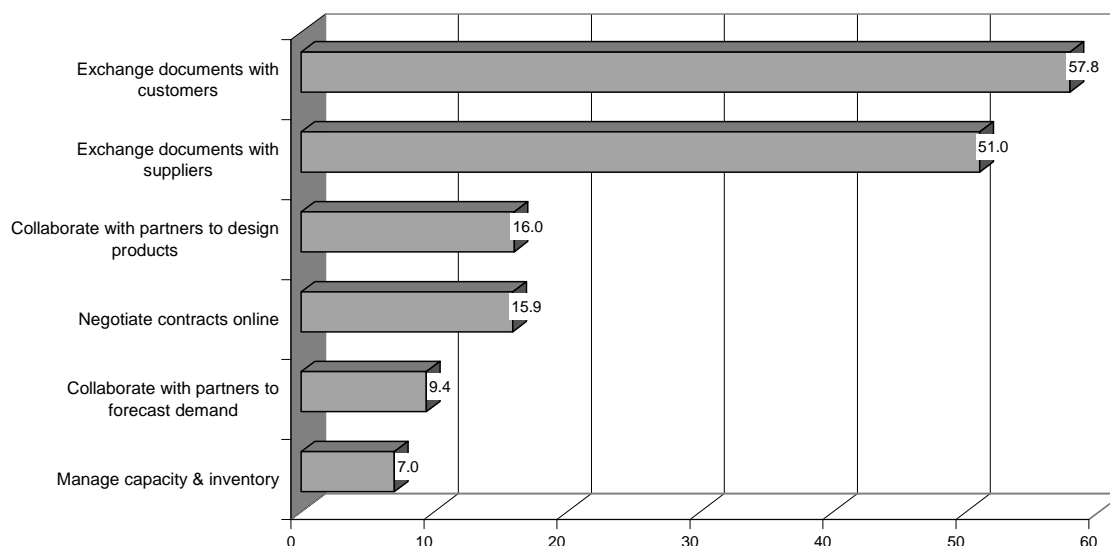
In Canada, just over 10% of private sector businesses sold goods or services online during 1999. Online sales were more common in the business services sector, with 11.5% of professional, scientific and technical services businesses selling online. The value of those sales was around USD 272 million, or 0.8% of professional, scientific and technical services sector operating revenues.¹¹⁴ In 2000, Internet sales by professional, scientific and technical services organisations in Canada amounted to USD 225 million, down almost 18% on the previous year.¹¹⁵

In Australia, 39% of businesses in the property and business services sector used the Internet to place orders (*i.e.* procurement) during 2001-02, but just 7% received orders (*i.e.* online sales / digital delivery). Notably, the proportion of businesses receiving online orders (*i.e.* online sales) both in the property and business services sector and across all industries in Australia was 3% lower in 2001-02 than it had been during the previous year – although across the economy the value of online sales increased from an estimated USD 5.2 billion in 2000-01 to USD 6 billion in 2001-02. Nearly three-quarters of the businesses in Australia placing orders online during 2001-02 also made payments online. However, less than one-third of those businesses receiving orders online (*i.e.* selling) also received payments online.¹¹⁶

Looking at digital delivery support, E-business Watch (2002a) reported that, as at mid-2002, almost 58% of business services enterprises with Internet access in the EU-4 countries (France, Germany, Italy and the United Kingdom) used online technologies to exchange documents with customers, 51% used them to exchange documents with suppliers, 16% used them to collaborate with partners for designing products

and to negotiate contracts online, 9.4% collaborated online with partners to forecast demand and 7% used online technologies for management of capacity and inventory.¹¹⁷

Figure 10. **Use of online technologies in business services in EU-4, mid-2002**
(Per cent of enterprises with Internet access)



Source: E-business Watch (2002) *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002. Data Annex.

Table 17. **Use of online technologies in business services enterprises, Europe mid-2002**
(Percentage of enterprises with Internet access)

	<i>Collaboration with business partners for designing products</i>	<i>Collaboration with business partners to forecast demand</i>	<i>Online Management of capacity / inventory</i>	<i>Electronic exchange of documents with suppliers</i>	<i>Electronic exchange of documents with customers</i>	<i>Negotiation of contracts</i>
<i>Total</i>	15.7	9.1	7.0	50.6	57.1	16.3
EU-4	16.0	9.4	7.0	51.0	57.8	15.9
Denmark	27.0	8.5	8.5	52.5	72.9	42.3
Germany	16.2	9.0	7.2	40.9	49.9	14.1
France	13.4	13.3	1.9	54.1	68.9	13.3
Ireland	23.6	15.8	15.7	56.8	56.8	35.2
Italy	13.8	12.1	10.4	48.2	50.0	8.7
Netherlands	5.1	1.6	5.0	39.7	36.8	14.4
United Kingdom	20.0	4.1	6.0	62.0	68.0	28.0

Source: E-business Watch (2002) *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002. Enterprise weighted.

As with ICT services, there were variations between countries in digital delivery support activities of business services enterprises. In Denmark, 73% of business services enterprises with Internet access were exchanging documents with customers online in mid-2002, compared with just 37% in the Netherlands.

Online collaboration with business partners in the business services sector varied from more than 27% of enterprises with Internet access in Denmark to 5% in the Netherlands.¹¹⁸

As at mid-2002, 15% of enterprises in the business services sector in Europe used online technologies to post job vacancies and 13% used them to support human resources functions. At that time, 15.7% of business services enterprises in Europe used online technologies to track working hours and billable time and 5.2% used automated travel reimbursement systems. Forty-five per cent of employees in the business services sector in Europe worked in firms that allowed remote access to the firms computer systems, and almost 42% of enterprises in the sector used online technologies to share documents and support collaborative work. Seven per cent of the small and 23% of the large firms in business services in Europe used knowledge management systems, and almost 13% of all employees in the business services sector worked in firms that used knowledge management systems. Around 20% of employees in the sector worked in firms that had extranets that supported collaboration with third parties.¹¹⁹

Table 18. **Use of supporting online technologies in business services, Europe mid-2002**
(Percentage of enterprises with Internet access)

	<i>Using a Knowledge Management Solution</i>	<i>Using online technologies to share documents or to perform collaborative work</i>	<i>Using online technologies to automate travel reimbursement</i>	<i>Using online technologies to track working hours and production time</i>	<i>Using online technologies to support human resources management</i>	<i>Using online technologies for learning</i>	<i>Posting job vacancies on special boards on the Internet</i>
<i>Total</i>	6.8	41.3	5.2	15.7	12.9	16.5	15.0
<i>EU-4</i>	6.8	42.1	5.2	15.7	13.1	16.9	14.5
<i>Denmark</i>	8.3	51.0	5.1	18.3	13.5	13.3	33.0
<i>Germany</i>	5.1	35.3	6.8	22.1	10.2	15.0	23.7
<i>France</i>	3.3	39.6	3.3	14.9	10.1	8.2	18.4
<i>Ireland</i>	15.5	58.9	15.8	29.8	20.1	35.3	43.2
<i>Italy</i>	11.5	47.6	6.6	11.5	16.5	19.7	4.9
<i>Netherlands</i>	3.3	15.9	3.4	12.9	8.0	4.7	16.2
<i>United Kingdom</i>	5.1	43.4	3.4	15.1	13.4	20.0	15.1

Source: E-business Watch (2002) *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002. Enterprise weighted.

Looking at internal support for digital delivery, just 3.3% of all business services enterprises in France and the Netherlands used knowledge management systems to support digital delivery in mid-2002, compared with more than 15% in Ireland. Similarly, the use of online technologies to support human resources management varied from 8% of business services enterprises in the Netherlands to more than 20% in Ireland, and the use of online technologies in core project management functions (*e.g.* to track working hours and production time) varied from 11.5% in Italy to almost 30% in Ireland.¹²⁰

Management consulting services

In a survey of the management consulting sector in the United Kingdom, PricewaterhouseCoopers (2001) noted that, in terms of customer facing technologies, only 32% of the consultancies surveyed had a formal e-commerce strategy or plan in place, and one-third of those did not have a budget for its implementation. Most had only begun to think about an e-commerce strategy during 1999 and to implement it during 2000. All of the management consultancies surveyed had external e-mail, 84% had a Web site and 42% conducted electronic document interchange with customers. Almost all had Web sites that allowed customers to read about the firm's products and services online, but only 34% had Web sites

that allowed customers to place an order online, 31% had sites that allowed customers to view reports and research online, 6% had sites that allowed customers to view information about their account online and only 3% had sites from which customers could take delivery of the product or service. Similarly, 50% of the management consultancies surveyed reported that they captured customer information online, but only 19% reported analysing it.¹²¹

In terms of internal process and knowledge management technologies, PricewaterhouseCoopers (2001) found that: 94% of management consultancies surveyed had Intranets that allowed staff to read company information; 75% had Intranets that allowed staff to access databases, obtain project or team specific information and complete forms online and 56% had Intranets from which staff could obtain personalised information.¹²²

Human resources and labour supply

Recruitment is the process by which employers find workers and workers find jobs. In effect it is a matching of services. Digital delivery of recruitment services, or online recruitment, delivers the services traditionally delivered through employment agencies. However, digital delivery adds greater reach in coverage of would-be employers and employees, enabling closer matching of people, skills and jobs, speed of process, higher volume of transactions and reduced costs.¹²³

Box 5. Online Payroll Services

By providing a simple, reliable and economical outsourced payroll solution exclusively designed to meet the needs of small businesses, SurePayroll has quickly become the largest online payroll service in the world.

SurePayroll provides an economical way for small businesses to process and distribute payroll and taxes in minutes. The Company's payroll service automates the entire payroll process, completely eliminating the traditional processing steps that conventional payroll services providers use. Using SurePayroll, small businesses and their employees can initiate and access their payroll from anywhere, at any time. SurePayroll helps small businesses focus on building their own businesses, by allowing them to save time, save money and stay in control while processing payroll.

SurePayroll serves small businesses with less than 100 employees. It is now America's fastest growing payroll service and the largest *online* payroll processor in the United States. As of April 2003, SurePayroll serviced over 7 500 clients in the United States, processing more than USD 2 billion in employee payrolls and taxes in the first four months of 2003.

Source: SurePayroll.com. Available www.surepayroll.com accessed May 2003.

Varian *et al* (2002) reported that in the United States, human resources is one of the major areas of Internet-based systems implementation – adopted by 37% of enterprises surveyed by the end of 2001. In Europe, 29% of enterprises in Germany had adopted Internet-based systems in human resources, as had 28% in France and 21% in the United Kingdom. In the United States, 63% of enterprises in healthcare reported using Internet-based systems in human resources, as did 37% of enterprises in service providers and telecommunications, 27% of enterprises in financial services, 24% of enterprises in manufacturing, 23% of enterprises in wholesale and retail and 43% of enterprises in all other industries. Whereas in Europe, a lower 35% of enterprises in healthcare reported using Internet-based systems in human resources, 29% of enterprises in service providers and telecommunications, 20% of enterprises in financial services, 18% of enterprises in manufacturing, 12% of enterprises in wholesale and retail and 38% of enterprises in all other industries.¹²⁴

The impacts of broadband

The widespread adoption of broadband technologies among SMEs over the coming years is likely to have a significant effect on the level of digital delivery and support activities. First, because broadband will help to overcome the current digital divides between both developed and less developed countries and regions, and between large and small firms. Second, because broadband will enable the rich forms of communication so fundamental to many business services activities.

Broadband communication is now spreading out, from leading to later adopting countries and regions, and from large firms to SMEs. For medium and large business users in a growing number of OECD countries connections to the Internet are almost ubiquitous. For large corporate users leased lines provide most permanent connections. For SMEs many of connections are still dial-up. Business demand for broadband access will, therefore, continue to be expressed in two ways. For large users high speed leased circuits continue to be in demand. For SMEs, demand for broadband access can be expected as they convert from narrow-band dial-up connections (including ISDN) to broadband access. Use of new broadband access technologies, such as xDSL, is still not very common among business. Hence, there remains tremendous scope for connecting SMEs to broadband access networks and bringing the advantages of broadband access to them.¹²⁵

Table 19. **Optimal bandwidth for selected applications**

<i>Capability</i>	<i>Speed</i>	<i>Applications</i>
Dial Up Access	24-56 Kbps	Email File Attachments Collaboration (limited) Basic Webcasts Web Access Simple Web Applications
Broadband	1 Mbps	Text-based Distance Education Collaboration, document sharing Peer-to-peer Networking Complex Web Applications Desktop Video Conferencing Streaming Video/Audio
Ultraband	10 Mbps	Flawless Streaming Video and Audio Interactive Video Conferencing Virtual Presence, approaching "tele-immersion" Virtual Reality Highly Data-intensive Collaboration (e.g. CAD/CAM) Simulations/3D

Source: Morris, P. (2003) *The Impact of Broadband on the Shape of Work*, Telesis Communications, Fremantle, p18.

Morris (2003) suggested that the key characteristics of broadband include an always-on capacity, lower latency and higher definition. High definition, low latency and always-on connections contribute greatly to the richness of the communication and an ability to grasp far more of the context. While broadband does not entirely remove the need for face-to-face contact when dealing with complex or "wicked" problems, it can sustain relationships between in-person meetings. Broadband technologies also make the communication of tacit knowledge more feasible.¹²⁶ Hence broadband communications can significantly increase functionality and impact the digital delivery of business services beyond simply being able to move big files more quickly. Slow Internet connection speeds for both individuals and businesses have been a particular bottleneck, although there has been a great deal of policy attention and broadband rollout has gathered pace in most countries.¹²⁷ One challenge will be to overcome the chicken and egg problem, which sees potential users unable to access, afford or even envisage use of broadband on the one hand, and providers waiting for demand to materialise before introducing broadband services.

Current status

From the evidence outlined above it is clear that the levels of adoption of digital delivery and support are already extensive when looked at in terms of the proportion of firms offering digital delivery options, but do not yet account for a very large share of business services revenue. Digital delivery is more often supplementary and supportive than the main form of delivery. Nevertheless, there are an increasing number of business services firms that have adopted substantially, even exclusively online business models. Hence, we find that the level of digital delivery of business services varies from country-to-country, from firm-to-firm, from service-to-services, between small, medium and large sized firms, between metropolitan and regional and rural locations and between business models – development is mature in some services (*e.g.* software development and IT services) and emergent in others (*e.g.* R&D and technical testing and business consulting).

Table 20. **Digital delivery of business services**
(role and current status)

<i>Service type</i>	<i>Role</i>	<i>Current status</i>
Software development	Full, depending on business model	Mature
IT services	Supporting	Mature
Information retrieval services	Full, depending on business model	Mature
R&D services	Supporting	Emergent / Developing
Design services	Supporting	Emergent / Developing
Technical testing services	Full, depending on business model	Developing
Advertising	Full, depending on business model	Developing / Mature
Marketing	Supporting	Emergent / Developing
Business consulting	Supporting	Emergent
Human resources	Supporting	Emergent / Developing
Labour supply	Full, depending on business model	Mature
Recruitment	Full, depending on business model	Developing / Mature

Source: Author.

Given the magnitude and heterogeneity of business services activities, this variety is perhaps not surprising. Levels of adoption and maturity of activities differ on an individual case-by-case basis. Therefore, it is extremely difficult to generalise, and one must examine the generic characteristics of each case. Generally, where the exchange of information is a central part of the business model; where there is more scope for standardisation; where the complexity of the tasks involved can be managed; where the knowledge involved either is, or can be codified; where the nature of the problem addressed by the service can be specified and defined (*i.e.* is relatively tame); and where the contextuality of the work involved is relatively low, there is more scope for digital delivery.

IMPACTS OF DIGITAL DELIVERY

At the general level, one could expect the cost and productivity impacts of digital delivery to be felt across all industries, like those of e-commerce and e-business applications more broadly,. However, specific impacts are likely to vary from service-to-service and from firm-to-firm.

Evidence from experience

Looking at a range of industry sectors, Varian *et al.* (2002) found that those organisations in the United States, United Kingdom, France and Germany that had deployed Internet business solutions had realised cumulative cost savings of USD 163.5 billion since 1998. They suggested that Internet business solutions had yielded cumulative cost savings of USD 155.2 billion (0.6%) to U.S.-based organisations and helped to increase their revenues by approximately USD 444 billion (1.9%). Similarly, they found that the adoption of Internet business solutions in the United Kingdom, France and Germany had resulted in cumulative cost savings of EUR 9 billion (0.1%) (USD 8.5 billion) and helped to enhance revenues by EUR 86.4 billion (0.9%) (USD 81.5 billion). The difference between reported U.S. and European impacts is supposed to reflect different patterns and levels of adoption and different business environments.¹²⁸

In the United States, reported impacts of Internet business solutions include: attracting new customers, cited by 71% of firms; increased customer attraction, cited by 57% of firms; increased customer satisfaction, cited by 54% of firms; increased customer retention, cited by 37% of firms; increased customer loyalty, cited by 32% of firms; increased frequency of sales to existing customers, cited by 25% of firms; increased volume of sales to existing customers, cited by 17% of firms; and increased value of sales to existing customers, cited by 7% of firms.¹²⁹

In the United Kingdom, France and Germany, customer service and support was the Internet business solution reported to have the most significant impact on reducing costs – being cited by 45% of firms. E-commerce (cited by 37% of firms), customer development and Internet-based marketing (cited by 14%) and finance and accounting (cited by 13%) were the other applications contributing most to cost savings. Perhaps not surprisingly, customer facing applications were found to have contributed most to increasing the revenue of firms in the United Kingdom, France and Germany – with 18% citing customer service and support as the major contributor, 17% citing e-commerce, 16% citing customer development and Internet-based marketing and 10% citing sales force automation.¹³⁰

In Canada, CEBI (2002) found that those firms adopting Internet business solutions realised substantial financial benefits. On average revenues increased 7%, costs of goods sold decreased 9.5% and the cost of sales decreased 7.5%. It was also reported that Internet-based customer development and marketing had the biggest impacts. The main reasons for revenue increases reported by firms in the communications and service provider sector included: attracting new customers, cited by 84% of firms; increased sales to existing customers, cited by 38%; existing customers buying more expensive products or services, cited by 31%; existing customers buying more frequently, cited by 29%; and ability to raise prices, cited by 22%.¹³¹

In an extensive survey of e-commerce activities in Europe, the United States, Japan, South Africa and India, Accenture (2001) found that:

- 73% of respondents surveyed thought e-commerce was increasing the benefits of being an established company, and just 9% thought it was decreasing the benefits of being established.
- 72% thought e-commerce was increasing the rewards to successful companies, and just 5% thought it was reducing rewards to the successful.
- 65% thought e-commerce was increasing the benefits of being a large company, and 15% thought it was reducing the benefits of scale.
- 62% thought it would enable them to bring products and services to market more quickly, and 20% thought it would not.
- 60% thought e-commerce would provide a lower cost channel for transactions with customers, and 20% thought it would not.
- 54% thought e-commerce was increasing market concentration, and 19% thought it was reducing concentration.
- 54% thought it would enable them to develop stronger relationships with buyers and suppliers, and 19% thought it would not.
- 50% thought e-commerce was reducing barriers to market entry, and 33% thought it was raising barriers to entry.
- 46% thought e-commerce would enable them to get a better understanding of their clients' needs, and 25% thought it would not.

On all of these indicators there were some significant variations between countries.¹³²

Table 21. **Impacts in business services, Europe mid-2002**
(Percentage of those selling online saying it has a positive or very positive impact)

	<i>Volume of sales</i>	<i>Number of customers</i>	<i>Sales area</i>	<i>Efficiency of internal business processes</i>
<i>Total</i>	55.5	55.6	59.9	58.7
EU-4	55.5	55.1	59.7	57.9
Denmark	38.0	50.1	50.2	37.9
Germany	60.0	66.5	66.1	17.3
France	2.7	3.8	2.7	50.5
Ireland	64.0	82.0	81.3	79.5
Italy	66.5	66.4	66.6	99.8
Netherlands	66.5	65.3	66.1	97.1
United Kingdom	55.7	50.2	60.2	66.8

Source: E-business Watch (2002), *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002. Enterprise weighted.

E-business Watch (2002b) reported that the majority of business services¹³³ enterprises already selling online in Europe in mid-2002 said that doing so had positive impacts on the volume of sales (56%), number of customers (56%), efficiency of internal business processes (59%) and sales area (60%). Positive impacts on sales were felt less in France, Denmark and the United Kingdom than they were elsewhere.¹³⁴ Very similar reports of the positive impacts of selling online were reported by enterprises in the ICT services sector.¹³⁵

Table 22. **Impacts in ICT services, Europe 2002/2003**
 (Percentage of those selling online saying it has a positive or very positive impact)

	<i>Volume of sales</i>	<i>Number of customers</i>	<i>Sales area</i>	<i>Efficiency of internal business processes</i>
<i>Total</i>	54.8	56.0	56.6	59.1
EU-4	53.2	52.6	54.4	57.7
Finland	59.5	59.6	79.3	21.8
France	82.3	74.4	66.2	90.7
Germany	42.6	17.4	42.1	43.2
Italy	12.6	28.7	31.3	47.1
Netherlands	68.7	86.1	72.6	80.8
Spain (2003)	66.0	66.4	63.1	72.3
United Kingdom	66.7	64.3	64.4	60.1

Source: E-business Watch (2002), *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6, July 2002; E-business Watch (2003) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6/III, July 2003. Enterprise weighted.

PricewaterhouseCoopers (2001) found that 53% of the management consultancies surveyed in the United Kingdom reported that they expected positive impacts on procurement and 53% said they expected positive impacts on recruitment. Major impacts noted from experience (*ex post*) were in services provision (in which 68% noted improvements) and productivity (in which 66% noted improvements). UK-based management consultancies reported that e-commerce had effected competition by reducing barriers to entry and increasing the availability of substitute products and services, but had not noticeably increased rivalry between competitors. The main business impact noted was in 'channel enhancement', in which customer relationships had been enhanced by the use of ICTs – as a complement to and extension of face-to-face, rather than a replacement.¹³⁶ Similarly, E-business Watch (2003c) concluded that the most important impact of e-business as perceived by companies is not the change of the product or service itself, but the improved quality of customer service.¹³⁷

Discussion

These findings suggest that the impacts of digital delivery are felt somewhat differently from country-to-country, service-to-service and firm-to-firm. At the national level, difference can be summarised in terms of readiness, diffusion and the environment in which impacts occur and diffuse. The economy must be digital delivery 'ready' before the digital delivery of business services can take off. This will mean, *inter alia*, access to affordable bandwidth, skills and services. Diffusion will depend upon the convergence of the adoption of outsourcing and e-commerce on the demand side, and development of sustainable digital delivery business models on the supply side. The scope and scale of the impacts will depend upon management and government capabilities in the realisation of potential benefits, and how the impacts are felt will depend upon such factors as industry structures and competition in ensuring the diffusion of benefits rather than the realisation of monopoly rents. Where these come together, the adoption of digital delivery will be quicker, the diffusion of digital delivery more rapid and extensive, and the impacts of digital delivery greater and more widely felt.

At the industry level, the impacts of digital delivery are different for those industries with strong economies of scale (*e.g.* packaged software development and publication) and those without (*e.g.* consulting). The extension of distribution through digital delivery enables firms to grow and achieve lower average costs, which may lead to some concentration. This effect will be accentuated where there are network effects (*e.g.* standardised packaged software). Conversely, in such areas as business consulting, the enhanced availability and accessibility of information via Internet enables small firms to compete more equally in some areas (*e.g.* market research) and to deliver certain types of services worldwide

(e.g. research reports). At the firm level, the financial and organisational impacts of digital delivery can be significant. Substantial cost savings and revenue increases are widely reported. These flow from increased sales, access to more customers and improved customer relationships. Internally, efficiency of business processes and reduction of costs are widely observed.

While impacts will vary from country-to-country, service-to-service and firm-to-firm, likely impacts in each of the business services sectors covered in this report include the following.

- ***Software development***

Digital delivery of *packaged software* and related updates is already changing the nature of the industry, with a shift from a ‘shrink-wrap’ product business model to a life-long services model based on accession licensing. For large software providers this is likely to cut out a significant part of the product distribution chain with a direct-to-customer service. Employment reductions in the wholesale–retail channel are likely to be counterbalanced by increased customer services employment opportunities in software firms. Increased business generated through closer contact in, for example, the provision of regular updates is likely to provide growth opportunities in the software industry. Software buyers are likely to see added value, rather than price reductions. Both might expect productivity improvements, especially where the software providers business model translates closer customer relationships into opportunities for ‘flexible customisation’ of the software. Trade in software will undoubtedly increase with digital delivery, although it may not show up in trade statistics in obvious ways as the product becomes a services and/or a licensing of intellectual property. For SMEs, digital delivery provides an opportunity, with electronic distribution supplementing, and possibly replacing, traditional distribution channels, and thereby lowering barriers to entry.

Application services providers depend upon digital delivery, so the entire development of ASP businesses could be seen as an impact of digital delivery – with all the employment, growth, productivity and trade opportunities involved. Exactly how significant these impacts will be is still unclear as the ASP business model has yet to be proven. Much will depend upon pricing and value adding on the supply side, and upon taxation treatment on the demand side (e.g. assessing the relative merits in various taxation regimes of pay-per-use and expensing software versus purchasing and depreciating it).

Digital delivery in *customised software development* is already extensive (e.g. outsourced software development services from India). There seems every reason to expect an expansion of such activity, with resulting cost reductions and implied growth and productivity opportunities. However, the two unknowns are the extent to which open source and object oriented code libraries can be developed, and the global mobility of jobs. In the short term, as the ICT sector comes out of the downturn, there is likely to be increased global mobility of jobs, with large job losses and significant job gains accruing around the world – with the former likely in low skill and/or high cost locations and the latter likely in high skill and/or low cost locations. Longer-term, perhaps the activity itself can be automated, with software development tools reaching the users desktop and allowing pick-and-mix customisation from open source and object libraries to be done by users with little or no software development skills.

- ***IT services***

Digital delivery of IT outsourcing services is already widespread, with remote data centres, hosting and server farms becoming increasingly common (e.g. www.verio.com). Greater reach and richer customer relations are facilitated by digital delivery, but there is less fundamental

change involved. The key issue is, perhaps, the location of the services activity. If IT services ‘migrate’ to high skill, low cost locations (e.g. some Eastern European locations, India, Philippines and China), then there may be significant job losses in higher cost locations and considerable employment gains in lower cost locations, and consequent adjustments to be made. Such competition would see the benefits passed on to the users, through lower cost services, and be realised throughout the using economies as productivity gains. However, there are dangers of ‘jobless growth’ in the higher cost economies as such strategies tend to be job destroying in the first round.¹³⁸

- ***Information retrieval services***

Information retrieval services are already essentially global and footloose, depending upon bandwidth, operational skills and security for their location. The impacts of further digital delivery will depend upon the nature of the content. Where the content can be collected easily from anywhere in the world, mobility will be high, employment impacts uncertain, but growth and productivity improvements likely. Where there is a ‘cultural’ element to the content, or the content collection is locationally specific, the location of employment impacts is clearer, but the extent to which the content can ‘translate’ into new markets uncertain. However, as the Internet develops into an increasingly complex network of networks, the actual location of the information and of its provision are more likely to become dissociated – making the possible impacts even more difficult to predict.

- ***R&D, technical testing and design services***

Digital delivery of R&D, technical testing and design services promises significant opportunities. Access to skills and the possibility of international collaboration promise to add value to activities, reduce costs and improve quality. In addition, the possibility of speeding processes through 24/7 worldwide work promises significant employment and growth benefits. Increasing the pace of innovation and the introduction of new products and services, has already had, and will continue to have, major competitive impacts. The location of 24/7 services activities holds great promise for countries such as Australia and New Zealand, with non-European and non-American time-zones, although there is no shortage of vigorous competitors in the Asia-Pacific time-zone. Immediate beneficiaries, in terms of jobs and growth, will be the locations capable of providing such services. However, the benefits are likely to accrue as consumer surplus throughout the world, as the purchasers of services pass the savings through to their customers.

- ***Advertising and marketing***

Advertising and marketing services are likely to be deeply affected by digital delivery. Not only does the service become mobile, but the number of possible delivery media, formats and forms multiplies. As in other areas, people are struggling to find sustainable business models. As these become clearer, however, significant changes are likely. Online advertising, and much more targeted marketing and advertising based on increased availability of information about consumer behaviour, are already changing the face of the advertising industry. As noted in Box 3, major multinational companies are now moving towards increased online advertising. Impacts are likely to include major changes for the advertising industry, with opportunities for new players driving change, and some turmoil and consolidation among the large firms in the industry as they struggle to incorporate new activities, new lines of business and new services. For the industry, consolidation of global accounts in the top five or six global firms and cities, and turmoil among other players are likely. Advertising industry employment and growth impacts may vary

significantly from location to location, but the net result should be much more effective and efficient marketing.

- ***Business consulting***

Because of the nature of the service, business consulting is among the most difficult business services to deliver digitally. However, there are opportunities in doing much of the related back office and desk-based research activity remotely. As in other areas, the key driver is the cost/skills equation, with a number of cultural and communication factors important in the management of projects. In terms of extending national and international reach and the ability of consultants to more readily search for and access information, digital delivery promises to enable smaller consulting firms to compete with larger firms. However, scale is still important for large, shorter term projects, such that immediate access to skills and scale remain an advantage. Hence, enhanced competition may be felt most by small consulting firms increasingly enabled to compete outside their local markets. From the customer's perspective, this should enable access to better or more optimal skills (the 'forgotten division of labour') and thereby improve quality and lower costs. For the consulting firms, digital delivery can open new markets to those with the cost/value advantage, with employment and growth benefits, increase competition in what has been in many cases a somewhat locationally specific business and provide greater opportunities to outsource formerly in-house activities. Increased trade and productivity benefits for consumers should flow.

- ***Human resources, labour supply and labour recruitment***

Digital delivery of labour recruitment and supply services is already common, with obvious advantages in scale bringing potentially better job-candidate matching. As with business consulting, there are both opportunities and threats for recruitment services employment and growth in the delocalisation of the service. Nevertheless, benefits should accrue to customers of the services, as well as the individuals matched. Labour supply services appear to be developing from the supply of relatively low-skilled casual labour into higher-skilled areas, such that the importance of reach and better matching through digital delivery is increasing. Human resources is one of the areas of business process outsourcing (BPO) expected by many analysts to experience rapid growth over the coming years. Again, however, the main beneficiaries are likely to be the customers of the service, with cost reductions and service value enhancements.

MAJOR IMPEDIMENTS TO DIGITAL DELIVERY

There are a range of impediments to the digital delivery of business services, with suitability of the particular services to digital delivery, concerns over security and privacy, internal and external skills availability, infrastructure and implementation costs and regulatory barriers being among the more important.

Evidence from experience

Varian *et al.* (2002) found that, in the United States, the major barriers to the further implementation of Internet business solutions were: the cost of projects and infrastructure, cited by 13% and 6% of organisations, respectively; time to implementation, cited by 7%; the difficulty of obtaining skills, cited by 6%; worker training internally, cited by 5%; and regulatory barriers, cited by 5%. Organisations in different industries had somewhat different perspectives on the most pressing barriers, with worker training, skills and privacy issues being a greater concern in healthcare, regulatory issues being a greater concern in financial services, and time to implement being a greater concern for services providers and telecommunications firms.¹³⁹

Varian *et al.* (2002) also reported that organisations in the United Kingdom, France and Germany identified a similar set of barriers. Reflecting different levels of readiness, however, organisations in Europe did not identify regulatory issues as a major barrier, but did see worker training and organisational inertia as greater stumbling blocks. The time to implement projects was also more widely cited as a barrier in Europe.¹⁴⁰ In Scandinavia, SIKI (2003) found that among firms that do not use Internet the major barrier cited was security concerns – cited by 38% of non-using firms in Finland, 30% in Sweden and 26% in both Norway and Denmark. The second most commonly cited barrier was the cost of developing and maintaining Internet-based systems – nominated by 28% on non-using firms in Sweden, 20% in Finland, 14% in Denmark and 13% in Norway.¹⁴¹

In an extensive survey of e-commerce activities in Europe, the United States, Japan, South Africa and India, Accenture (2001) found that: 74% of firms surveyed cited security concerns as a barrier to further development of e-commerce; 67% cited the lack of a transparent regulatory framework; 66% cited concerns over privacy; 59% cited lack of payments standards; 59% cited the lack of ability to successfully implement new technology; 57% cited lack of capital to fund implementation; 50% cited costs of communications access and usage; and 42% cited over-regulation. Again there were significant variations from country-to-country.¹⁴²

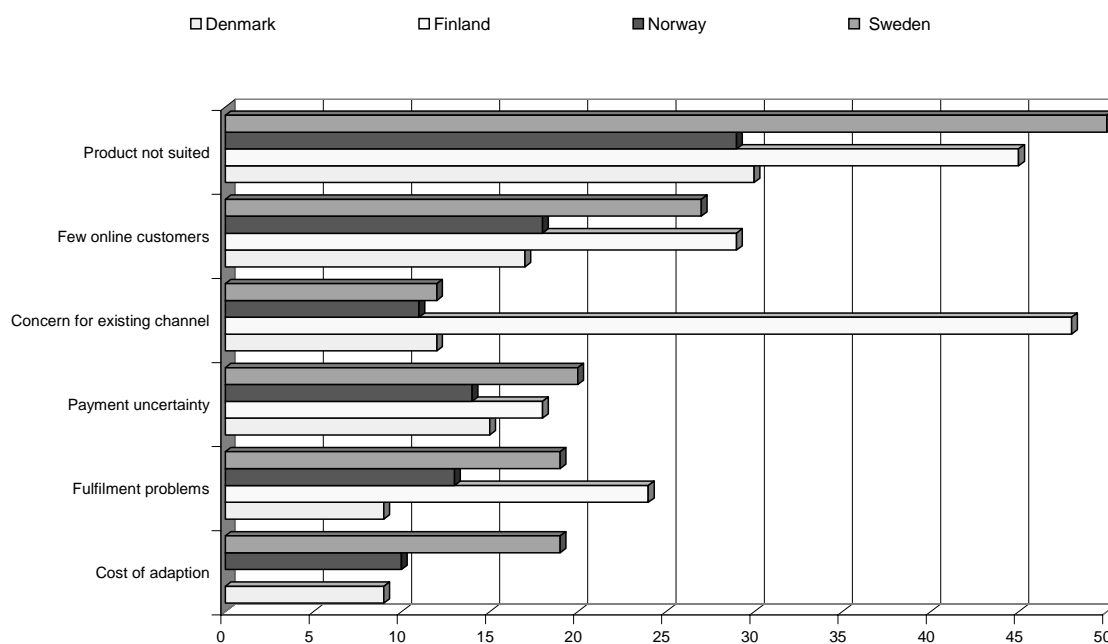
E-business Watch (2002) reported two surveys of European firms conducted in 2001 that suggested that the main barriers to selling online were:

- *Goods and services were unsuitable for e-sales* – 25% of respondents to a Eurostat survey and 38% of respondents to an Empirica survey cited suitability as very important, and more than 50% said that it was either important or very important.

- *Lack of confidence and trust* – 29% of respondents to an Empirica survey said that lack of confidence and trust was very important, 20% of respondents to a Eurostat survey were concerned with uncertainty over payments, and 17% were concerned with uncertainties in contract, delivery and guarantees.
- *Cost* – 18% of respondents to a Eurostat survey were concerned with costs, as were 16% of respondents to the Empirica survey.¹⁴³

In Scandinavia, SIKA (2003) reported that the most significant obstacle to e-commerce reported by firms was that their product was not suited to online sales – cited by 50% of firms in Sweden, 45% in Finland, 30% in Denmark and 29% in Norway.¹⁴⁴ Lack of an online customer base was cited as a barrier by 29% of firms in Finland, 27% in Sweden, 18% in Norway and 17% in Denmark. Other commonly cited factors included: uncertainty regarding payments, costs of adaption and concerns for existing sales channels. Again there is a clear pattern, despite national differences.

Figure 11. **Barriers to Internet sales in Scandinavia, 2000**
(Per cent of firms)



Source: SIKA (2003) *Facts About Information and Communications Technology in Sweden 2003*, SIKA Institute, Sweden. Available www.sika-institute.se accessed October 2003.

In the business services sector¹⁴⁵ in Europe, almost 67% of enterprises surveyed cited the unsuitability of their goods and services for selling online as the major barrier. The low revenue from online sales and reluctance of customers to purchase online were also widely perceived to be significant barriers. There were, however, some notable differences from country-to-country. For example, less than 10% of business services enterprises in the Netherlands saw problems in the delivery process (*i.e.* fulfilment), compared with more than 40% in France and Italy. Similarly, in the United Kingdom and France 45% or more of the business services enterprises surveyed cited the lack of customers online as a barrier, compared with less than 15% of those in Denmark.¹⁴⁶ PricewaterhouseCoopers (2001) found that the lack of e-commerce skills and training were the main internal barriers to the deployment of e-commerce in UK management

consulting firms, while lack of availability of e-commerce skills was also seen as a major external barrier.¹⁴⁷

Table 23. **Barriers for business services enterprises, Europe mid-2002**
(Percentage of enterprises agreeing)

	<i>Few customers online</i>	<i>Customers hesitant to buy online</i>	<i>Goods / services do not lend themselves to selling online</i>	<i>Processing of payments for online orders is a problem</i>	<i>Technology too expensive</i>	<i>Revenue of online sales is still low</i>	<i>Delivery process causes problems</i>	<i>Adapting corporate culture is difficult</i>
<i>Total</i>	38.3	64.0	66.6	40.1	42.2	64.4	32.8	46.7
EU-4	39.0	64.7	66.8	41.0	42.2	65.4	33.7	47.3
Denmark	14.8	49.3	68.9	16.5	41.0	63.9	36.0	39.5
Germany	28.4	59.7	76.5	34.8	25.4	69.8	11.7	32.0
France	47.6	83.4	73.8	63.6	63.6	54.2	45.7	70.4
Ireland	31.5	64.6	80.4	31.4	60.8	81.8	39.2	53.1
Italy	37.7	68.8	59.0	41.0	39.3	72.1	42.6	45.9
Netherlands	29.4	54.0	60.1	27.8	41.7	40.4	9.6	32.7
United Kingdom	45.0	55.0	63.4	34.9	48.3	60.1	36.6	50.0

Source: E-business Watch (2002) *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002. Enterprise weighted.

In ICT services, enterprises also cited the unsuitability of goods or services for online sale, the hesitance of customers to buy online and relatively low online revenues as the major barriers to online sales. Country variations were also apparent among ICT services providers, with more than 60% of ICT services enterprises in France citing the lack of customers online as a barrier, compared with less than 20% of those in Germany and Finland.¹⁴⁸

Table 24. **Barriers for ICT services enterprises, Europe mid-2002**
(Percentage of enterprises agreeing)

	<i>Few customers online</i>	<i>Customers hesitant to buy online</i>	<i>Goods / services do not lend themselves to selling online</i>	<i>Processing of payments for online orders is a problem</i>	<i>Technology too expensive</i>	<i>Revenue of online sales is still low</i>	<i>Delivery process causes problems</i>	<i>Adapting corporate culture is difficult</i>
<i>Total</i>	33.2	63.9	66.8	40.9	45.5	63.4	33.8	44.1
EU-4	33.0	64.5	68.1	41.1	45.0	64.5	35.2	45.1
Finland	19.7	59.6	53.6	52.6	39.4	53.7	27.2	20.5
France	61.7	76.9	76.9	58.2	56.5	68.3	36.8	40.6
Germany	16.4	47.1	67.0	27.1	38.1	68.3	10.2	28.4
Italy	45.7	68.5	57.2	44.2	30.0	62.8	47.1	48.5
Netherlands	38.8	56.3	52.5	35.5	54.0	51.3	16.8	35.9
U.K.	28.4	66.7	71.6	41.7	51.6	63.3	38.3	50.0

Source: E-business Watch (2002) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6, July 2002. Enterprise weighted.

Similar findings have been reported by Statistics Canada (2000), which suggested that 34% of businesses in the information and cultural services industries that were already Internet users cited the unsuitability of goods and services for online transactions as the main barrier to them selling or purchasing

online, and a further 17% cited security concerns. In the professional, scientific and technical services sector in Canada, the majority of Internet using businesses cited a preference to maintain their current business model as their main barrier to online sales and procurement (42.7% of Internet using businesses). The unsuitability of goods and services for online transactions (32%) and security concerns (27%) were also widely cited barriers for businesses in that sector.¹⁴⁹

Discussion

The suitability of services for digital delivery is clearly a major determinant of the level and rate of adoption of digital delivery-based business models by business services firms. As noted above (See '*Amenability of Services to Digital Delivery*'), however, suitability is not entirely a given. There are things that services firms can do to define and structure service elements in such a way as to enhance opportunities for digital delivery.

In terms of digital delivery 'readiness', lack of necessary skills, both internally and externally, is a widely cited barrier, which can be addressed through improved education and training as well as through increased adoption and thereby learning. A number of the other widely cited barriers are also likely to benefit from increased levels of adoption and consequent scale and learning opportunities (e.g. infrastructure costs, levels of online revenue and hesitancy of customers to buy online). Cost and skills related barriers are felt more acutely by small firms, of which there are many in the business services sector. Again, however, as digital delivery options are developed there are likely to be more solutions available in the marketplace that are more nearly tailored to the needs of SMEs. The potential barrier of communications costs can be addressed from the supply side through telecommunications reform and enhanced competition.

There are a number of barriers relating to such things as standards, privacy and security which can be eased by governments, in consultation with industry players. These include developing, implementing and operating supportive regulatory environments at both the national and international levels. Standards are one area in which much more could be done in developing both formal and informal standards for messaging across industry horizontals and more deeply in industry verticals. It is both an advantage and a disadvantage for business services that they tend to operate in both horizontals and verticals.

Beyond all these things there remain a number of barriers that might be loosely described as cultural. Heeks *et al.* (2000) suggested that a key to success in global software outsourcing is achieving and maintaining a high level of congruence between client and developer on such dimensions as: co-ordination and control systems, objectives and values, capabilities, processes and information technology. Achieving congruence enhances opportunities to optimise the risk-return trade-off and enables the relationship to move up the value chain. In case study analyses of outsourced software development in India, Heeks *et al.* showed that it is critical to deal with the three overlapping issues of tacit knowledge, informal information and culture. Failure to do so may yet limit the success of global software outsourcing.¹⁵⁰

MAJOR POLICY ISSUES

From the perspective of governments, the major policy dimensions can be seen as those relating to readiness, diffusion and creating an environment in which positive impacts can be maximised and diffused. However, it is clear from the analysis above that the level of digital delivery of business services varies from country-to-country, from firm-to-firm, from service-to-service, between small, medium and large sized firms, between metropolitan, regional and rural locations, between regulatory regimes, between business and cultural milieux, and between provider business models. These variations must be borne in mind when setting targets and designing policy initiatives. Nevertheless, tailored initiatives should fall within the scope of, and be supported by programmes (*e.g.* for R&D, skill enhancement, technology diffusion and venture capital) that apply equally across business services and to other sectors.

Strengthening the framework for the digital delivery of business services

Bandwidth availability, low network latency and competitive communications costs are the foundations for the digital delivery of business services. Much progress has been made in OECD countries in respect to the liberalisation of communications and the introduction of competition. Nevertheless, there is scope for further improvement in this rapidly evolving environment. It is becoming increasingly clear that governments cannot afford to allow slow reform in one sector to adversely effect the development of globally competitive firms in others. Every effort must be made to ensure that communications and converging media regulation (*e.g.* cable television) do not retard the provision of low cost broadband services. Experience to date would suggest that infrastructure-based or access competition is an area for particular attention.¹⁵¹

Governments can play an important role in the development of both formal and informal messaging standards, which are essential for successful e-commerce and digital delivery, and in the promulgation of best practice guidelines. Standardisation (of technology, data and processes, including: identification, authentication, signature, certification and accreditation criteria, conformance testing, etc.) is a means to help ensure the business case through shared trusted infrastructure and essential supporting services.¹⁵² Governments can do much to support and enable standardisation in these areas. In the particular case of business services there are special difficulties and opportunities – difficulties in the form of demands to conform to a multiplicity of vertical industry standards, and opportunities in the form of the potential for business services to introduce standards across industries (*i.e.* act as a mechanism for inter-industry harmonisation).

There are a range of privacy, security and authentication issues fundamental to the digital delivery of business services. In order to provide services to customers online businesses must be able to track customers, record and analyse customer information. This raises a number of privacy concerns, relating to the use of that information outside the immediate transaction (*e.g.* on selling locational and financial information to direct marketing agencies). Clear national privacy legislation, applicable to organisations of all sizes and in all sectors across the economy (in both the private and public sectors) is an essential foundation. Providing information and support to business services providers on its appropriate implementation and operation is also an important contribution that governments can make, as is public awareness of rights and responsibilities.

Concerns relating to security of commercially confidential and payments information, authentication of those authorised to access it and the potential for fraud are widespread. While many of the issues depend upon appropriate technological developments and implementations, there are also significant awareness and education issues. Governments can enhance the level of confidence by addressing and publicising regulation and standards relating to privacy, security and authentication nationally, and those relating to cross border disputes and issues of jurisdiction internationally.

Quality certification and accreditation of business services providers are also an important foundation. Governments can work with industry and professional organisations to further improve quality standards and encourage quality accreditation, and to encourage continuous professional development (*e.g.* in such areas as management consulting) through a variety of training and education activities. Where governments are a purchaser of business services they can further support quality certification and accreditation by being a demanding customer.

Enhancing the diffusion of digital delivery of business services

Moving to digital delivery is not without cost for either buyers or sellers. Online activities must be integrated into the business. Often the learning curve is steep and organisational restructuring and retraining costs are considerable.¹⁵³ The small scale of many business services providers affects their capacity to implement digital delivery and e-business solutions (*e.g.* they lack vision, strategic leadership, skills, capital, etc.) and the affordability of doing so (*e.g.* the solutions available in the marketplace tend to be designed for, and scaled to larger organisations). Governments might consider ways to publicise existing commercially available solutions, especially those appropriate for small businesses (*e.g.* by reviews, competitions and awards). There may also be potential to encourage the development of new, less expensive solutions on the supply side, and foster consortial development and/or purchasing of such solutions on the demand side (*e.g.* by working through industry and professional associations).

Governments are significant suppliers and consumers of business services, both directly and indirectly. They can do much to encourage both demand for, and supply of business services. Much attention has been given to IT outsourcing, both as a potential cost saver and as an industry development initiative. Similar potential exists in many business services for greater business process outsourcing (*e.g.* marketing and advertising, business consulting and human resources). By demanding services, and corporatising and privatising internal service provision capabilities governments can contribute to the development of the business services sector. For example, government R&D expenditures are large and growing. With increasing emphasis on value for money these expenditures are calling forth a wider range of R&D and technical services providers. Existing providers, such as universities and national research institutes, are being restructured and encouraged to seek increased contract research funding. This is contributing to the development of the research and technical services industry's capabilities.

Governments can also serve as a role model, by buying and selling services online (*i.e.* e-government) and supporting initiatives that aim to raise the awareness of other organisations of the potential advantages of digital delivery alternatives. Either directly, or working through industry and professional associations, governments can also assist in the promulgation of realistic, vendor-independent information, tailored to the needs of small businesses.

One particularly important area is that of skills. Moving to digital delivery requires new specialist skills (*e.g.* IT skills and organisational change management skills) and internal retraining and updating skills in support of the business transformation. Governments play a major role in the provision of education and can influence the emphasis given to specific areas through information provision and target setting. Governments can also promote lifelong learning through direction setting, funding and other incentives. One area of concern is the traditional management culture of control. Digital delivery of

business services can be encouraged with greater awareness and tolerance of remote working, and the development of the necessary skills to undertake and support management at a distance. These can be enhanced if appropriate attention is given to the issue in business services training and education programmes.

Labour market regulation is also critical. Governments can encourage deregulation of labour markets in order to make it easier for organisations to more flexibly manage the border between in-house production and outsourcing. This might include such things as the use of non-standard employment practices to enable the use of short-term contract and agency staffing – which would have an obvious and immediate impact on recruitment and labour supply services, and facilitate other services outsourcing and contracting.

The cost, skills and accessibility barriers noted in many studies are felt most acutely by SMEs. They need particular support in the areas of technical standards and the development of e-business tools that are scaled to, and affordable by SMEs. In many countries, small firm size limits access to capital, not just because of simple scale factors, but also because of the underlying ownership structures common among small firms (*e.g.* family trusts and partnerships). Such developments as limited liability partnerships can make a significant difference to the investment and development potential of small services firms. A related area of concern in some countries is the burden of liability/indemnity insurance demands on small firms, which are not always scaled to the size of the contracts concerned. Again governments can lead the way in adjusting their own contractor indemnity demands.

Ensuring the environment enables positive impacts to diffuse

Developing, monitoring and maintaining a supportive regulatory environment for e-commerce and the digital delivery of business services is already a priority for many OECD governments. Competition policy affects the supply of business services. While often characterised by the existence of many small firms, there are a small number of very large players in most business services markets. In such areas as telecommunications, IT outsourcing, software development, accounting and management consulting there are tendencies for digital delivery to further concentration. Policy makers need to be aware of, and responsive to possible negative effects on competition. One key challenge will be to appropriately define ‘markets’ in what are rapidly evolving, dynamic and converging industries.

Despite recent growth in services trade, services are not traded internationally to the same extent as goods. Variations in regulatory regimes, investment, legal, reporting and physical presence requirements act against the internationalisation of business services. Governments can play a central role in regulatory and legislative simplification at the national level, and in harmonisation at both the national and international levels. Key areas of concern for digital delivery relate to local presence requirements, restrictions due to the non-recognition of foreign qualifications and expertise, and local purchasing preferences. Privacy, security and authentication concerns tend to be magnified with cross-border digital delivery, requiring international efforts to clarify and harmonise regulations. There is also further work to be done clarifying, monitoring implementation and educating users about taxation and border tariffs on online sales and in clarifying and harmonising intellectual property regimes. To the extent that there are restrictions on international trade in services and on cross-border digital delivery of business services, such restraints will reduce demand for them and slow their diffusion. This has a potentially negative effect on business efficiency and competitiveness, and limits the extent to which business services providers can act as a conduit for the diffusion of business process innovations.

Globalisation and the cross-border digital delivery of business services raise particular challenges for policy. It has been noted that in many social democracies policy involves a strong element of tripartisanship – in which employers, workers and governments join. Traditionally, they have shared a

common base and citizenship, been bound by the same regulatory system, customs and practices, and shared the same culture and tacit understandings of the local ‘social contract’. Globalisation and the displacement of work beyond national boundaries challenges many of the shared assumptions, and makes it difficult for governments to play their traditional role. Hence, for governments, at the supra-national level, a major challenge will be to develop ways to harmonise business and employment regulation, without falling into a ‘race to the bottom’ and/or creating regulatory disincentives to local investment.¹⁵⁴

Table 25. **Digital delivery of business services**
(key policy issues)

<i>Service type</i>	<i>Major Policy issues</i>
Software development	IPRs, bandwidth, congruence
IT services	Trade regulation, congruence
Information retrieval services	Bandwidth, IPRs, security, authentication
R&D services	Congruence, bandwidth, IPRs, security
Design services	Congruence, bandwidth, IPRs, security
Technical testing services	Bandwidth, IPRs, security
Advertising	Bandwidth, privacy, security
Marketing	Congruence
Business consulting	Congruence
Human resources	Congruence, bandwidth, privacy
Labour supply	Labour market regulation, congruence
Recruitment	Congruence, privacy, security

Note: Congruence is the fit between client and provider on such dimensions as co-ordination and control systems, objectives and values, capabilities, processes and information technology.

Source: Author.

Differences in adoption levels in different services and market niches may reflect different optimal business models in differently structured economies, rather than different levels of readiness.¹⁵⁵ One of the keys to reaping the full benefits of digital delivery lies in integrating it into full e-business processes and solutions – fully integrating front and back office, internal and external processes. Skills, technical, social and organisational will be critical to success in gaining benefits from digital delivery. Governments can assist in putting into place strategies for continuous learning and the upgrading of skills, and fostering the development of social and organisational skills that make it possible for people to delivery services in virtual or digitally mediated environments.

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NOTES

- ¹ Business services include: software and information services (ISIC Rev 3: 721-724), R&D and technical services (ISIC Rev 3: 731, 7422), marketing services (ISIC Rev 3: 7413 and 743), business consulting services (ISIC Rev 3: 7414), and labour supply services (ISIC Rev 3: 7491) and human resource development (ISIC Rev 3: 809). Recent developments have seen a blurring of the boundary between manufacturing and services. One example is OEM/contract manufacturing, in which manufacturing has become a business service. For the purposes of clarity, such 'services' are not studied in this report.
- ² This refers to work done remotely through electronic means, internal to the firm (formerly known as telecommuting) or outsourced, also known as ICT-enabled outsourcing when it involves business to business contracting or the electronically mediated version of free-lancing when it involves individual contracting.
- ³ E-business activities refers to Internet/Intranet-based business support activities (e.g. project management, scheduling, billing and reporting that is accessible to both the supplying firm and its client).
- ⁴ Turnover comprises sales (exclusive of excise and sales tax) of goods and services whether or not produced by the establishment. It excludes interest and other income.
- ⁵ OECD (1999), *Strategic Business Services*, OECD, Paris.
- ⁶ OECD (1999), *Strategic Business Services*, OECD, Paris, p17.
- ⁷ E-business Watch (2002), *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002; and E-business Watch (2003) *ICT & e-business in the Telecommunications and Computer Services Sector*, European Commission, Sector Report No 6/III, July 2003. Available <http://www.ebusiness-watch.org/marketwatch/> accessed October 2003.
- ⁸ U.S. Census Bureau (2003), *Professional, scientific and technical services: 1998-2001*, U.S. Census Bureau, Washington D.C. Available <http://www.census.gov/econ/www/servmenu.html> accessed March 2003.
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- ¹¹ E-business Watch (2002), *ICT & e-business in the Business Services Sector*, European Commission, Sector Report No 15, October 2002, p13. Referring to the EU-8. Available <http://www.ebusiness-watch.org/marketwatch/> accessed February 2003.
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- 23 Excluding Ireland, the Netherlands and Greece (Eurostat).
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