Sector Report: *No. 09-II, August 2004*

Electronic Business in the
Business Services Sector

Key issues, case studies, conclusions

e-business
w@tch

European
Commission

Enterprise publications

The *e-Business W@tch*

The European Commission, Enterprise Directorate General, launched the *e-Business W@tch* to monitor the growing maturity of electronic business across different sectors of the economy in the enlarged European Union and in EEA countries. Since January 2002 the *e-Business W@tch* has analysed e-business developments and impacts in 17 manufacturing, financial and service sectors. Results are continuously being published on the internet and can be accessed or ordered via the Europa server or directly at the *e Business W@tch* website (www.europa.eu.int/comm/enterprise/ict/policy/watch/index.htm or www.ebusiness-watch.org).

This report is the second Sector Impact Study on electronic business in the business services sector published by the *e-Business W@tch* in the 2003/04 period. It builds on the first study from April 2004 which presented mainly the quantitative picture, focusing on the results of the e-Business Survey 2003. This study analyses in more detail specific issues which were found to be particularly relevant for the sector at stake.

Disclaimer

Acknowledgements

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Introduction to the *e-Business W@tch*

The *e-Business W@tch* – observatory and intermediary since late 2001

The *e-Business W@tch* monitors the adoption, development and impact of electronic business practices in different sectors of the European economy. The eEurope 2002 Action plan provided the basis for targeted actions to stimulate the use of the Internet for accelerating e-commerce, acknowledging that "electronic commerce is already developing dynamically in inter-business trading […]" and that "it is important for SMEs not to be left behind in this process […]." The eEurope 2005 Action Plan, endorsed by the Seville European Council in June 2002, confirmed and built further upon these objectives with Action 3.1.2. "A dynamic e-business environment", which defined the goal "to promote take-up of e-business with the aim of increasing the competitiveness of European enterprises and raising productivity and growth through investment in information and communication technologies, human resources (notably e-skills) and new business models".

It is against this background that the European Commission, Enterprise Directorate General, launched the *e-Business W@tch* in late 2001, with the objective of providing sectoral analysis based on sound empirical research, including annual enterprise surveys in all countries of the enlarged European Union. Special emphasis is placed on the implications for SMEs.

Since its launch, the *e-Business W@tch* has published e-Business Sector Studies on 17 sectors of the European economy, two comprehensive synthesis reports about the status of electronic business in the European Union, statistical pocketbooks and further resources (newsletters, presentations, special issue reports). These are all available on the website at www.ebusiness-watch.org.

The quantitative analysis about the diffusion of ICT and e-business is based to a large extent on annual, representative surveys among decision-makers of European enterprises. The 2002 survey included 9,264 enterprises from the former 15 EU Member States. In 2003, the regional scope of the survey was extended to the new EU Member States and EEA countries, with about 10,500 companies in total.

Survey results confirm the initial assumption and rationale of the *e-Business W@tch* that the sector in which a firm operates and the size of a company are main determinants of its e-business activity, rather than the location of a company. The large demand for the various publications and statistics provided by the *e-Business W@tch*, and their exploitation by other research institutions (for example, in the EITO Yearbook 2003 and in the OECD Information Technology Outlook 2004), documents that there has clearly been a demand for sectoral e-business analysis.

Facilitated by positive responses and the growing interest in its analysis, the *e-Business W@tch* is increasingly developing from an observatory into a think-tank and intermediary, stimulating the debate about the economic and policy implications of e-business among stakeholders at an international level.

The wide-angle perspective: the *e-Business W@tch* provides the "big picture" as a basis for further research

The mission of the *e-Business W@tch* is to present a "wide-angle" perspective on e-business developments and practices in the sectors covered. This has important implications regarding the level of detail in which various issues can be explored, both in terms of the quantitative picture (survey) and in terms of the qualitative assessment and background research.

Over the past 10 years, "electronic business" has increased from a very specific to a very broad topic to be studied. The OECD concisely defines e-business in 2004 as "automated business processes (both intra-and inter-firm) over computer mediated networks". This definition is useful as it makes clear that e-business is more than e-commerce (which focuses on commercial transactions between

companies and their customers, be it consumers or other companies) and that e-business includes internal processes within the company as well as processes between companies. Furthermore, the OECD definition implicitly indicates that the focus and main objective of electronic business is to be found in business process automation and integration and the impacts thereof.

This implies that the potential scope for e-business analyses has also broadened. The measurement of e-commerce transactions (the volume of goods and services traded online) can and should be complemented by studies analysing the degree to which business processes, including intra-firm processes, are electronically linked to each other and have become digitally integrated.

In such a context, it becomes practically impossible to cover in depth all areas and facets of e-business in one study. The scope of such a study needs to be carefully defined and – to use the analogy of photography – it must be decided whether to "zoom in" or to use a "wide-angle" perspective. "Zoom-in" studies investigate one specific aspect of electronic business in much detail. "Wide-angle" studies adopt a broader perspective and investigate more issues at the same time, which necessarily puts limits on the level of detail in which each single issue can be explored. This must be considered when using the Sector Studies prepared by the *e-Business W@tch*.

The role of economic analysis in the Sector Reports

The first chapter of each *e-Business W@tch* Sector Study provides background information on the respective sector. This overview includes the definition of the sector (on the basis of NACE Rev. 1 classification), some basic industry statistics, as well as information about the latest trends and challenges concerning the specific sector.

It appears that this practice, combined with the growing interest in the *e-Business W@tch* analysis, has caused some confusion: Some readers mistakenly consider that an *e-Business W@tch* "sector report" is a piece of economic research on the sector itself, and not a report focussing on the use of e-business in that particular sector. It is, therefore, necessary to underline that, while some background information is provided in order to better understand the context and the economic impact of e-business, the *e-Business W@tch* reports are neither intended to, nor could, be substitutes for more detailed and specific industrial analysis and statistics on each particular industry.

The same applies to the industry statistics presented in this first, introductory chapter of the *e-Business W@tch* reports. These data are mainly derived from official statistics prepared by Eurostat. However, in order to close the many gaps in the official statistics, DIW Berlin imputed missing data based on extrapolations and their own calculations. The *e-Business W@tch* cannot go beyond the presentation of this consistent set of statistics in the context of its principal assignment.

The mission of the *e-Business W@tch* is to monitor, analyse and compare the development of e-business in different sectors of the European economy – not the sectors themselves. Its objective is to provide reliable results, based on commonly accepted methodologies, which are not readily available from other sources and would trigger the interest of policy-makers, researchers, and other e-business stakeholders for more in depth analyses (or statistical surveys). The *e-Business W@tch* has adopted a "wide-angle" perspective in its approach and the necessary trade-offs are transparently depicted in all its deliverables.

The definition of sectors and the adequate level of aggregation

Economic sectors constitute the main level of analysis for the *e-Business W@tch*. In 2003/04, the sample consists of ten sectors. Their configuration and definition are based on the NACE Rev. 1 classification of business activities. The aggregation of various NACE divisions and groups into a "sector" was guided by the aim to produce results which are relevant for the dynamics of the economy as a whole as well as with the intention of covering the most important features of e-business provision and adoption in Europe. The configuration of sectors partly followed aggregations that are also used in the "Panorama of European Businesses" published by Eurostat.

In the context of its "wide-angle" perspective, the *e-Business W@tch* analysis covers a large part of the European economy rather than focusing on very specific (sub-)sectors. Therefore, the statistics presented in these reports need to be carefully treated when making comparisons between countries and, occasionally, companies' size-classes. Against the previously described background, some generalisation and approximation has to be accepted, while the definition of sectors could be revisited during the implementation of the *e-Business W@tch*.

The 10 sectors analysed in 2003/04

The 10 sectors which are being monitored and studied in 2003/04 include eight sectors that were already covered in 2002/03 (thus allowing the continuous monitoring of changes and progress), as well as two new ones (namely the textile, clothing and footwear industries and the craft and trade sector).

Exhibit: Sectors covered by the e-Business W@tch in 2003/04

Title	NACE	Short Description
Textile, clothing and footwear industries	17, 18, 19	The textile, clothing and footwear industries account for about 5% of total value added in manufacturing in the former EU-15 and about 9% of employment. SMEs and co-operative SME networks play a vital role.
The chemical industries	24,25	ICT and the Internet in particular have fuelled the globalisation of markets for chemical products. E-business may have considerable future impact on this sector which accounts for ~15% of the production value of EU manufacturing.
The electrical machinery and electronics industries	30, 31, 32	The electronics industry is very suitable for e-business because of the high degree of standardisation of products, globalisation of production, and specialisation of firms along the value chain. Its dynamic development calls for continuous monitoring.
The manufacture of transport equipment	34, 35	The transport equipment industries are precursors for economic development in Europe. Large companies are forerunners in using e-business, with considerable implications for all stakeholders in the value chain.
Craft & trade	(17-19), 20, (30-32), (34-35), 36, 45	The craft sector, which includes firms with less than 50 employees from a number of business activities, is vast, in terms of number of enterprises, employment and value added. E-business may become crucial for many craft firms to stay competitive with industrial production.
Retail	52	The retail sector represents a cornerstone of economic activity within Europe, with around 3 million retail enterprises currently in the EU, employing nearly 14 million people. As there is still untapped potential, ICT may eventually have major implications for the retail value chain.
Tourism	55.1-5, 62.1, 63.3, 92.33, 92.52+53	Hotels, restaurants, travel agencies and tour operators (NACE 55 and 63.3) employ about 2.2 million people in the EU. SMEs play a very important role. In some respects, the tourism sector has always been a forerunner in using ICT. E-commerce is exerting a huge impact, challenging intermediaries.
ICT services	64.2, 72	The ICT services sector in many respects is the leading sector and a kind of benchmark with respect to e-business application. E-business can change the nature of ICT services, which has important implications for other sectors which use them.
Business services	74	Business services are a huge sector, involving more than two million enterprises (99% are SMEs), and employing close to 13 million people. ICT and e-business have significant implications for those areas of the business services sector that are based on information and knowledge.
Health and social work	85.1, 85.3	As national health systems suffer from increasing costs and political pressures to constrain these, it is hoped that strategies for the development of an e-health and e-business infrastructure will become key drivers of change.

Rationale for the selection of sectors to be monitored in 2003/04

The selection of the ten sectors to be monitored in 2003/04 was guided by the aim of producing results relevant to tracking the dynamics of the economy as a whole as well as with the intention of covering the most important features of e-business provision and adoption in Europe. There are, however, additional factors that have been taken into consideration for the selection process. An important aspect to be considered is that any sector which is not going to be covered during the 2003/04 period is a candidate for analysis in 2004 onwards, provided that the *e-Business W@tch* contract will be renewed.

Primary selection criteria

(a) **The economic importance of the sectors for the EU economy**. For the representation of e-business impacts in the economy as a whole, "large" sectors play a major role, since changes in their production models, their purchasing and marketing behaviour as well as their productivity and dynamics of growth have a very major effect on the performance of the entire economy. The assessment of the economic importance was mainly based on two standard economic indicators: the sector's share of employment and the amount of value-added by the sector.

(b) **The relative importance of electronic business within the sector**. As the *e-Business W@tch* has demonstrated in the first phase (2002/03), the intensity and nature of ICT and e-business usage differs considerably between sectors. Some sectors, although still small in absolute terms, are growing rapidly and/or illustrate the role which ICT and electronic business may play in other sectors in the future. The statistical proxy for the relative importance of e-business in a sector is the Pilot Index which was computed for 15 sectors (cf. European E-Business Report 2003), based on the eEurope 2005 E-Business Index.

Secondary selection criteria

In addition to these two fundamental criteria, some other selection criteria were applied in cases where the economic and e-business relevance appeared to be equal or similar. These criteria were:

- **Balance of business activities.** There should be a balanced mix of manufacturing and service sectors. Sectors could include a public service sector for comparison.

- **The continued importance of the SME dimension.** Sectors with a higher share of SMEs could therefore be given priority over sectors where large companies dominate.

- **Policy relevance.** The selection needs to consider the policy relevance from the perspective of DG Enterprise and, in particular, sectors for which the DG has responsibility.

- **Roll-out strategy.** Some new sectors (not covered in 2002/03) should be included in order to broaden the monitoring scope of the *e-Business W@tch*. Among sectors with a comparable economic size, new sectors (not yet covered) may be given priority.

In order to come to an initial ranking of economic importance, the *e-Business W@tch* has computed a simple Index using two component indicators: the number of people employed, and value added. The Index reflects the contribution of the sector to the total of all sectors compared.

The next step in the selection process was an attempt to make a joint consideration of the sector's contribution to employment and value added, together with the relative importance of ICT and e-business in the sector. For this purpose, the *e-Business W@tch* has computed an Index that combines the two components. In such a ranking, Business Services comes out on top, followed by Health, Retail, the Financial Services sector and ICT Services.

Based on this statistical evidence and the considerations presented above, the *e-Business W@tch* proposed a roll-out plan and a configuration of 10 sectors for the period 2003/04 that provide good coverage of relevant business activities, issues and countries, as well as being manageable in the organisation designed for the *e-Business W@tch* and the resources available.

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The Role of Electronic Business
in the Business Services Sector in 2004:
Main Issues and Challenges

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This report is the second Sector Impact Study on electronic business in the business services sector published by the *e-Business W@tch* in the 2003/04 period. It builds on the first study from May 2004, which mainly presented the quantitative picture by focusing on the results of the e-Business Survey 2003.

This study analyses in more detail specific ICT and e-business related issues that have been found to be particularly relevant for this sector. Case studies support this analysis. Conclusions derived summarize the main business implications of ICT and e-business for firms in the sector. In addition, they assess the main drivers and barriers for the future development of electronic business in the sector. In the last section, the study points at ICT related policy challenges, starting with considerations about the overall implications of ICT for policy and leading to more sector specific aspects.

1   Introduction

This section gives a brief overview of the size and structure of the business services sector and points out overall current trends and challenges. It summarizes findings from the respective sections of previous Sector Impact Studies on e-business in the business services sector. For a detailed analysis as well as for more information on the statistics presented we particularly recommend Chapter 1 of the previous report (May 2004).

Definition and structure of the business services sector

When discussing the role of electronic business in the business services sector, two main characteristics describing the definition and structure of the sector should be kept in mind. Firstly, the various business services sub-sectors show a considerable heterogeneity. And secondly, the sector is dominated by micro and small enterprises. While both observations are true to some extent for many other sector, this is even more so the case in business services.

Services enterprises classified "business services" (NACE Rev. 1 74)[1] cover a wide range of activities, which are often closely related to the activities in various other sectors:

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[1]   Strictly speaking, these are "other business services", as many definitions of business services also include activities covered in other *e-Business W@tch* reports. For example, the definition for business services often chosen by the EU also includes IT services (NACE 72.1-6) as well as renting and leasing activities (in NACE 71.1-71.3). Cf. European Commission (1998): The contribution of business services to industrial performance: a common policy framework, COM (1998) 534 final.

Exhibit 1-1: Business services in EU-14* by type of activity (2001)

NACE REV. 1		Enterprises	Production value	Value added at factor cost	People employed
		(Number)	(Mill. Euro)	(Mill. Euro)	(Number)
74.1	Legal, accounting, bookkeeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	939,304	356,605	213,764	3,546,825
74.2 74.3	Architectural and engineering activities and related technical consultancy; technical testing and analysis	589,992	176,683	96,379	1,928,138
74.4	Advertising	132,072	103,817	32,279	697,347
74.5	Labour recruitment and provision of personnel	31,364	88,740	63,977	2,613,291
74.6	Investigation and security activities	21,615	16,481	12,977	661,499
74.7	Industrial cleaning	106,952	49,451	35,818	2,394,608
74.8	Miscellaneous business activities n.e.c.	426,962	130,706	58,479	1,477,569
74	**Other business activities**	**2,248,261**	**922,484**	**513,671**	**13,319,278**
EU-14 = EU-15 without Greece.					

Source: Eurostat New Cronos 2003, calculations and estimates by DIW Berlin (2003)

NACE 74.1 includes legal activities such as legal advice, notary activities or management of trusts (NACE 74.11); accounting, book-keeping and auditing activities as well as tax consultancies (NACE 74.12); market research and opinion polling (NACE 74.13); business and management consulting activities (NACE 74.14); and the management of holding companies (NACE 74.15). This sub-sector has close ties with ICT services, e.g. with outsourced accounting-related data processing activities, or with hardware and software consulting. The distinction between management and ICT consulting is in particular increasingly difficult as ICT is of rising strategic importance for companies and as decisions about ICT equipment are turning into strategic business decisions. (Many well-known large business services enterprises like Accenture, Capgemini or IBM are increasingly active in both areas.) The sub-sectors NACE 74.11, 74.12 and 74.14 are often addressed as "professional services".

NACE 74.2 combines activities in architecture, landscape design, and engineering. While the first two have close ties with the construction sector, companies in the engineering sub-sector work closely together with the manufacturing industry, especially the manufacturing of investment goods. Closely related to NACE 74.2 is **NACE 74.3** (technical testing and analysis), which contains, for example, pollution measurement as well as certification of ships or motor vehicles. Both categories combined are often labelled "technical services".

NACE 74.4 (advertising) includes the design of advertising campaigns, the provision of spaces for advertising as well as media representation. This sub-sector shows close ties to market research (NACE 74.13), public relations (part of NACE 74.14) and direct mailing (part of NACE 74.83). These four are sometimes combined under "the marketing and communications sector". NACE 74.13 and 74.4 are commonly addressed as "marketing services".

Some parts of **NACE 74.5** (labour recruitment and provision of personnel) are close to management consulting (e.g. executive search activities). Other parts, such as temporary employment agencies, are specific services in their own right.

NACE 74.6 (investigation and security activities) and **NACE 74.7** (industrial cleaning) are often referred to as "operational services". NACE 74.6 contains investigative services, which are mainly provided on a project basis, while security and related activities (e.g., surveillance or guard activities, store detectives) are typically provided on a continuous basis. Also provided on a continuous basis are services in the industrial cleaning sector (NACE 74.7).

Finally, **NACE 74.8** (business activities not elsewhere classified) contains a variety of very different activities. Photography services (NACE 74.81) are in part related to advertising but also subsume household-oriented photography (e.g. for weddings and passports) as well as coin-operated photographic machines. Packaging activities (NACE 74.82) contain all sorts of packaging, labelling and stamping. They are closely related to direct mailing activities, which are part of secretarial and translation activities (NACE 74.83). Finally, other business activities not elsewhere classified contain credit reporting and collection agencies, special design services and the activities of exhibition, fair and conference organisers.

Business services are often divided into two groups: knowledge-intensive business services such as consulting or advertising services on the one hand and operational business services such as cleaning, packaging or security services on the other hand. Knowledge-intensive business services are typically project-based, whereas operational services are mostly provided on a continuous basis. In addition, access to and exchange of information plays a crucial role in knowledge-intensive sub-sectors, whereas technical equipment such as machinery or a vehicle fleet is of greater importance in most operational services enterprises. These differences have specific implications for the role of e-business in the respective sub-sectors, as will be analysed in greater detail in section 2.2.

Exhibit 1-1 shows key economic figures for business services as a whole (NACE 74). The total production value of the business services sector in the EU-14 (EU-15 without Greece) amounted to more than 922bn Euro in 2001. Of this, about two thirds were generated in knowledge-intensive sub-sectors (here defined as NACE 74.1, 74.2, 74.3 and 74.4). And almost 40% of the sector production was created by the legal, accounting and management consultancy companies (NACE 74.1) alone. However, the proportion of a certain sub-sector contributing to the total production value does not necessarily reflect its importance for other economic indicators such as employment. Companies active in industrial cleaning (NACE 74.6), for example, generate only about 5% of the total production value, but employ almost 18% of the sector workforce.

As already pointed out, the business services sector is characterised by a strong dominance of small enterprises. Exhibit 1-2 illustrates that in 2000 almost 94% of the enterprises employed less than 10 people and about 99% less than 50 people. At the same time, small companies with less than 50 employees in the EU-15 generated more than half of the value added at factor cost and employed about 45% of the sector workforce. Though accounting only for less than 1% of the total number of enterprises, the large companies (more than 250 employees) employed over 38% of the total sector work force, but generated only 30% of the added value in the EU-15.

This dominance of small companies is even more pronounced in the new EU member states. In 2000, more than 97% of business services enterprises there were micro companies with less than 10 employees. In addition, the shares of value added at factor cost and of people employed by micro firms were significantly higher than in the EU-15 of 2003.

Exhibit 1-2: Structure of the business services in the EU (2000)

	Total	Enterprises with … people employed			
		1-9	10-49	50-249	250+
NACE	Number of enterprises	Structure in % of total			
	Total (EU–15 of 2003)				
74	2,127,191	93.5	5.4	0.9	0.2
	New EU Member States*				
74	357,978	97.4	2.0	0.5	0.1
NACE	Value added at factor cost	Structure in % of total			
	Total (EU-15 of 2003)				
74	487,254.8	30.8	21.2	17.8	30.3
	New EU Member States**				
74	9,634.8	48.8	17.7	18.3	15.3
NACE	Number of people employed	Structure in % of total			
	Total (EU-15 of 2003)				
74	12,824,500	27.8	17.7	16.3	38.2
	New EU Member States ***				
74	407,028	43.5	21.2	19.4	15.9

*Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland only. - **Czech Republic, Hungary, Latvia, Poland only. - ***Czech Republic, Hungary, Latvia only.

Source: Eurostat New Cronos 2003, calculations and estimates by DIW Berlin (2003)

Trends and Challenges

A frequently discussed topic in the business services sector is the challenges resulting from the EU enlargement. Significant gaps exist in productivity and labour costs between the EU-15 of 2003 and the new EU member states.[2] On the one hand this leads to increasing cost pressure on services companies. On the other hand the EU enlargement leads to further internationalisation and increasing complexity of projects in the business services sector.

A more intense price competition is expected in business services with a rather technical focus such as technical testing, architecture or engineering services. This pressure is caused by a larger supply of comparatively "cheap" experts and by the fact that many components of such services can also be delivered from abroad. Business services without specific requirements on human capital such as cleaning also feel the cost pressure, especially due to (temporary) migration of the eastern European workforce or due to companies from the new Member States becoming active in markets in the west. In contrast, business services that require rather country-specific human capital, such as tax or law consultancies, are less affected.

The EU enlargement also facilitates a further integration of international businesses from all industries by advancing the development of international cooperations and projects. This in turn leads to an increasing demand from multinational clients for multinational support from business services enterprises, especially in the context of complex, international projects. Especially large business services companies can benefit from this trend, e.g. internationally

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[2] See Chapter 1 of the previous sector report (May 2004).

active business consulting firms, law or tax advice companies. On the other hand, small businesses can compensate for their limited capacities by engaging in cooperations and subcontracting. Setting up and keeping networks of experts and specialised suppliers as well as managing the associated coordination work becomes an increasingly important challenge for business services.

In addition to the EU enlargement several other recent trends constitute challenges for providers of business services. In particular, new trends propagated by the IT services sector such as Business Process Outsourcing (BPO) and the automation of services procurement will place new demands on the e-readiness of business services providers.

Outsourcing services, for example, are increasingly offered both for running the companies' IT infrastructure as well as for operating entire business processes such as HR (Human Resources), finance, accounting or supply chain systems. The trend towards BPO places new requirements on IT services providers as well as on business services enterprises: IT services providers have to accumulate specific knowledge about the management of business processes; business services must become increasingly familiar with ICT issues related to their services.

Services procurement applications are supposed to be a "growing segment in the overall eProcurement/eSourcing market" according to the US based IT consulting company Forrester[3]. This trend is driven by the need of many companies to better control services spending. In a survey among 225 purchasing heads from large companies in Europe, which has been conducted by the technology provider Ariba and the London Business School, it turned out that consulting services, travel and facilities management "were seen as the biggest mystery spending areas".[4] Some solution providers in the e-procurement market such as Ariba, PeopleSoft or Elance are already offering IT applications for supporting services procurement. If this development continues, it might turn out that service providers will increasingly be forced to integrate their IT systems with the procurement systems of their customers – as is the case for other industries,

As a consequence of the trends listed above, the proper deployment and management of e-business tools as well as the set-up of an appropriate ICT infrastructure become crucial issues for business services. The sophisticated use of the internet, e.g. to obtain access to international job markets, as a platform for collaboration and exchange of information and documents, as a basis for IT-based project management, and for integrating with ordering systems of clients, becomes an essential requirement. Challenges that arise with the deployment and management of e-business tools will be discussed in detail in Section 3.1.2 of this report.

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[3] Forrester (April 2004): "Services procurement needs executive sponsorship to achieve potential", Executive Summary, April 15 2004.

[4] Ariba & London Business School (March 2004), Press release: "European enterprises admit existence of spending 'black holes'", published by Octopus Communications, March 10 2004.

2 The role of electronic business in the businesses services sector

The aim of this chapter is to provide a more detailed analysis of sector specific issues related to e-business. Compared to the previous report (May 2004), which was mainly based on the description of the *e-Business W@tch* results, the analyses in the report at hand are derived from a more extensive statistical analysis, from case studies based on in-depth interviews with business services companies, solution providers and sector experts as well as from discussion of the literature. Five major issues are discussed in this chapter.

- **Key application areas of e-business in the sector.** Business services differ in many ways from other sectors. This will be reflected in the way in which these companies use ICT and e-business technologies, which differs from the usage in other sectors. Section 2.1 discusses this issue as a summary of the findings and discussions in the previous sector report from May 2004.

- **Knowledge-intensive versus operational services**. Business services can be divided into these two groups with rather different characteristics. This leads to the question whether differences between the sub-sectors are also reflected in the adoption of e-business technologies. Therefore, in Section 2.2. key parameters will be compared for these two main groups.

- **Mobile solutions for the optimisation of business processes**: The use of ICT and e-business for the integration of fieldworkers is a key application area in this sector. More than 20% of business services enterprises consider mobile solutions to better connect fieldworkers to the company to be important. Section 2.3, therefore, focuses on mobile solutions. The characteristics of mobile solutions will be explained, usage potentials identified and challenges for their adoption discussed.

- **E-Learning**: Despite the importance of knowledge as an input factor, in particular for knowledge intensive services, the use of e-learning in this sector is only marginal. In Section 2.4, therefore, possible explanations for this finding will be analysed. The section also discusses how e-learning solutions can be made better available to small and medium-sized enterprises in this sector.

- **Support of marketing and sales activities – websites and e-marketplaces**: Even though many business services do not lend themselves very well to being sold online, there exist appropriate e-business technologies to support marketing and sales activities. In this context Section 2.5 discusses the role and importance of websites and e-marketplaces.

2.1 Key application areas of electronic business in the sector

As discussed in Chapter 1, the business services sector is essentially characterised by a strong dominance of small enterprises as well as by largely heterogeneous sub-sectors. These two characteristics should also be kept in mind when discussing key application areas of electronic business in this sector. The strong dominance of small enterprises explains, for example, why rather complex software systems such as CRM (Customer Relationship Management), SCM (Supply Chain Management) or ERP (Enterprise Resource Planning) systems are only of marginal importance.

Exhibit 2-1: Internet access and E-mail usage in comparison to other sectors

	Internet access		E-Mail	
	% of firms	% of empl.	% of firms	% of empl.
Business services*: total	93	97	90	94
All sectors	76	88	68	84
Textile and footwear	58	82	48	77
Chemical industry	86	98	80	95
Electronics	97	98	96	98
Transport equipment	83	99	78	99
Retail	64	80	51	74
Tourism	84	90	80	87
ICT services	97	98	97	98
Health services	63	72	51	63
Craft & trade sectors	67	77	58	69

*Business services are a sub-group of the sectors discussed in the European Commission's communication on business related services (COM (2003) 747 final). Business services as defined here cover activities listed as "Other business services" in the official statistics under classification NACE 74.

Base: all enterprises, EU-5 (DE, ES, FR, IT, UK). N= 4516 (All sectors), N ~ 500 for single sectors. "% of empl." means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W@tch* (2003/04)

Enterprises in this sector are, however, well equipped with basic ICT infrastructure. As indicated in Exhibit 2-1, the percentage of companies having internet access or using e-mail is considerably above the average of all sectors covered by *e-Business W@tch*. Percentages are similar to that of high-tech industries such as ICT services or electronics. The fact that not only large but also small companies have a good ICT infrastructure distinguishes the business service sector from many others sectors. Even for small companies the respective percentages are at 90% or higher.

Key application areas of ICT in the business services sector as summarized in Exhibit 2-3 are for accessing and exchanging information, for facilitating collaboration among employees, for enhancing third-party relationships as well as for the integration of fieldworkers. Their importance, however, differs with respect to the characteristics of the various sub-sectors. The use of ICT and e-business for accessing and exchanging information as well as for the management of knowledge, for example, plays a key role in knowledge-intensive sub-sectors. In consulting, research, and advertising services knowledge is the main input factor besides labour, therefore efficient ways to access and exchange it are of outstanding importance.

In addition, many business services, in particular in knowledge-intensive sub-sectors, are a result of the collaboration of experts from various fields, some from the same company and some from external partners. Thus, the use of online technologies to collaborate with and to enhance third party relationships is of outstanding importance. Many architects, for example have to collaborate with construction companies, technical engineers with production or development units of their clients, and management consultants with banks or tax advisors.

Since many business services activities are carried out on the customers' premises, the use of ICT and e-business to integrate these fieldworkers better into the internal information flow is of increasing importance. Mobile solutions, which enable fieldworkers to plug into the company's intranet from the road, the hotel room or the customers' offices are particularly interesting for business services sub-sectors with a high proportion of fieldworkers, such as business consultants, cleaning or technical services.

The outstanding importance of these issues for the business services sector is also supported by the findings of *e-Business W@tch*. Most parameters that characterise the use of ICT and e-business technologies for the purposes discussed, such as the use of online technologies to share documents or to collaborate (see Exhibit 2-2), are above the average of all sectors covered.

Exhibit 2-2: Use of online technologies to share documents and to perform collaborative work (cross-sector comparison)
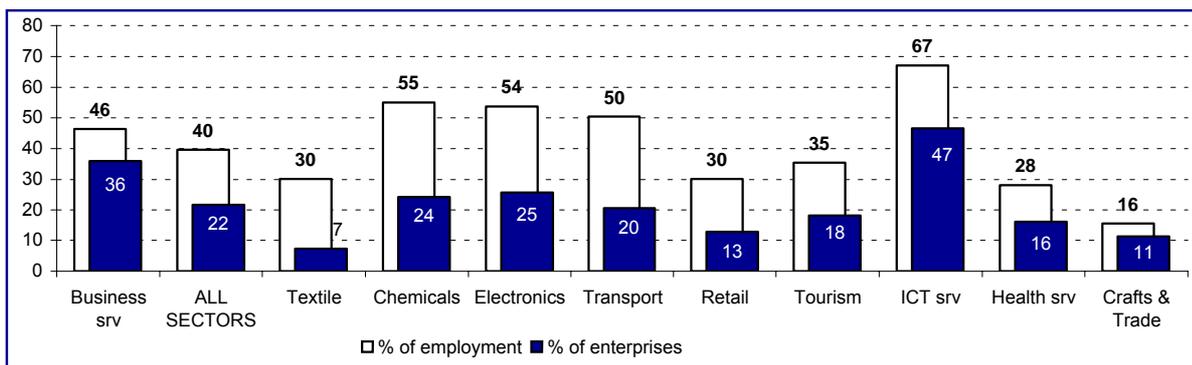
Base: all enterprises, EU-5 (DE, ES, FR, IT, UK). N= 4516 (EU-5 Total), N ~ 500 for the single sectors. "% of employment" means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W@tch* (2003/04)

Compared to the areas described above, the use of ICT for buy- and sell-side activities are still of lesser importance in the business services sector. Even though the proportion of enterprises procuring online is above the average of all sectors covered, the sales volumes are relatively low. Direct inputs in services production are – particularly in knowledge-intensive business services – mainly labour and knowledge. In addition the electronic procurement of MRO (maintenance, repair and operation) goods often plays no important role due to the small average company size.

Sell-side e-commerce activities, in particular if the pure trading process is considered, do not play a significant role either. Most services differ inherently from products as they are "produced" individually for each customer and at the customer's premises. In addition, many services are "trust goods" – as one does not know the outcome before, one needs to trust the service producer, e.g. the consultant. Personal knowledge of each other often is essential

for building this trust. Due to this special nature, many business services do not lend themselves as well to being sold online as do products.

However, there exists some potential for using online technologies to support marketing and sales activities. The use of websites to provide customer-related services or to provide proofs of work suited to build trust is one example. This application area will be analysed in greater detail in Section 2.5.

Exhibit 2-3: Summary overview: Importance of e-business applications in the business services sector

E-business application area	Importance	Remark / example
Improve access to information	●●○○	Key priority, in particular for knowledge-intensive business services
Management of knowledge	●● ○	In particular of importance for knowledge-intensive enterprises with a large number of employees.
Project management and collaboration among employees	●●○○	Project management and collaboration among employees is at the heart of services provided on a project basis
Integration of fieldworkers	●●○○	Increasing importance in particular for business services activities carried out in the field.
Enhancing cooperation with third parties	●●○○	Management and coordination of third-party relationships is of key priority, i.e. for the provision of project-based business services.
Process management and integration by the use of ERP	●	Of little relevance due to the small company sizes
Buy-side e-commerce	●●	Usage numbers for online procurement are above the EU-5 average, but sales volumes are very low.
Supply chain integration by the use of SCM systems	●	Of little relevance due to the small company sizes
Web based e-marketing and customer related services	●●●	Simple applications (e.g. websites) widely distributed, but still differences between large and small companies
Sell-side e-commerce activities / Participation in e-marketplaces	●○	Generally weak, mainly due to the low level of standardisation
Electronic customer management (CRM)	●	Due to the small company sizes not a key issue in the business services sector.
Use of e-business standards for exchanging structured data	●●	Not a key issue yet, most of information exchange takes part informally, companies usually exchange Word and Excel files.
Web services and XML based standards	●●	Not a key issue yet due to the small company sizes and the rather basic applications used.
Extended enterprise: Collaborative product design	●●○	Of some relevance in particular for single sub-sectors such as architecture, technical engineering or advertising
● = little relevance; ●● = average relevance; ●●● = very relevant; ●●●● = high relevance for sector ○ = mixed results, depending on the sub-sector within the combined business services sector		

Source: *e-Business W@tch* (2003/04)

2.2 Knowledge- intensive versus operational services

Introduction

The different characteristics of business services subsumed under NACE 74 suggest that the diffusion of single e-business applications may be different in the various sub-sectors. Such differences should especially be significant when distinguishing between knowledge-intensive and operational services, as structural differences are particularly strong between these two groups.

Knowledge-intensive services such as consulting, engineering or advertising are characterised by a strong importance of information and knowledge. Access to and exchange of information play the key role in the production of these services. Since they are typically project-based, collaboration among employees as well as management of third-party relationships are also key characteristics of their production.

In comparison, operational services such as cleaning, packaging or security services are to a larger extent characterised by manual activities on a continuous basis. Skilled specialists, though not with a university degree, are usually needed in operational services. Compared to knowledge-intensive services access to and exchange of information are of lesser importance. The continuous provision according to the same formula in operational services makes internal processes in this sub-sector well-suited to being streamlined by the use of e-business technologies. In order to check our hypothesis about differences in e-business adoption and emphasis, we divided the survey sample into two groups. Activities subsumed under NACE 74.1 to 74.4 are identified as knowledge intensive services. The remaining business services activities, i.e. activities subsumed under NACE 74.5 to 74.8, are classified as operational services.

We are aware that this classification is not perfect and that single sub-sectors assigned to one of the groups might also show opposite characteristics. Translation services (NACE 74.85), for example, show characteristics of knowledge-intensive sub-sectors. Also within sub-sectors there exist differences. While, for example, legal advice is clearly a knowledge-intensive service, one might argue that monthly repetitive accounting or payroll services also provided by legal offices are more of an operational nature. However, we believe that the grouping chosen is the best possible when taking into account that our data do not allow for a more selective classification method. Furthermore, the statistical effects of an imprecise classification of single sub-sectors are rather marginal and balanced if the entire sample is considered.

Comparison of key parameters: statistical analysis

Data of knowledge-intensive and operational sub-sectors will be compared for four different groups of key parameters, including indicators for the ICT infrastructure, the use of ICT for support of internal processes, the IT use for sell- and buy-side activities as well as indicators describing the perceived importance of e-business.

The results are reported in enterprise- as well as in employment-weighted form. Enterprise-weighted results are best suited to represent the distribution of e-business technologies across companies. Using this scheme implies that small companies dominate the sector results, as small companies dominate the business services sector. In contrast, employment-weighted results put a greater weight on large companies (companies with 50 and more employees make up only 1% of the companies but employ more than 50% of the sector workforce).

Statistical significances or confidence intervals are not reported for each single result. As a rule of thumb, though, one may keep in mind that differences of about 10 percentage points and more between the percentages for knowledge-intensive and operational services can be considered as statistically significant.

The data show that business services enterprises in knowledge-intensive sub-sectors tend to be better equipped with basic ICT infrastructure. They are also more likely to use basic internet applications such as e-mail or the web. All indicators listed in Exhibit 2-4 show above average values for knowledge-intensive business services, most striking for the use of e-mail and for the use of DSL connections to the internet. The results generally support the hypothesis that using ICT to access and exchange information is of greater importance in knowledge-intensive than in operational services.

Exhibit 2-4: Knowledge-intensive versus operational ser vices: basic ICT infrastructure and use of Internet

	Basic ICT infrastructure and use of internet in…						
	% of enterprises			% of employment			N =
	EU-5 total	KIS	OPS	EU-5 total	KIS	OPS	KIS / OPS
Computer usage*	97	98	95	99	99	99	312 / 189
Internet access*	93	94	90	97	97	96	312 / 189
DSL connection**	48	53	37	47	47	48	301 / 178
E-mail usage*	90	93	80	94	96	91	312 / 189
WWW usage*	74	76	71	86	87	83	312 / 189

Base: *all enterprises / **enterprises with internet access; EU-5=DE, ES, FR, IT, UK, KIS=knowledge–intensive services; OPS=operational services; "% of employment" means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W @tch* (2003/04)

Indicators characterising the support of internal processes by ICT (see Exhibit 2-5) show a less clear picture, however. In line with our expectations is the striking difference between sub-sectors in the use of online technologies to share documents or to perform collaborative work. It underlines the importance of information exchange and collaboration for the provision of knowledge-intensive services.

Operational services enterprises, however, seem to be better endowed with knowledge management systems. This result is surprising at first glance since the importance of managing knowledge seems to be more important for knowledge intensive sub-sectors. However, the term "knowledge management" leaves considerable room for interpretation. There also exist various technical solutions that help to organise information about pre-defined technical processes or internal workflows. Such systems are well-suited for usage in operational services and help them to improve internal processes. We presume that the results are driven by such systems.

Parameters indicating the integration of mobile workers by ICT technologies do not show a clear picture. Remote access solutions, for example, are less widespread in knowledge-intensive sub-sectors when enterprise-weighted results are considered. However, the opposite is true for employment-weighted results. This indicates sector-specific differences between small and large enterprises but does not necessarily reveal structural differences between the two sub-sectors. Furthermore, the evaluation of the future importance of mobile solutions to connect fieldworkers shows a rather balanced picture. Thus, the results are in

line with the examples given above, which indicate that both sub-sectors can benefit from an integration of mobile workers.

Exhibit 2-5: Knowledge-intensive versus operational ser vices: Support of internal processes and integration of mobile workers

	Internal processes and integration of mobile workers in…						
	% of enterprises			% of employment			N =
	EU-5 total	KIS	OPS	EU-5 total	KIS	OPS	KIS / OPS
Use of Intranet*	27	27	29	49	55	40	312 / 189
Knowledge Management*	5	4	10	12	8	19	312 / 189
E-learning*	3	4	2	10	12	7	312 / 189
Use of ERP systems*	2	1	2	12	14	9	312 / 189
Online technologies to share documents/ to perform collaborative work*	36	42	20	46	51	38	312 / 189
Remote access**	21	18	29	43	48	35	309 / 187
Wireless remote access**	5	3	9	12	12	12	309 / 187
Future importance of mobile solutions to connect fieldworkers*	22	23	20	32	31	34	312 / 189

Base: *all enterprises / **enterprises using computer; EU-5=DE, ES, FR, IT, UK, KIS=knowledge–intensive services; OPS=operational services; "% of employment" means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W @tch* (2003/04)

Exhibit 2-6: Knowledge-intensive versus operational services: Support of buy- and sell-side activities

	Support of buy- and sell-side activities in…						
	% of enterprises			% of employment			N =
	EU-5 total	KIS	OPS	EU-5 total	KIS	OPS	KIS / OPS
CRM usage*	4	4	5	13	16	9	312 / 189
Website*	35	33	42	72	70	74	312 / 189
Selling online*	3	2	6	11	10	13	312 / 189
Online procurement*	35	33	40	50	49	51	312 / 189
Electronic exchange of documents with suppliers**	29	27	34	45	42	48	301 / 178
El. exchange of documents with customers**	40	36	52	50	50	50	301 / 178

Base: *all enterprises / **enterprises with internet access, EU-5=DE, ES, FR, IT, UK; KIS=knowledge–intensive services; OPS=operational services; "% of employment" means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W @tch* (2003/04)

As summarized in Exhibit 2-6, operational services companies seem to use e-business technologies more intensively for the support of sell- and buy-side activities. Differences on the sell-side, i.e. in having company websites, in using e-business technologies for selling online, or in exchanging documents with customers, may be explained by the different service characteristics as well as by different requirements for the their provision.

Knowledge-intensive services, for example, often come in the form of individual projects, where very specific services are customised according to the clients' needs. Thus, the degree of standardisation – as an important condition for actually selling goods online – is usually lower than for operational services. Cleaning services, for example, are better suited to being offered on a standardized basis than management consulting services.

Moreover, the fact that many knowledge-intensive services enterprises work with confidential data from their clients increases the sensitivity of customer relationships in this sub-sector. Keeping a climate of confidence is a key factor in knowledge-intensive companies and often of larger importance than, for example, creativity or innovation. Tax or law consulting companies, for example, are typically fostering a "conservative" image. They are, therefore, rather reluctant to put their image at risk by trying to sell online.

The use of e-business technologies on the buy-side, for example for procuring online or for exchanging electronic documents with suppliers, is also more widespread in operational business services. Explanations for these differences might be found in the different inputs necessary for the provision of services. Whereas knowledge-intensive services are mainly based on labour and knowledge, other direct inputs such as pharmaceuticals for cleaning services or paper & pulp for the packaging sector are of importance for providing operational services. The use of electronic tools to support the buy-side might thus be more economical in operational sub-sectors.

Exhibit 2-7: Knowledge-intensive versus operational services:
e-business scepticism and reasons for it

	E-business scepticism and reasons for it in…						
	% of enterprises			% of employment			N =
	EU-5 total	**KIS**	**OPS**	EU-5 total	**KIS**	**OPS**	KIS / OPS
General importance of e-business*:							
Does not play a role	40	**42**	**35**	30	**33**	**26**	312 / 189
No significant role today nor within the next 2 years	54	**60**	**39**	50	**49**	**52**	312 / 189
Reasons for not doing e-business:**							
Company too small	68	**65**	**77**	43	**43**	**44**	127 / 61
Technology. too expensive	39	**42**	**29**	30	**34**	**21**	127 / 61
Technology too complicated	22	**24**	**15**	16	**20**	**8**	127 / 61
Concerns about security issues	41	**43**	**35**	37	**38**	**34**	127 / 61

Base: *all enterprises / ** enterprises saying that e-business does not play a role; EU-5=DE, ES, FR, IT, UK, KIS=knowledge–intensive services; OPS=operational services; "% of employment" means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W@tch* (2003/04)

These differences in buying and selling online are in line with the companies' assessment of the importance of e-business: E-business scepticism is more widespread across knowledge-intensive services providers, as often e-business is simply understood as the use of online technologies to buy and sell online, i.e., e-commerce. Other ICT applications such as using the web or e-mail or collaborating online technologies are often not subsumed under the term e-business. This has to be kept in mind when interpreting the results.

The stated reasons for not doing e-business are also to a large extent in line with the sub-sector differences pointed out above, although these results have to be interpreted with care,

as the sample size is comparatively small. For example, a comparatively large fraction of the knowledge-intensive services companies does not engage in e-business due to security concerns. This is not surprising if one recalls the huge importance of legal, tax and consulting services in this sub-sector – all enterprises that handle confidential information. In addition the larger fractions of companies stating that e-business technologies are too expensive and too complicated can simply be translated into meaning that there is less of a business case for their use than in operation services. For buying and selling online this has been shown above.

Summary and conclusion

Our findings support the hypothesis that there are differences in the use of e-business technologies between knowledge-intensive and operational business services sub-sectors. The use of ICT for accessing and exchanging information, in particular within the company, is more pronounced in knowledge-intensive business services. In contrast, online technologies supporting sell- and buy-side activities are more widespread in operational business services. This result also explains to some extent the larger e-business scepticism across knowledge-intensive business services companies.

This has important methodological consequences, particularly regarding the adequate aggregation of business services sub-sectors for the purpose of studying e-business use and impacts. The results of this comparative analysis suggest a more differentiated perspective in the analysis of future sector impact studies.

In light of the importance of third-party-relationships for knowledge-intensive business services providers, the significantly lower percentages of companies exchanging electronic documents with customers is – at first glance – surprising. This finding, however, might be explained by security concerns, especially among smaller enterprises. This explanation is in line with some statements of practitioners and marketplace operators interviewed (see also Chapter 2.5). The sensitivity of customer relationships in knowledge-intensive services should therefore be kept in mind as an inhibiting factor for the use of ICT and e-business in this sub-sector. As better and easier to use security protection becomes available, this might change. An indicator is that large knowledge-intensive services enterprises are already exchanging documents with customers more frequently online than smaller ones.

2.3   Process support by mobile solutions

Introduction: Components and usage of mobile solutions

Mobile solutions to connect fieldworkers have the potential to become a key driver for e-business adoption in the business services sector. As shown in Exhibit 2-8, more than 20% of companies in this sector consider this issue to be important. Since many business services activities are carried out in the field, the use of ICT and e-business technologies to integrate mobile workers becomes a key factor for the optimisation of business processes. Most of the cleaning or security services, for example, are provided at clients' sites. Architects have to supervise construction measures on-site, and consulting companies usually spend most of their time at the clients' premises.

Exhibit 2-8: Cross sector comparisons – wireless remote access and future importance of mobile solutions

	Wireless remote access solution*		Future importance of mobile solutions to connect fieldworkers**	
	% of firms	% of empl.	% of firms	% of empl.
Business services: total	5	12	22	32
Knowledge-intenive BS	3	12	23	31
Operational BS	9	12	20	34
All Sectors	5	11	Na	Na
Textile and footwear	1	6	5	18
Chemical industry	6	13	Na	Na
Electronics	7	25	Na	Na
Transport equipment	4	9	Na	Na
Retail	5	10	Na	Na
Tourism	4	10	Na	Na
ICT services	11	26	Na	Na
Health services	3	3	6	10
Craft & trade sectors	2	3	Na	Na

Base: *enterprises using computers / **all enterprises, EU-5 (DE, ES, FR, IT, UK). N = 4279* (All sectors) N = 309* / 312** (knowledge-intensive business services), N = 189* / 187** (operational business services), N ~ 440-500 for other sectors. "% of empl." means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W@tch* (2003/04)

A mobile solution for the connection of fieldworkers typically consists of three integral parts:

- **Mobile devices.** Typical mobile devices are mobile phones, PDAs (Personal Digital Assistants) or notebooks. There exist, moreover, special devices designed for the specific tasks, needs and environments of the processes to be supported. Generally, companies face a trade-off between relatively cheap devices produced for the mass-market and special devices, which are more expensive but optimally suited for the specific tasks. Examples for the latter are the mobile devices of logistics companies like UPS or FedEx. Critical factors for the deployment are, for example, weight, size, boot time as well as optimally adjusted input options or the support of different technologies for the transfer of the data.

- **Interfaces for the direct or indirect transmission of data from the mobile device to the company's computer system.** The provision of wireless remote access was in the past often considered as a key element of mobile solutions. In this scenario fieldworkers use their mobile device as a "thin client" by accessing internal browser-based applications via a wireless radio connection. Today, however, only a small fraction of mobile solutions works like that. Instead, most mobile solutions, such as the one presented in the case study, do not require a permanent wireless connection to the company network. Rather, mobile devices are equipped with "fat clients", i.e. smart applications and databases, which have all the functionality needed to be worked with offline and which can store the entered data until the next time a (wireless) connection is established to the company. Thus, the data on the device can be synchronised from time to time through a fixed-line or wireless connection or even when returning to the company. Permanent wireless radio connections are therefore not required, which makes the solutions more stable and usable in a variety of environments.

- **Mobile software.** The mobile software, which typically consists of a mobile middleware server installed in the company and of the software installed on the devices, is the key component of mobile solutions, particularly of those supporting very specific processes. The software must integrate mobile devices, specific applications and databases installed in the company backend as well as data transmission technologies into a complete solution. This includes the management of access and security issues as well as the synchronisation of data between mobile devices and the company's computer systems. Thus, setting up such a mobile solution is a typical IT project, not just the usage of yet another telecommunication service. The main technical challenges are the integration of different elements into the envisaged solution, which in addition reflects the business logic of the company network, e.g. rules for the access of fieldworkers to certain applications and databases.

Horizontal versus vertical mobile solutions

In general, mobile solutions can be divided into non-specific (horizontal) and process-specific (vertical) mobile solutions. Horizontal mobile solutions are often offered targeted to the mass market at comparatively low prices. Typically, they support rather simple activities such as the remote access to e-mails or to calendar and address data. A typical example is the Blackberry e-mail client offered by many mobile telecommunication providers in various countries. Using this special-purpose PDA, e-mails can be accessed and processed immediately. About 120 partners of consulting company Clifford Chance Germany, for example, use the Blackberry solution of T-Mobile to be always up-to-date with the company[5].

However, the potential of this type of solutions for streamlining company processes is limited. The largest potential for mobile process optimisation is not in better access to e-mail or similar *general* mobile usages but rather in the reduction of paperwork and the avoidance of media breaks within processes involving *specific* tasks of the field force. This kind of process optimisation could for example be achieved by mobile sales force automation tools targeted exactly to the needs of one company or by other rather specific vertical solutions (see case study below).

Vertical mobile solutions are, in contrast, suited for the needs of a specific company or for a group of companies belonging to a specific sub-sector. Typically, these solutions include special software to support certain processes and sometimes special devices are also in use. In any case, the solution has to be modified more or less to each company's needs. These adjustments imply larger set-up costs than for horizontal solutions, but are necessary to fully exploit the efficiency potential from better integrating one's fieldworkers. The following case study shows a typical example of an industry specific mobile solution.

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[5] See reference cases at T-Mobile [www.t-mobile.de].

CASE STUDY: PROCESS OPTIMISATION BY MOBILE SOLUTIONS IN THE CLEANING SERVICES SECTOR

Abstract

This case study illustrates a typical example of how mobile solutions for the optimisation of internal processes work today. It clearly shows success factors: considering specific needs and environments of the targeted sectors are more important than using (wireless) state-of-the-art technologies.

This way, mobile solutions are also an appropriate tool for use by small and medium-sized enterprises.

Case characteristics	
• Sector focus	Business Services (Facility Management / Cleaning)
• Business focus	SMEs
• Geographical focus	Austria
Case objectives	
• Mobile work	✷✷✷✷
• Optimisation of internal processes	✷✷✷

✷ = some relevance for case; ✷✷✷✷ = high relevance

Background and objectives

The Tempore Zeiterfassungsysteme GesmbH is a developer of time recording systems for the services companies who want to optimise the deployment of labour. Particularly in services companies, labour costs constitute a large part of total costs. Optimizing the usage of labour is thus an important factor for staying competitive.

The main target group of Tempore are cleaning companies. "In this sector," explains Martin Brunner, General Manager at Tempore, "the possibility of verifying the services provided to the clients is – besides the optimisation of labour costs – of outstanding importance. By employing the Tempore solution, cleaning companies are provided with reliable data to provide evidence for the work performed."

Tempore: mobile computing in the cleaning sector

In general, the Tempore solutions consist of four elements:

o **Contact points.** At each site served, a button the size of a coin is fixed, containing the ID of the object. At the start of work employees have to sign on and at the end to sign off by touching the button briefly with their mobile devices.

o **Mobile device.** The mobile device is a small box for recording and storing the sign-on and sign-off data and the respective object IDs. In an advanced version Tempore also offers the opportunity to state and save specific services provided such as basic cleaning, technical services etc.

o **Trip recorders.** Vehicles used by the fieldworkers are endowed with a trip recorder, which stores all the information necessary for a driver's logbook such as times of departure or arrival, distances etc. At the beginning and the end of each day the driver has to sign on or sign off through a contact with his/her mobile device. On the mobile device the driver can also determine whether he/she is using the vehicle for work or private reasons. When signing off at the end of the day all the information stored in the trip recorder is transferred to the mobile device.

o **Data synchronisation and analysis.** Once the fieldworkers are back in the office, the data stored on the mobile devices is transferred into a specific software programme. This software contains analysis tools to produce tables and charts as well as interfaces to the company's accounting and controlling systems.

Mr Brunner emphasises that the solution is not only appropriate for large companies. More than half of the Tempore users are companies with less than 50 employees. One of the customers is the Gerl Gebäudereinigung & Anlagenbetreuung GmbH. The facility management company, which is based in Vienna (Austria), has around 20 employees and the same number of vehicles in the field. Gerl installed the Tempore solution in 1999 to optimise the field service management, and the company uses nearly all components provided in the solution.

Asked about the resultant benefits, Mr Gerl, owner of the family business, considers "significant time savings" the most important one. Recording the information in the mobile solution only takes a few seconds; the extensive paperwork of filling in hour sheets and logbooks was replaced completely. Furthermore, he points out that in case of clients' complaints he can immediately check whether the fieldworkers have been on the site at the stipulated time.

He also regards the mobile solution as a comfortable tool to gain a better control over the processes in the field. The data recorded in the system provides him with a good basis for management work, such as the optimisation of routes and the deployment of employees. In addition, cases of absenteeism or the overuse of vehicles by employees for private purposes can be easily detected. Mr Gerl emphasises that the solution proved technically robust and simple to handle. The easy use of the mobile devices as well as simple features, such as a noise in the vehicle if the employee forgets to sign up, facilitated its adoption.

In general, according to Mr Brunner, General Manager, problems reported by Tempore clients are management problems rather than technical issues. Employees may feel completely monitored and thus reject the solution. This has already occurred in one large company, where the introduction of the Tempore solution was blocked by a veto of the works council.

Lessons learned

The mobile solution presented in this case study shows how fieldworkers in business services can be better integrated with the companies' IT systems by mobile solutions. It shows that the solution was specifically adapted to the needs of this specific sector. The success of the Tempore solution, in particular in the cleaning sector, is based on its simple usage – even low-skilled workers can easily work with it – and on focusing on problems with which customers are confronted. In the cleaning sector the main

problems, solved by Tempore, are limited control over the fieldworkers and the handling of clients' complaints. Solving these problems is a more important success factor than usage of the latest technology.

Furthermore, the example shows that challenges in implementing mobile solutions are management challenges rather than technical issues. Finding appropriate measures that ensure the acceptance of mobile solutions by employees is a major challenge in this context.

Sources and references

- Tempore website: www.tempore.com
- Interviews (conducted in May and June 2004):
    - Martin Brunner (General Manager at Tempore Zeiterfassungssysteme GesmbH)
    - Mr. Gerl (Owner and CEO of the Gerl Gebäudereinigung & Anlagenbetreuung GmbH)

Usage potentials and challenges

In general, companies can optimise their processes in three ways by employing mobile solutions: firstly, by a reduction of redundant process steps; secondly, by avoiding multiple manual data entry associated with media breaks and thirdly by the provision of time and location critical data.

Exhibit 2-9 shows how the interaction between company and fieldworkers takes place before and after process optimisation with mobile solutions. Obviously, after the deployment of mobile solutions a number of process steps become redundant. Data recorded in the field, for example, can be directly transferred into the company's computer systems. No additional manual data entry is needed. Vice versa, information needed by the mobile workforce can be directly accessed. This has been illustrated in the case study, where all data needed for controlling purposes is immediately available. No human interaction is needed for collecting hour sheets or transferring data into the main computer systems.

In conventional processes media breaks often generate errors. Manually recorded information may be unreadable, or typing errors may occur when data is transferred from sheets into the computer system. Mobile solutions help to avoid such errors and thus help to reduce costly revisions or inquiries due to errors. The case study shows that it is possible to completely eliminate manual data recording. Working, driving and project times are recorded precisely in a quality good enough for verification purposes in case of complaints.

Finally, mobile solutions combined with wireless remote access allow the provision of infor-mation when and where it is needed. The opportunity to access critical information from within the field increases the flexibility and allows for a prompt reaction to unforeseen changes or client wishes. An architect might, for example, be asked for a specific detail of a construction plan on the construction site. If he can access this information via his mobile solution, he can react immediately and at the same time increase customer service and save time.

Exhibit 2-9: Information workflow before and after optimisation by mobile solutions
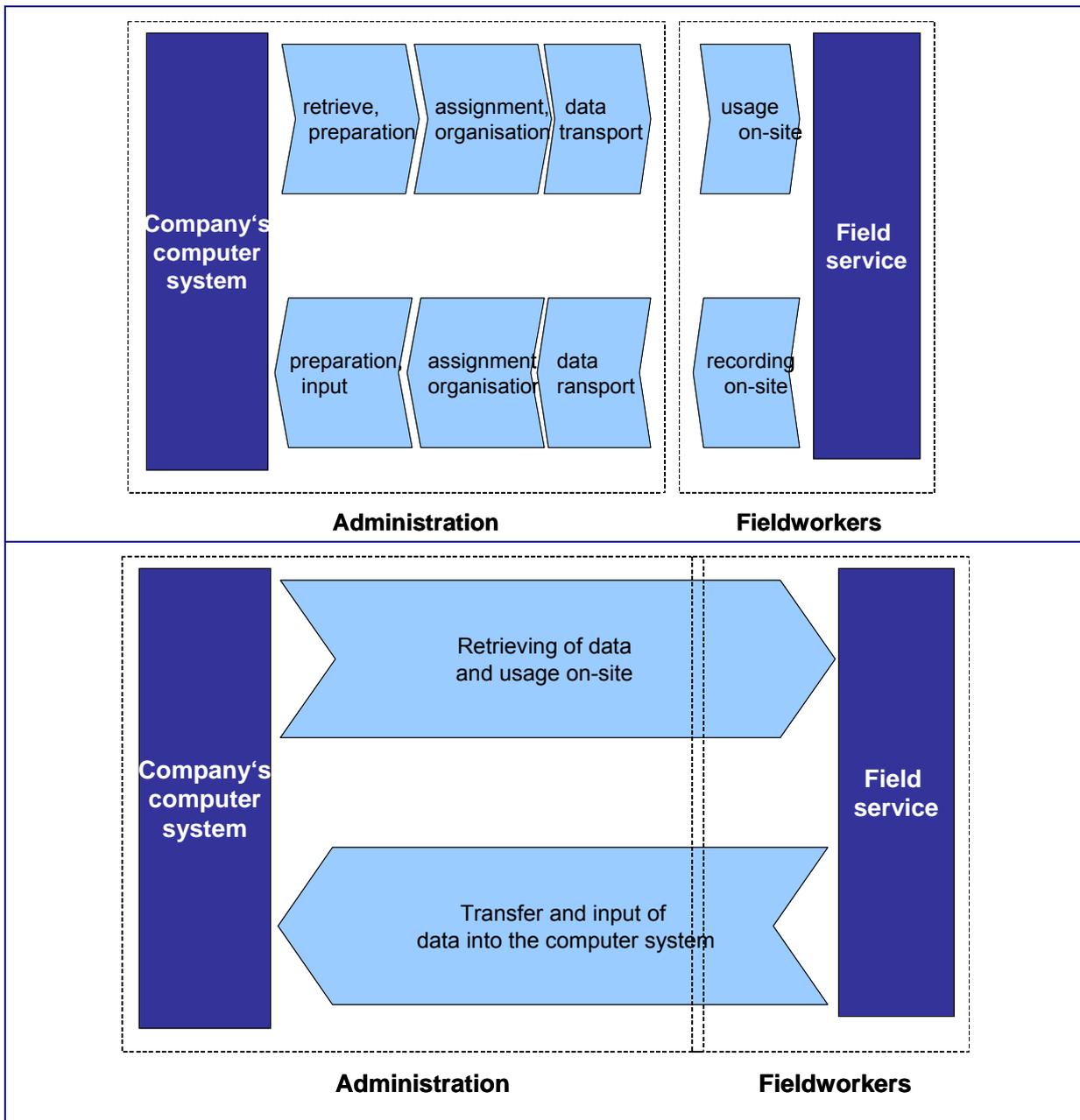
Source: Berlecon Research (2004)

Process optimisation by employing mobile solutions can result in a variety of benefits, which typically differ between solutions and companies. Typical benefits are:

- **an optimised deployment of personnel**, i.e. employees can concentrate on their core competencies;

- **direct and indirect cost savings**; e.g. by reducing costs for paper and printing or by optimising routes;

- **an acceleration of work processes**, which may result in shorter times for provision or invoicing of services and, eventually, cause positive effects on customer satisfaction or cash flow.

- **an improvement in data quality**, which decreases costs due to inquiries or revisions, and which might be crucial for verifying the performance for the customers;

- **an acceleration of the information flow**, which may result in an improved customer service, e.g. faster delivery or faster reaction to complaints.

As mentioned above, the introduction of a mobile solution is a typical IT project. Thus, challenges are similar to those of other IT-related projects, including the choice of appropriate technical components and integration tools or the provision of adequate security. Moreover, in the case study discussed here as well as in other case studies[6] it turned out that the most important challenges are management issues, in particular the acceptance of these solutions by fieldworkers.[7] This is rather typical for most IT projects.

When mobile solutions are introduced, employees might be afraid of losing personal freedom or social contacts. Making redundant certain process steps, for example, is often associated with making redundant meetings that ensure social contacts. In addition, fieldworkers might feel monitored and consider mobile solutions to be just an exploitation tool. Therefore, appropriate change management and early involvement of employees in the decision processes must ensure that fears associated with mobile solutions are abolished. Additional measures such as generating alternative social contact events or implementing a payment scheme that shares the benefits gained with employees can help.

Summary and Conclusion

This chapter has illustrated the potential of mobile solutions to optimise business processes. In particular, many business services enterprises may profit from mobile solutions due to the large amount of activities carried out in the field.

Moreover, it has been shown that mobile solutions are not just a future vision for a time when perfect mobile networks become available, but can be used today to optimize processes. It has also been shown that permanent wireless radio connections are not as central for successful solutions as often assumed. Mobile solutions are not simply a new mobile telecommunications solution, but are part of a company's IT infrastructure. As a consequence their introduction is a classical IT project, where the technical challenges have to be met, but where management challenges are even more important. Ensuring acceptance of the mobile solution by employees is often the most difficult task in their introduction.

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[6] See, for example, case studies in the report "Prozesse optimieren mit Mobile Solutions" by Berlecon Research, March 2004.

[7] Conclusions from case studies, however, should be interpreted carefully since they are based on small samples and individual instances.

2.4   Use of online technologies for e-learning

Introduction: What is e-learning

E-learning can be defined as internet-based education and training for professional reasons. Generally e-learning solutions consist of two parts: a technical solution that provides the foundations and the training programmes themselves, including associated organisation and pedagogical monitoring of the learning progress.

The central element of e-learning technologies is typically an internet-based platform, which may contain various elements, including:

- **Tools for the presentation of courses and learning materials** such as a "virtual classroom", which guides through the materials provided, or knowledge databases, which contain appropriate text documents as well as audio or video broadcasts.

- **Tools for interaction** such as e-mail systems, live chats or bulletin boards, which enable communication between participants and teachers as well as among the participants.

- **Administration tools**, e.g. for booking, invoicing or grading as well as

- **Tools for course production**, i.e., technical tools used to create the educational contents. Sometimes courses are produced by the trainers themselves, sometimes by specialised educational companies.

Ongoing e-learning courses are usually monitored by experts, who supervise the learning process by guiding through training. They are also available for answering questions and correcting participants' homework.

Benefits and costs of e-learning

E-learning combines essential advantages of face-to-face seminars and media-based training such as books, video, TV or conventional forms of computer-based training. Classical face-to-face training, for example, is interactive and provides ample opportunities to exchange knowledge with trainers as well as with other participants. In contrast, media-based learning methods, in particular new media, support the individual learning style and pace of trainees, allow for the use of multi-media applications, and can easily be kept up to date. In addition, travel and hotel expenses can be saved, since learning materials can be accessed from home or work. By using the internet's possibilities, e-learning is able to provide both interactivity and information exchange as in conventional face-to-face seminars, as well as flexible and comparatively cheap access to modern forms of media-based training.

Moreover, "blended learning" as a mix of face-to-face and online seminars provides an even better combination of the advantages of both types of learning. In online seminars participants can be provided with theoretical background and prepare face-to-face seminars or repeat what they have learned, whereas they find lively discussions and personal contacts in face-to-face seminars.

All the advantages of e-learning (summarised in Exhibit 2-10) are of particular importance for many knowledge-intensive business services enterprises. Since knowledge is a major input, acquiring and updating it is crucial for such enterprises. For example, there already exist a large number of advanced training programmes for tax advisors and lawyers. In addition, expenses associated with attending face-to-face seminars are essential cost factors in these

sub-sectors. Last but not least, knowledge-intensive services companies are usually well equipped with basic ICT infrastructure and are familiar with computers and the internet.

One major disadvantage of e-learning is that a full-fledged e-learning solution usually involves large set-up costs, which can easily be as high as a five or six digit sum.[8] This does not even include costs for learning material. These are higher the more sophisticated an e-learning solution is, and the more it makes use of the technical possibilities. Furthermore, setting up and running e-learning solutions requires both, technical competencies and pedagogical resources. Thus, firm-specific e-learning solutions for small and medium-sized companies are simply not economically feasible.

Exhibit 2-10: Main benefits and costs of e-learning

Main benefits	Costs
If compared to face to face seminars: • Cost savings (travel and hotel expenses) • Flexibility (Use independent of time and location) • Individual learning ("learning on demand") • Use of multi-media applications If compared to conventional media-based learning: • Interactivity (information exchange with teachers and other trainees)	• Large setup costs (technical platform) • Support of the technical solutions • Content (production of services) • Administration costs • Costs for supervising or/and sector experts

Source: *e-Business W@tch* (2004)

An alternative is obviously the use of shared resources, such as e-learning classes offered by specialised providers, the so-called "online academies". While good in theory and suitable for some learning tasks, these academies have their drawbacks, especially for knowledge-intensive business services enterprises.

To be profitable, the online academies have to offer courses that are of interest to many potential participants. Therefore, courses often focus on rather general topics such as management, IT and language skills. Training on very specific issues, which are often required by knowledge intensive enterprises, are rarely offered. While the target group for such training is comparatively small, the cost of creating these contents is high, as specialists on the subject are required.

High set-up costs and the unsatisfactory supply of appropriate courses by external providers might be important reasons why only 4% of knowledge-intensive business services enterprises use online technologies for e-learning (see Exhibit 2-11). This number roughly corresponds to the average of all sectors covered by the *e-Business W@tch.*

However, another factor might also be responsible: knowledge-intensive professional services are very similar to crafts when it comes to knowledge transfer. Rather than attending classes and using formalised training, juniors traditionally learn on the job from seniors by watching them and by participating in joint projects. Often the skills to be learned are difficult to codify, which makes formalized training difficult.

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[8] See "Wachstumsmarkt E-Learning", p. 31 ff., Berlecon Research (August 2001).

Exhibit 2-11: Use of online technologies for e-learning by industries
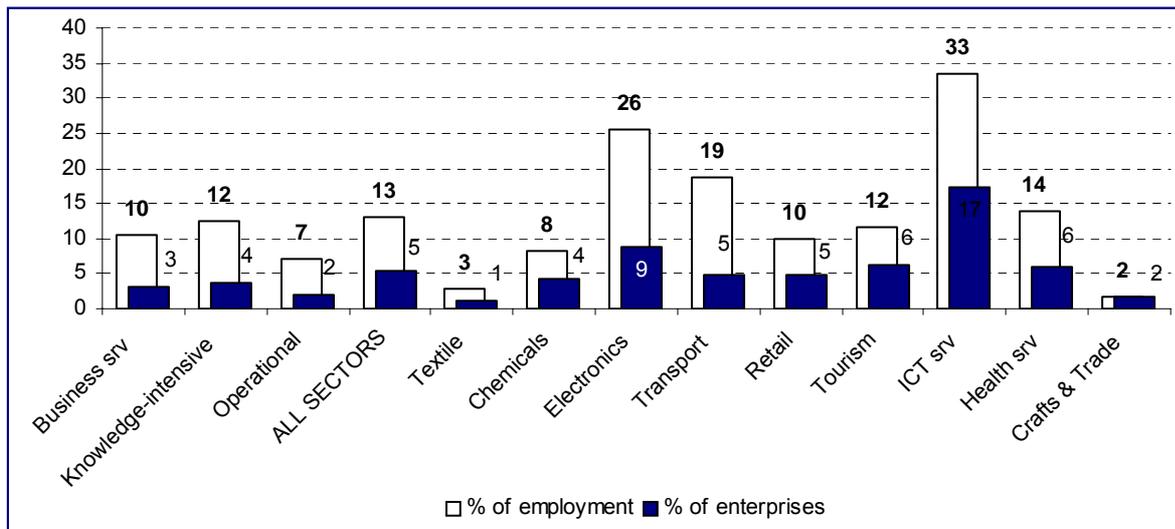
Base: all enterprises, EU-5 (DE, ES, FR, IT, UK). N= 4516 (All sectors), N = 312 (knowledge-intensive services), N = 189 (operational services), N ~ 500 for other sectors. "% of employment" means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W@tch* (2003/04)

In larger business services enterprises these problems seem to be less pronounced, as shown in Exhibit 2-12. Nearly one fifth of companies with more than 250 employees use e-learning compared with only 3% on average for this sector. Large enterprises can spread the high set-up costs for e-learning solutions over more employees than SMEs, which decreases the cost per capita. In addition, large companies tend to have more formalized internal processes, company ways of doing things and internal regulations – all these can be taught in e-learning courses. Finally, large companies generally tend to employ formal training – also for ICT skills – more often than small ones.[9]

Exhibit 2-12: Use of online technologies for e-learning in the business services sector (by size-bands)
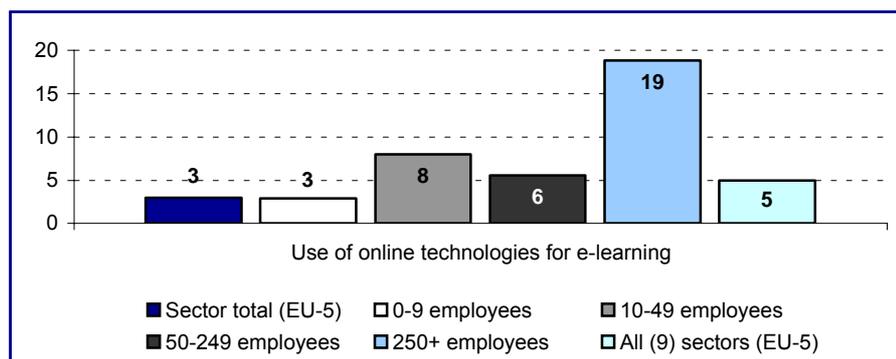
Base: all enterprises. EU-5 = DE, ES, FR, IT, UK. N=501 for EU-5 sector total.
Weighting: in % of enterprises. Reporting period: November 2003.

Source: *e-Business W@tch* (2003/04)

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[9] See *e-Business W@tch* (2003): Sector Impact Study on Business Services, No. 15-II, March 2003, p. 21f.

An alternative to sharing resources is the provision of e-learning courses by professional associations as described in the following case study. Professional associations are often well suited as providers of e-learning courses. They are well-known in their target group, which gives them an advantage in marketing. They may be able to subsidize e-learning courses by general membership fees. They know the problems of their target group well, and might even have special relationships with the necessary experts. All this leads to lower costs and enables them to offer courses for lower fees than a general-purpose online academy can do. Last but not least, as they often already offer face-to-face seminars to their members, e-learning is just a logical extension of their ongoing activities.

CASE STUDY: PROVIDING BENEFITS OF E-LEARNING TO SMEs

Abstract

This case study illustrates how professional associations may contribute to the use of e-learning technologies by SMEs. It also shows that – besides significant cost savings – there are further advantages that make the use of e-learning technologies attractive, in particular for tax consulting companies.

Case characteristics	
• Sector focus	Business Services
• Business focus	Small companies
• Geographical focus	Germany
Case objectives	
• E-learning	✳✳✳✳
• Knowledge Management	✳

✳ = some relevance for case; ✳✳✳✳ = high relevance

Background and objectives

Tax advisers seem to be well-suited for the use of e-learning technologies: they already use computers for their daily work and there is a high need for advanced training in this sector. However, the high costs for implementing and running e-learning solutions often make the use of e-learning technologies uneconomical – particularly for small and medium-sized tax consulting companies.

This was the background for the idea of providing e-learning services by the Bundes-steuerberaterkammer, a syndicate with about 50,000 associated tax consultancy companies, which employ about 500,000 people. The Bundessteuerberatungskammer offers, among other services, a large range of training programmes for members. They are typically provided as full-day programmes on a regional basis.

In 2001 the organisation agreed on the formation of the DWS Steuerberatung-Online GmbH as a subsidiary of the Bundessteuerberaterkammer with the objective of offering

e-learning programmes for members. The first e-learning programme by DWS-Online was launched in February 2002.

E-learning at DWS-Online: Offers and Benefits

The e-learning programme of DWS-Online consists of training units that cover current problems relevant for consultants and related to tax and economic law, as well as of applied courses in business administration. Basic courses on tax law and accounting are also available.

Each specific field is administered through a well-known expert. The lectures are presented via video streams assisted by parallel Power Point presentations. Further reading material and scripts can be downloaded. Participants have access to about 1-2 current courses per month as well as to previous seminar programmes. Within three years more than fifty courses have been produced. The participation fees are charged per company and depend on the number of employees.

According to the initiator and president of the advisory board at DWS-Online, Professor Sommer, the concept of blended learning is increasingly adopted. Some seminars are already produced in cooperation with providers of face-to-face seminars at local branches of the Bundessteuerberaterkammer. Thus, theoretical knowledge can be acquired online, enabling teachers to focus on the discussion of practice cases during the seminars.

About 500 small and medium-sized tax consulting companies already subscribe to DWS-Online. Thus, approximately 3,000 to 5,000 tax advisors and employees in tax consulting companies use the e-learning programme. According to Prof. Sommer there is increasing demand by large companies wishing to integrate the DWS-Online programme into their knowledge management systems.

Savings of travel or hotel costs are an obvious advantage of e-learning compared to face-to-face seminars. There are, however, also a number of other benefits, which are less easy to express in numbers. Prof. Sommer refers to the following four crucial advantages, which have been also frequently reported in customers' feedbacks.

o **Time independence**. Learning activities can be carried out in the evening or during the weekend. Thus, the tax consultants are not inhibited in their daily work routine.

o **Focus.** In their daily work tax consultants are used to focusing on the essentials. This working style is better supported by e-learning than by face-to-face seminars. Participants can concentrate on the specific problems in which they are interested.

o **Learning at one's own pace**. Participants of e-learning courses can take the time they need to assimilate learning material. By contrast, during seminars participants are often reluctant to ask several times about the same problem, even if they have not yet understood it.

o **Advanced learning culture in the companies**. Many participants pointed out that a new learning culture is developing in their companies. Compared to face-to-face seminars, e-learning allows for a prompt realisation of the knowledge acquired. Consultants therefore interact more often and exchange information more frequently than was the case when attending face-to-face seminars.

Lessons learned

The case study has demonstrated how professional organisations may contribute to the diffusion of e-business technologies among small and medium-sized companies. The provision of an e-learning programme by DWS-Online allows a large number of tax consulting companies to benefit from the advantages of e-learning. These advantages are, however, not only direct cost savings. E-learning also supports the individual working and learning style of the consultants and contributes to an advanced learning culture in the tax consulting companies.

Sources and references

- Presentation material of DWS-Online
- Interview with Prof. Sommer (Initiator and President of the advisory board at DWS-Online), May 2004
- Information on websites:
    - www.dws-online.de
    - www.verbaende.com/Management/online_weiterbildung.htm

Summary and Conclusions

The previous analysis and case study show that e-learning can provide large benefits, particularly for knowledge-intensive business services enterprises. However, large set-up costs make the installation of their own e-learning solutions too expensive for small and medium-sized enterprises. The provision of e-learning courses by professional associations, as presented in the case study, shows a way out of this problem. This seems – at first glance – in contrast to other researchers'[10] findings that companies have a preference for in-house training that is tailored to the specific needs of the company. However, e-learning programmes provided by external service providers also allow for training on-site. And secondly, professional organisations usually know about their clients' problems well and are thus able to tailor their programmes to the clients' specific needs.

One wonders, however, why such initiatives like that of DWS-Online are not more wide-spread. One reason for this might be the long decision processes within professional associations compared to privately owned companies. Convincing the majority of associates or of their representatives needs time as well as personal effort. Prof. Sommer, initiator of the DWS-Online project, started discussing the idea in 1999. It took him nearly three years before the first e-learning programme could be launched.

This chapter's analysis and in particular the case study have illustrated[11] the potential of professional associations as important enablers of e-business adoption by SMEs. This also applies to other e-business areas, such as e-procurement or e-commerce. However, e-business scepticism among the representatives of some professional organisations might keep them from accepting this role. Policy may help to overcome this scepticism by targeting educational campaigns towards professional associations and their representatives.

[10] See, for example, the CRIC (2004) study on "Innovation in Services"

[11] Conclusions from case studies should be interpreted carefully since they are based on individual instances.

2.5   E-business on the sell-side: The role of websites and e-marketplaces

Introduction: Challenges of business services on the sell-side

The use of e-business technologies for sell-side activities in the business services sector is weak if compared to other sectors covered by *e-Business W@tch*. In particular, the percentage of business services enterprises selling online is well below the average of all sectors surveyed (see Exhibit 2-13). As discussed in Section 2.1, this is particularly due to the specific nature of many business services, which are not well-suited for being sold online.

Exhibit 2-13: Companies selling online by sectors
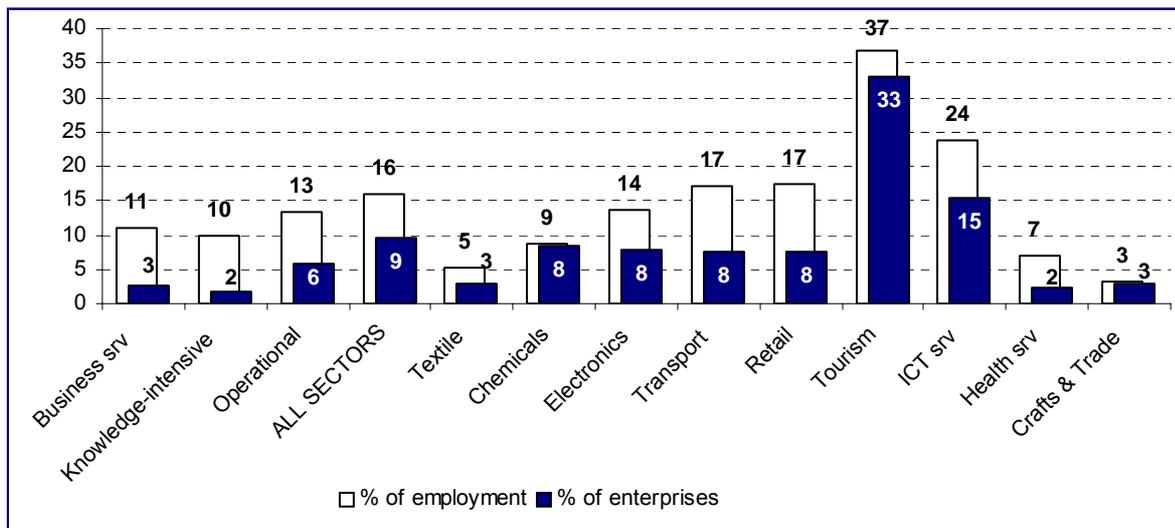
Base: all enterprises, EU-5 (DE, ES, FR, IT, UK). N= 4516 (All sectors), N = 312 (knowledge-intensive services), N = 189 (operational services), N ~ 500 for other sectors. "% of employment" means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W@tch* (2003/04)

There are mainly three critical issues with which business services' customers are faced when procuring business services:

- **Individual nature and low degree of standardisation.** Many business services are of an individual nature and thus difficult to standardise. This applies in particular for business services provided on a project basis such as consulting or engineering services. When procuring these types of services, customers have to describe their problems to be solved and cannot simply choose required items from a list or a catalogue.

- **Management of services.** The procurement of business services is often closely tied to the management of services activities. Since many business services are produced in close collaboration with the customer, and since the production is typically accompanied by frequent modifications of the original specifications, the procurement process does not stop once the contract is fixed. Therefore, managing the interaction and communication processes between services provider and customer is crucial.

- **Evaluating the qualification and trustworthiness of service providers.** Qualification and trustworthiness of service providers are crucial criteria for the choice of business services providers. Relationships between providers of business services and their

customers are usually sensitive. Many business services activities such as cleaning or security services are carried out at customers' premises, so that providers have access to the heart of the company. Moreover, the quality of services provided, in particular if knowledge-intensive services such as management or law consulting services are considered, significantly influences the success of the client's business.

Successful sell-side activities by business services enterprises try to address these issues. ICT and e-business technologies may be used to facilitate the enquiry process, to enhance collaboration with customers as well as to help them verify competencies and establish a trust relationship. Thus, the role and importance of websites and e-marketplaces will be discussed in the following chapters with respect to these aspects.

The role and importance of company websites

Company websites have become a common element in the overall marketing strategy of business services companies. About one third of business services enterprises have a website today, a value similar to the average of all sectors covered by *e-Business W@tch*. There are, however, large differences between different size classes. While for large companies having a website is practically a must (97% have one), there exists catch-up potential, particularly for micro enterprises: only 33% of them have a home on the internet, although the use of websites to support marketing and sales activities may particularly help small enterprises to overcome disadvantages of their company size.

Exhibit 2-14: Companies having a website by sectors
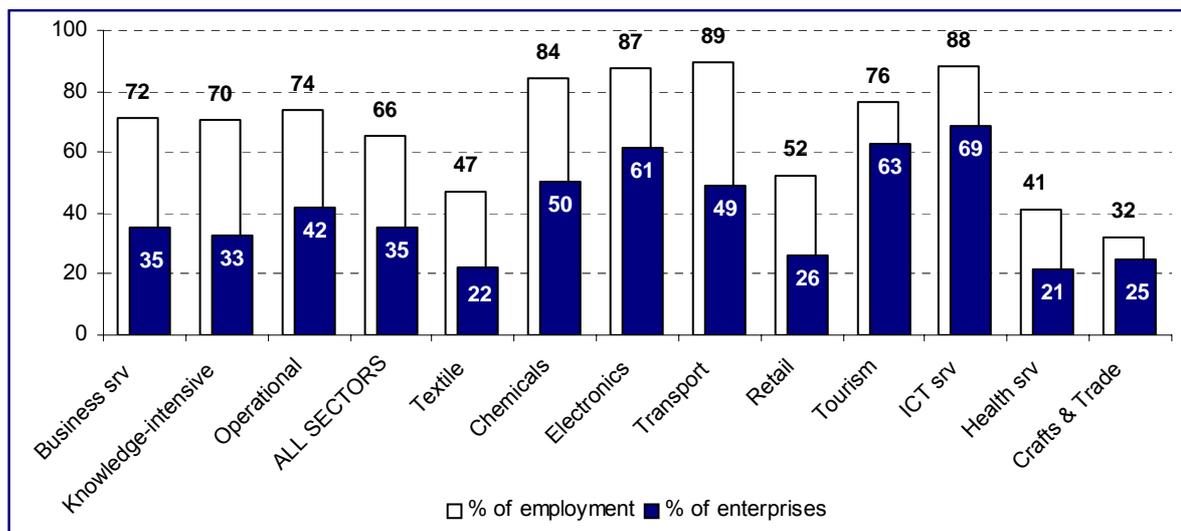
Base: all enterprises, EU-5 (DE, ES, FR, IT, UK). N= 4516 (All sectors), N = 312 (knowledge-intensive services), N = 189 (operational services), N ~ 500 for other sectors. "% of empl." means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W@tch* (2003/04)

Company websites provide – as a "virtual business card" – a low-cost opportunity to address a large audience. Such a large audience might allow smaller companies to specialise in niche services. By doing so they can differentiate themselves from their larger competitors. The internet has the additional advantage that the well-designed website of a small specialised company signals the same professionalism as a large company's site: "On the internet nobody knows that you are a dog."

In addition, websites allow the provision of customer-related services to meet the customer needs described above. The enquiry process, for example, may be facilitated by providing online tools that allow prospective customers to describe their problems and to request individual offers. By providing insight into contracts and files of ongoing projects via a (protected) website, greater transparency is achieved and the management of services is facilitated. The provision of articles, white papers or case studies on the website helps customers to understand the services offered as well as to evaluate the competencies of the services provider.

Exhibit 2-15: Companies having a website in the business services sector (by size-bands)
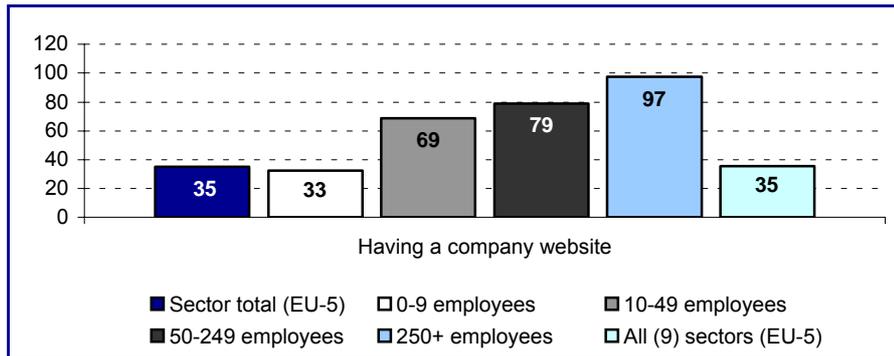
Base: all enterprises. EU-5 = DE, ES, FR, IT, UK. N=501 for EU-5 sector total.
Weighting: in % of enterprises. Reporting period: November 2003.

Source: e-Business W@tch (2003/04)

The use of websites as a "virtual business card" as well as for the provision of customer related services is illustrated in the following case study.

CASE STUDY: THE PROVISION OF CUSTOMER-RELATED SERVICES ON COMPANY WEBSITES

Abstract

This case study illustrates how websites may be used for the provision of customer-related services by SMEs. It is shown that customer-related services may be provided by both knowledge-intensive and operational business services.

Case characteristics	
• Sector focus	Business Services
• Business focus	SMEs
• Geographical focus	Germany
Case objectives	
• Support of marketing activities	✳✳✳✳
• Online Sales	✳
• Streamlining internal processes	✳✳

✳ = some relevance for case; ✳✳✳✳ = high relevance

Background and objectives

This case study illustrates the use of websites for the provision of customer-related services by two companies belonging to different sub-sectors of business services.

advo24 [www.advo24.de] is a "virtual lawyer's office" provided by esb Rechtsanwälte Strewe & Partner GbR, an association of 11 lawyers. The services of advo24 have been available since 1999. The main objective of the online service is to facilitate inquiry processes and to provide customers with a better insight into the workflows related to their case(s); all this at comparatively low costs and by meeting the high security standards required in this sector.

The HSG Heistermann-Gebäude-Service GmbH is a German provider of facility management services with about 80 employees. The extensive reconstruction of the company website [www.heistermann.de] in the year 2003 was driven by the aim to promote its image as a modern, fast-growing and significant player in this sector.

advo24: A virtual lawyer's office

This aim of advo24 – to provide a virtual lawyer's office – is reflected by the structure of the website. Just like in a real lawyer's office, there is a reception area, a conference room, a file archive and a library.

In the **reception area** – with a news section, contact data of the company and FAQs (frequently asked questions) – customers can become familiar with the services provided by advo24. In the **conference room** – the heart of advo24 – customers find an online form for describing their case and for inviting offers from the associated lawyers. Customers are, however, not obliged to use the online form. Correspondence with advo24 is also possible through other media such as telephone or mail service.

Neither are customers forced to fully register for the first request. Anonymous requests will be answered as well.

From the very first request, all data are recorded in a central database. Within 24 hours customers get an offer on their requests. If they reject the offer, all stored data will be deleted. If they accept, the relationship starts and customers are provided with more services such as the **file archive**, an area of the website where all files and correspondence related to the specific case are stored. Even mail correspondence will be scanned and stored in the file archive. In this way customers gain insights into all workflow processes related to their case.

An additional service is the **library** with professional articles about current legal problems.

After the mandate is finished, customers are asked to provide feedback and to evaluate the services by advo24. The feedback results are also published on the website.

According to the founder and project director of advo24, Stefan Ansgar Strewe, the online service contributes to an increase in customer satisfaction. Customers benefit from an easy enquiry process as well as from greater transparency. They can examine their files from any location with internet access, 24 hours per day without any delay. The increase of customer satisfaction is shown by the rising number of customers: from 2002 to 2003 their number increased by roughly 400%, and from 2003 to 2004 by another 50%. As the feedback statistics (published on the website) show, most of the customers that have used the service also plan to return.

Despite the success of advo24, Mr. Strewe emphasises that the success of its business is mainly based on the provision of high-quality consulting services, independent from the media via which they are provided. He concludes that "*the internet helps to facilitate workflows and to provide more transparency. It must, however, be considered as a tool to increase added value and not as a plaything.*"

Heistermann.de – Website for lifting the company image

The Heistermann Gebäude-Service GmbH (HSG) has had a company website since 1999. In its old form, however, the website was not particularly appropriate to communicate the image of the HSG as a modern, fast-growing and significant company in the facility management sector. So in 2003 Christian Heistermann, founder and CEO of HSG, decided to completely restructure the website by renewing the design and by implementing additional customer-related services such as a calculation tool and an online shop.

The online calculation tool helps to facilitate the enquiry process. Potential customers can use it to calculate the costs for different service variants with an accuracy of +/- 20%. Based on any calculation, they can directly ask for an individual offer from HSG through the internet. The Heistermann website also includes an extranet for existing customers and suppliers. Large customers, for example, gain insight into their contract data in this restricted section of the website, and suppliers can directly update their offers. Finally, Heistermann has set up an online shop for cleaning articles, a facility which is expected to become an additional revenue source.

Even though hiring web designers or scriptwriters is a significant cost factor, Mr Heistermann considers their help as essential for the success of the project. Otherwise, by setting up a do-it-yourself site, the risk of generating the opposite effects (e.g. by getting a negative image) would be significant.

He understands the company website to be a competitive factor. By providing customer-related services on the website he wants to realise a competitive advantage in a market environment with fierce competition and an increasing number of competitors. A professionally designed website may help to make the company better known among potential customers and to distinguish it from the large number of competitors. Thus, Mr. Heistermann is convinced that costs and effort for restructuring the website will pay out in the long run. He has already noticed a greater awareness of his company confirmed by client comments and by an increase in page views.

Lessons learned

Both business examples have illustrated various forms of providing customer-related services over a website.

The example of advo24 shows that customer-related services can be provided successfully on the web even in the very specific environment of law consulting.

The example of Heistermann shows that a website can positively influence a company's image. To achieve this objective, the website should be carefully planned and professionally designed, which could require more effort and costs than often assumed. However, the risk of creating a negative image by having a poor website could be even more costly.

Sources and references

- Information on websites:
  - Heistermann-Gebäude-Service GmbH: www.heistermann.de
  - advo24: www.advo24.de
- Interviews conducted in May and June 2004 with:
  - Christian Heistermann (Founder and CEO of Heistermann Gebäude-Services GmbH)
  - Stefan Ansgar Strewe (Founder and project director of advo24)

Role and importance of e-marketplaces

B2B e-marketplaces in the traditional sense, i.e. sites bringing together several buyers and several sellers for trading goods or services, are only of limited importance for the business services sector today, especially for selling their services. Cost savings resulting from stronger price competition or from reduced transaction costs – usually considered as main benefits provided by e-markets – are secondary for many business services' customers. As already discussed in the introductory section of this chapter, they have a stronger need for support in the services management as well as for the evaluation of competencies and trustworthiness of the service providers.

The decreasing importance of e-markets in the traditional sense is an overall trend, as the *e-Business W@tch* results demonstrate (see Exhibit 2-16). The participation in e-marketplaces – in the survey defined as "internet forum for the exchange of goods or services" – is less than 10% over all sectors surveyed. Looking at these numbers, it seems odd at first sight that the international directory eMarketservices.com still lists more than 900 e-marketplaces worldwide, about 35 of which specialise in services.

Exhibit 2-16: Participation in e-marketplaces by sectors
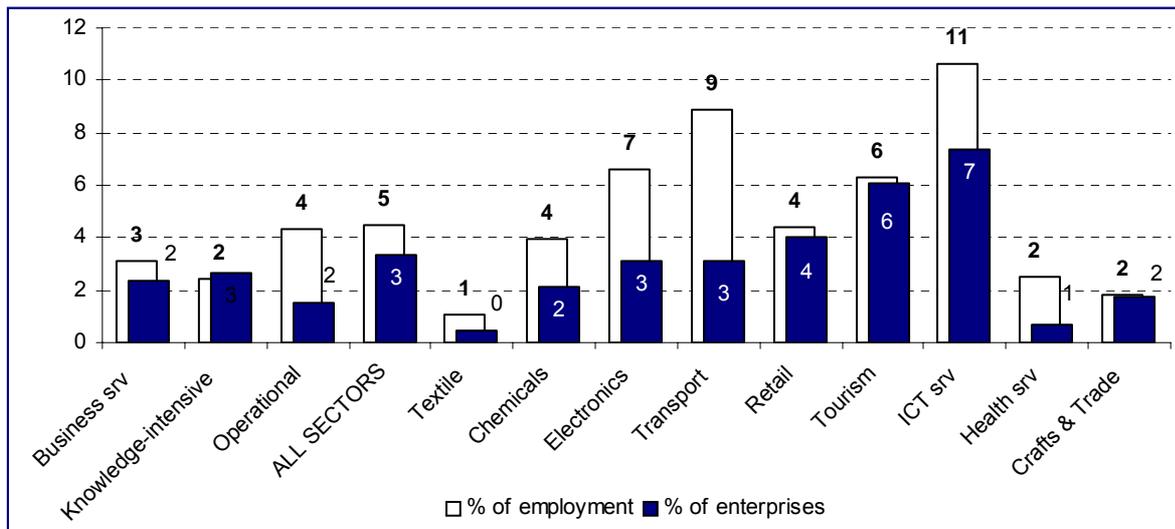
Base: all enterprises, EU-5 (DE, ES, FR, IT, UK). N= 4516 (All sectors), N = 312 (knowledge-intensive services), N = 189 (operational services), N ~ 500 for other sectors. "% of empl." means that data are weighted by employment ("enterprises comprising …% of employees in the sector"). Reporting period: March/November 2003.

Source: *e-Business W@tch* (2003/04)

However, taking a closer look at these 900 trading platforms reveals that many of them have adjusted their business model, and are no longer e-marketplaces in the traditional sense. Instead many of these platforms focus on the support of business processes. This goes along with an extension of the scope of services offered, which often extend beyond pure trading functions.

To reflect this changed reality in B2B e-commerce today, an expert group at the European Commission's DG Enterprise has proposed using the neutral term "Internet trading platform" instead of the term e-marketplace. These trading platforms include "all internet-based technical solutions that aim at facilitating the establishment of new trading relationships between companies or at supporting existing relationships".[12] The following case study describes the current landscape of internet trading platforms in the business services sector.

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[12] European Commission, Final report of the Expert Group on B2B trading platforms, July 2003, http://europe.eu.int/comm/enterprise/ict/policy/b2b/.

CASE STUDY: B2B E-MARKETPLACES IN THE BUSINESS SERVICES SECTOR

Abstract

This case study illustrates the current landscape and role of e-marketplaces in the business services sector. By analysing business models as well as the experiences of four different B2B internet trading platforms, we also learn about actual challenges and success factors for sell-side e-commerce activities in this sector.

Case characteristics	
• Sector focus	Business Services
• Business focus	B2B internet trading platforms
• Geographical focus	Slovakia, Germany, USA (global), Denmark / Sweden (Europe)
Case objectives	
• B2B e-commerce (e-marketplaces)	✳✳✳✳
• Marketing and customer-related services	✳✳✳
• Collaboration among employees	✳
• Managing customer / third-party relationships	✳✳✳

✳ = some relevance for case; ✳✳✳✳ = high relevance

Background and objectives

This case study comprises four different business cases of B2B trading platforms in the business services sector. They have in common that they started as "e-marketplaces" during the dotcom boom in the years 1999 to 2001. However the way in which challenges have been addressed, as well as the success of these strategies, differ significantly.

The Slovakian company Synergy-VCG, spol. s r.o, for example, was founded in 1999 with the objective of designing, developing, implementing and operating virtual business services for the Slovakian market. The activities by Synergy-VCG included different business activities such as the establishment of a directory for the advisory market and of an e-marketplace for paid advisory services in Slovakia. The business model of Synergy, however, has failed, and its activities were stopped in 2003 for economic reasons.

The German based e-marketplace workXL has been launched in 2000. It runs a tendering platform for various services offered by small and medium-sized companies. In order to achieve a sufficient footprint, the firm has established numerous cooperative projects with regional providers of B2B portals such as industry organisations or public institutions. Today, workXL offers its services over a network of 14 associated industry portals.

Elance considers its trading platform ElanceOnline to be the world's largest services marketplace. The US-based company launched its platform in 1999. The aim is to connect businesses worldwide with professionals and to support the entire services procurement process. Thus, in addition to pure trading functions, a variety of collaboration and management tools are provided.

LanguageWire was launched as an e-marketplace supporting the exchange of translation services in 1999. Today, LanguageWire considers itself a full-service globalisation company, offering innovative language solutions. The objective is to help companies find the best-qualified translators and to manage the relationship, rather than gaining the lowest price for translations services.

Synergy-VCG: Lessons from a failed marketplace model

"Virtual services as a pleasant reality" was the company slogan of Synergy-VCG to market the different services offered through the "Synergy Advisory Portal" between 2000 and 2003. The aim of the company was to establish virtual services for the consulting sector, such as

- **Synergy catalog**, a directory with information on companies offering advisory services in Slovakia and

- Synergy advisory **office**, an e-marketplace for paid advisory services where businesses with a need for advisory services could describe their problems and advisory firms could propose solutions and submit bids.

Synergy's services were supposed to be financed by registration fees and commissions to be paid by the advisory services providers. The service proposition, however, did not find the attention needed to build a successful business on it. After one and a half years only 150 advisory firms had been listed in the catalogue. The events on the e-marketplace amounted to only a few dozen. As a consequence, business activities were stopped at the end of 2003. The internet platform is still online, but in sleeping mode.

The founder and managing director of Synergy-VCG, Mr Mario Krsko, sees two groups of problems that contributed to the failure of his business. Firstly, the home market in Slovakia appears too small for the provision of virtual consulting services. It cannot provide the footprint necessary to make such offers viable. Secondly, industry-specific business and communication processes have not been reflected well enough by the platform.

Tendering procedures, for example, are according to Mr Krsko not very common in the procurement of advisory services in Slovakia. First of all, price transparency is not greatly appreciated by the providers of advisory services. Secondly, many customers of advisory services prefer to stick to already established relationships. The platform, however, was not designed to support existing relationships. In addition, it was not designed to distinguish between different types of services provided. Mr Krsko concludes that "*a generic procedure for all businesses does not work; the offers have to adopt industry-specific processes.*"

WorkXL: A network of service e-marketplaces

workXL started out as an e-marketplace providing tendering functions for commercial and public ordering in 2000. The model is quite simple: service providers will be listed for a fee in an industry directory, which distinguishes between the type of service

provided as well as the region. The categories supported include all kinds of services such as construction, transportation, writing, printing or translation services. Service providers can choose between three different packages containing different marketing opportunities as well as various additional services.

Registered suppliers can gain insight into public tenders published on the platform or use an e-mail service to stay informed about current offers. Potential buyers can use the directory (free of charge) to search for appropriate suppliers. In addition, they are provided with an online form to send requests for information, prices or quotes to specific suppliers listed in the directory.

In order to make such rather simple platform offers work, marketing activities are – similar to eBay or Amazon in the B2C environment – of outstanding importance. WorkXL, however, was not able to spend enormous sums on marketing. To solve this dilemma, workXL restructured its business model in 2001. Instead of trying to establish a standalone service, the workXL functionality has been made available to other B2B platforms such as regional B2B portals operated by local chambers of commerce or industry organisations. In this context, workXL operates the platform as an application service provider (ASP).

Today, the services by workXL can be accessed via 14 regional B2B portals. About 30,000 services providers are listed in more than 700 sector-specific categories of the directory. According to marketing manager Andrea Schleitz, more than 70% of suppliers are small enterprises with less than 20 employees. 20 to 40 actual requests per day are sent over the platform. In addition more than 400 public tenders are published daily. Most popular categories are according to Ms. Schleitz services that can be easily described, such as direct mailings, translation, printing or transport services.

ElanceOnline: Significant e-marketplace with global reach

The services procurement specialist Elance has two offers: a services procurement solution for the 2,000 largest companies world-wide and ElanceOnline, an internet-based services procurement platform for SMEs. With more than 10,000 registered suppliers (services professionals) and more than 100,000 visitors per week, Elance claims to run the world's largest services e-market.

According to the founder and vice president of Elance, Beerud Sheth, three factors have been crucial for the success of ElanceOnline:

1. **End-to-end support of the procurement process for business services.** The services procurement activities supported by ElanceOnline include both purchasing and management of services. Features available for services professionals include marketing tools to showcase their expertise such as the verification of credentials (licences, work experience, etc.) or past successful Elance engagements. Suppliers can also use collaboration tools and back-office assistance such as a private workspace or an e-mail communication archive. Buyers who want to set up large projects are supported by Elance Project Services, a team of professionals with expertise in project planning, sourcing and management.

2. **The global focus of the platform.** Services by ElanceOnline are available world-wide. About 50% of services professionals are from outside the US. Mr. Sheth estimates that around 25% of the services professionals are based in Europe. The international exchange is also facilitated by specific features of ElanceOnline, such

as a global billing and payment system that supports the use of various currencies for invoicing.

3. **The support of different methods of transaction:** The business model of ElanceOnline takes into account that the characteristics of services differ. Not every service is equally suited for each specific type of transaction. Therefore, ElanceOnline supports different types. For services that can be easily described and standardized, service suppliers can use the "buy-now" option, i.e. the ability to package and offer services through the platform at a fixed price. For more complex services, specific tendering functions are provided.

Mr Sheth in particular emphasises the role of the ElanceOnline feedback as a success factor. After a project is finished, buyers are asked to rate the service providers on various parameters such as quality of work, responsiveness or professionalism. The resulting information about past performance helps buyers to find the best-qualified suppliers. It also helps service providers to showcase their expertise and to build a reputation.

LanguageWire: Provider of global translation services

LanguageWire started as a typical e-marketplace for translation services by supporting tendering procedures on the internet-based platform. Very soon, however, the company became aware that this model does not meet actual customer needs in the translation services sector. Finding the cheapest supplier is not the main problem customers face when they search for translation services. The crucial issue, according to Anders Philipsen, marketing manager at LanguageWire, is rather .to find the translator best qualified for a specific task.

Therefore, the company has changed its business model to become a hybrid company: On the one side, LanguageWire operates an internet platform, which connects more than 2,400 translation professionals worldwide. It provides a large range of online tools, which support collaboration between translators and clients as well as the translators' work.

On the other side, the company offers extensive project management and consulting services to support customers in all aspects of translation activities. This involves a large amount of personal contact. All clients have their own project manager, who finds and assigns the best-qualified translators and monitors the translation process. All these services are supported by specific applications on the platform. For example, there is a knowledge management system, with information about clients, which could serve as guidelines for handling future assignments.

According to Mr Philipsen a key success factor for such a service is to assure customers of the translation service quality. To be considered as potential suppliers all translators have to submit certificates and have to pass tests set up by LanguageWire. According to Mr. Philipsen, one in twenty employees at LanguageWire is exclusively occupied with checking certificates and profiles submitted as well as with handling tests. Once a translator has proven his/her qualification, he/she can bid on all requests placed on the platform. Bidding, however, is not about the lowest price – which is fixed – but on the qualification for the respective project (a so-called "beauty contest").

Despite the considerable efforts required by the translators to be considered as serious suppliers, the cooperation with LanguageWire seems to be worthwhile. According to Mr. Philipsen, about 1,100 translation jobs per month are posted on LanguageWire,

and these are assigned to about 170 translators. For about 200 to 350 translators (typically freelancers) the earnings derived from LanguageWire constitute a significant share of their income. About 10 to 20 translators earn a living exclusively from jobs assigned by LanguageWire. For further 20 to 80 translators, projects obtained through LanguageWire make up the main share of their income.

Lessons learned

Using four examples, this case study has illustrated the current landscape of e-market-places in the business services sector as well as challenges crucial for the success of internet platforms in this sector. Lessons learned can be summarised as follows:

- **Not all services are equally suited for being traded on internet platforms.** Services that can be easily standardised and delivered over the internet, such as translation or writing services, are more likely to be traded on internet platforms. Such services turned out to be most popular at horizontal trading platforms like workXL or Elance. In addition to too high a complexity, the business culture in the particular sub-sector might inhibit willingness to trade services through e-marketplaces, as could be learned from the Synergy-VCG case.

- **Supporting the entire service procurement process as well as industry-specific communication and transaction forms is important.** This lesson is the essence of nearly all cases presented. One reason for the failure of Synergy-VCG was that processes in the specific advisory sectors were not entirely supported. For platform operators such as Elance or LanguageWire the provision of extensive process support services is a key success factor.

- **Ensuring qualification of suppliers is a key success factor for trading services over the internet.** The examples of ElanceOnline and LanguageWire have shown that in the business services sector finding the best-qualified suppliers is a task that can be handled by internet trading platforms. Platform services that allow suppliers to showcase their qualification and that support customers' search for qualified suppliers may become increasingly important. In particular SMEs might be able to benefit from the resulting lower search costs.

- **There is room for cooperation between public institutions and e-markets.** The case study of workXL has shown that both parties can benefit. The cooperation partners of workXL, often regional chambers of commerce, benefit from additional services provided on their industry portals. In addition, public tenders get more attention when published on all platforms associated with the workXL network. For workXL such cooperation is crucial to achieve the necessary footprint to be a viable service.

Sources and references

- Interviews conducted in May and June 2004 with:
    - Marian Krsko (Founder and Managing Director of Synergy-VCG)
    - Andrea Schütz (Marketing Manager at workXL)
    - Beruud Sheth (Founder and Vice President of Elance)
    - Anders Philipsen (Marketing Manager at LanguageWire)
- Information on websites:
    - eMarket Services: www.emarketservices.com
    - workXL: www.workXL.de

- o Elance: www.elance.com
- o LanguageWire: www.languagewire.com
- o Beep Knowledge System: www.beepknowledgesystem.org (Information on Synergy-VCG)

Various types of internet trading platforms were presented in the case-studies, illustrating the potential of B2B trading platforms to support business services enterprises[13]. Besides supporting marketing and establishing contact to new potential customers, they could solve problems crucial for the success of sell-side activities in the business services sector. For example, they can increase trust by installing feedback systems or by verifying the competencies of suppliers. Small and medium-sized enterprises, in particular, may gain from participation since they often do not have a well-known brand or reputation.

In addition, B2B trading platforms such as ElanceOnline make internet-based management and collaboration tools available. Implementing such tools, for example, as customer-related service on the company website is often too expensive, particularly for small enterprises. Last but not least, platform services such as LanguageWire allow small enterprises to extend their reach. Business service providers such as the translators using this platform are thus able to specialise and to differentiate from their competitors.

Summary and conclusion

Challenges and opportunities of e-business technologies, in particular of websites and e-marketplaces, to support sell-side activities in the business services sector have been discussed in this chapter. The low degree of standardisation and the selection of and cooperation with the right service providers turned out to be critical issues influencing the success of sell-side activities by business services enterprises.

As a "virtual business card", and as a basis for the provision of customer related services, websites turned out to be helpful tools to support marketing and sales activities in the business services sector. The same holds for internet trading platforms that – in contrast to traditional marketplaces – focus on the support of procurement processes by solving problems listed above. Both tools may particularly help SMEs to overcome disadvantages due to their company size.

The *e-Business W@tch* results on the use of websites have revealed that catch-up potential exists, particularly for micro enterprises (enterprises with less than 10 employees) in this sector. Increasing the use of websites particularly in companies of this size class remains a challenge for the overall adoption of e-business technologies in the business services sector.

The reported numbers on companies' participation in e-marketplaces are to a large extent based on the traditional definition of e-marketplaces. According to this definition e-markets are primarily trading sites bringing together several buyers and sellers and not services supporting integration or other B2B processes. It has been shown, however, that the more general concept of "B2B trading platforms" is better suited to reflect the reality of B2B activities – this applies also to business services.

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[13] Conclusions from case studies, however, should be interpreted carefully since they are based on small samples and individual instances.

3 Conclusions: Opportunities and challenges, drivers and barriers

Business services companies, particularly the knowledge-intensive ones, have a considerable impact on the performance of other industries. By supporting the introduction of innovations, the implementation of new business strategies and the management of change, they enhance the competitiveness of their clients. A strong and innovative business services sector is an important element of a well functioning economy.

For a policy aiming to enhance the overall innovativeness of the economy, it is therefore crucial to understand opportunities and problems related to e-business diffusion in this sector. The identification and discussion of opportunities and challenges as well as of drivers and barriers for e-business adoption is the objective of this chapter. It is based on the summary and conclusion of findings discussed in the previous sector study (May 2004) and from the analysis of sector-specific issues in Chapter 2 of the report at hand.

3.1 Opportunities and challenges

Exhibit 3-1: Overview of e-business opportunities and challenges in the business services sector

Opportunities	Challenges
• Easier access to information • E-learning to improve employee training and subsequently the skills level in the company • Facilitating collaboration among employees • Enhanced cooperation with third parties • Process optimisation by integration of fieldworkers in internal work processes • Support of marketing and sales activities and enhanced customer relationships • Improving quality and enhancing usability of services provided	Overall challenges driving the use of ICT and e-business such as: • Intensive price competition • Complexity and internationalisation of projects • Business process outsourcing and automation of services procurement Technical challenges due to the enhanced deployment of e-business technologies: • Integration of IT components • Security issues • Acquisition of technical knowledge Management challenges due to the enhanced deployment of e-business technologies: • Reorganisation of company workflows • Ensuring acceptance among employees • Involvement of external partners

Source: *e-Business W@tch* (2004)

3.1.1 Opportunities

Easier access to information

For business services enterprises, in particular for the knowledge-intensive service providers, access to information plays a key role. In this regard, the use of ICT and e-business has significant implications: the efficiency of accessing, compiling and distributing information is considerably enhanced. The internet puts any sort of information at the fingertips of

connected knowledge workers. This applies to information necessary for producing the services (e.g. legal documents, research) as well as to new business opportunities (e.g. through tender databases). Accordingly, the proportion of companies that have access to the internet and that use the web is well above the average of all sectors. The same holds for the quality of internet connections: modern DSL connections are more widespread in the business services sector than in other sectors surveyed by *e-Business W@tch*.

Micro and small companies in particular can make use of these advantages. Before the internet existed, such information had to be collected expensively (e.g. in libraries or archives) or was only available to larger companies, which could distribute the costs of using expensive databases over many projects and workers. Thus, the barriers to market entry are lower now than previously since the minimum size necessary to produce high-quality services is lower than it used to be.

Improving the efficiency of training

E-Learning tools that provide access to online courses can significantly improve the efficiency of advanced training for employees and can also save costs, e.g. by cutting back travel expenses for attending face-to-face seminars. In particular, knowledge-intensive business services enterprises with a high need for advanced training programs such as tax or law consulting companies may benefit from the introduction of e-learning solutions.

Despite its potential, the use of e-learning in this sector is not yet widespread. Particularly small enterprises do not have the necessary resources for setting up and running e-learning courses. The analysis and case study in Section 2.4, however, has demonstrated that SMEs may also use e-learning offered by specialised service providers through internet based platforms instead of setting up their own solutions.

Facilitating collaboration among employees

The use of online technologies to facilitate collaboration among employees is a further key issue in this sector. According to the survey results, one of the most important effects of ICT and e-business usage is an increased efficiency of internal work processes. More than half of the companies using the internet report a positive impact on collaboration and knowledge exchange between employees as well as on the availability of information for management and controlling.

These advantages particularly apply to knowledge-intensive sub-sectors, where the exchange of information is a key priority for the provision of services. More than 40% of knowledge-intensive business services companies (compared to about 19% of operational business services providers) use online technologies to share documents and to perform collaborative work. This number is also well above the average of other sectors covered by *e-Business W@tch*. Increased efficiencies already result from using basic technologies. Accordingly, almost all knowledge-intensive business services companies (more than 93%) use e-mails.

Enhancing third-party relationships

The coordination and management of third-party relationships, for instance with suppliers, sub-contractors or end-users, is an important part of business services. ICT and e-business applications today play a major role in managing these rather complex relationships and in enhancing efficiencies in the communication process. As the costs of exchanging documents and information decrease, and at the same time special software helps to manage larger and

more distributed projects and relationships, the costs for cooperating with others also decrease. Thus, cooperation between business services companies is significantly facilitated.

Accordingly, the use of online technologies to exchange documents with suppliers and customers is the most often used application on the buy- and sell-side in this sector. In addition, the use of online technologies for exchanging documents with customers is well above the EU-5 average for all sectors covered. Supporting the management of third party relationships is also a main success factor for operators of e-markets in this sector. Successful trading platforms such as ElanceOnline or LanguageWire not only support the tendering process, but also provide their customers with a broad range of collaboration tools.

Supporting marketing and sales activities

Even though many business services do not lend themselves well to being sold online, ICT and e-business technologies provide various opportunities to support the marketing and sales processes. Websites, for example, may serve as "virtual business cards" and as a basis for the provision of customer-related services. Thus, the market reach can be enhanced and customer relationships intensified. In particular small companies may use websites as low-cost tools to overcome disadvantages due to their size.

The potential of selling business services on traditional e-markets is limited in this sector. Mainly business services companies offering rather standardized services and services that can be delivered via the internet can benefit from such platforms. As illustrated in Section 2.5, however, there exist a number of B2B trading platforms that go beyond matching and support entire procurement or sales processes of their clients, which can also be suitable for business services. These platforms also help to overcome trust barriers by establishing feedback systems or by checking the qualification of suppliers. Such platforms can help SMEs in particular to establish new business relationships on the internet.

Integration of fieldworkers

Since business services are to a large extent provided at the customers' premises, the integration of mobile workers into the service company's computer systems is of significant relevance for the efficiency of internal processes. In Section 2.3 it has been shown that mobile solutions can help to streamline processes, e.g. by making process steps redundant or by reducing errors by establishing a fully electronic flow of information. Mobile solutions can already be used today, as there is no need for companies to wait for a more widespread availability of UMTS or other new telecommunication standards. Moreover, even small business services enterprises may gain from the introduction of mobile solutions, as has been illustrated in the case study.

Change of products and services provided

In many sub-sectors of business services, the services themselves change, e.g. by being provided digitally or by having digital components added to them. Such changes can lead to cost savings for the service companies' customers, but it can also increase the service quality and thus increase the value of the service to the customers. As a result, a strong link between innovative use of ICT and competitiveness exists in the business services sector. This is also supported by the survey results: more than one third of those business services enterprises using the internet reported positive effects from using e-business on product innovation.

Public opinion polling companies, for example, have developed internet surveys as a new service for their clients. Security firms have created online video surveillance systems, which

offer clients a significantly higher quality of service. Companies from the exhibition and conference sector are offering a large set of online services in addition to their offline business such as online directories, the download of conference material or virtual exhibitions.

3.1.2 Challenges

Business challenges enforce deployment of ICT and e-business solutions

As shown in Chapter 1, business services enterprises are confronted with a number of business challenges, which enforce the deployment and professional use of ICT and e-business technologies. The enlargement of the European Union in May 2004 has reinforced long-term trends in this sector, such as the intensive price competition or the increasing complexity and internationalisation of projects. As another driver, clients of business services companies increasingly adopt new IT trends such as business process outsourcing (BPO) and the automation of services procurement processes. Business services enterprises can use ICT and e-business tools in various ways to counteract the increasing price competition. Firstly, e-business applications such as mobile solutions help to streamline processes and thus reduce costs. Secondly, the sophisticated use of sell-side online tools such as websites or the participation in B2B trading platforms helps to increase the market reach and thus facilitates specialisation. Thirdly, the internet facilitates the search for information and thus helps find skilled experts and less expensive labour.

ICT-related trends pose increasingly higher demands on the technical capabilities of business services enterprises. Business process outsourcing or the automation of services procurement, for example, require that business services enterprises integrate their sell-side applications with the respective systems of the clients, otherwise they risk losing these clients. Business services companies should, therefore, acquire the necessary knowledge and capabilities. However, those companies that are still rather unfamiliar with ICT might have a disadvantage in this learning process.

Technical challenges from the introduction of e-business technologies

Introducing e-business technologies in business services enterprises brings its own challenges with it. Specific technical challenges are integrating new IT components and finding appropriate security solutions.

With an increasing number of applications, the integration of IT components becomes more and more important. This is also revealed by the results of *e-Business W@tch*: nearly one quarter (23%) of business services enterprises consider the integration of IT components through web services as important for the future.[14] Many companies have started to introduce single best-of-breed solutions to solve different problems, e.g. for accounting, sales or project management. This way, many different applications have been installed, often with their own database, and are not able to communicate seamlessly with each other. This leads to duplicate sets of data as well as to difficulties for managing integrated processes that require information from different systems.

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[14] Web services as an integration tool standardize the communication interfaces of different applications and thus facilitate the integration of different IT components.

Within business services a typical problem is the coordination of contact information. Valuable contact information about prospective customers might be documented in individual databases of consultants, in the project management system, in the billing system or in the customer relationship management system. Ideally, however, this information should be kept solely at a central location so that everybody can access it when needed.

Solving security issues is important due to the sensitivity of data and customer relationships. It is therefore a major requirement for the introduction of new e-business technologies. More than 40% of those business services enterprises that do not consider e-business as important for their company are of this opinion because of security concerns. This is particularly the case for knowledge-intensive business services enterprises such as tax or management consulting companies, which have to deal with confidential information. The use of online tools for managing third party relationships, for example, requires secure connections via the internet. Likewise mobile solutions have to ensure that applications installed on mobile devices will only be accessible by authorized employees.

Technologies designed to solve integration and security problems are increasingly available on the market. However, the business services sector is dominated by micro and small enterprises, which often do not have the resources to learn about, to install and to manage sophisticated integration and security solutions. Therefore overcoming these technical challenges is not easy for them.

Management challenges from the introduction of e-business technologies

Management challenges from the introduction of e-business technologies are at least as important as technical ones. The adoption of new technologies often requires a redesign of company workflows. Mobile solutions to integrate fieldworkers, for example, are often associated with the elimination of entire process steps (see section 2.3). Such significant changes are associated with the reallocation of employees or, at least, of working time. In addition several human control mechanisms disappear and must be replaced by adequate new ones. All these changes have to be implemented by management.

The main management challenge, however, is to ensure the acceptance of the new technologies by employees. The introduction of new technologies typically causes fears: employees might be afraid of being exploited, being monitored or losing social contacts. Measures to counteract these fears – often summarized as change management – are key factors for the successful introduction of e-business technologies. Such measures could be training to familiarize employees with the new technologies or financial incentives for using the new solutions.

Relations to external parties might also be affected by the adoption of e-business technologies, for example when traditional communication channels such as telephone and meetings are replaced by new ones such as e-mail and collaboration platforms. Such changes require the joint design and agreement of new information flows. In addition, the company's management has to decide whether and how digital correspondence will be filed within the company.

3.2   E-business drivers and barriers

Exhibit 3-2: Overview of e-business enablers and barriers in the business services sector

Enablers	Barriers
Enabling factors on the supply side: • Increasing quality of ICT infrastructure at stable or decreasing prices • Technologies increasingly suited to the needs of SMEs • Rising awareness of the importance of services management by IT services sector Enabling factors on the demand side: • Strongly developed basic ICT infrastructure • Increasing knowledge about use and benefits of e-business technologies	Barriers related to small company size: • Missing technologies for SMEs • Missing knowledge by SMEs (plus bad experiences) Further barriers: • Low degree of standardisation • Sensitive customer relationships

Source: *e-Business W @tch* (2004)

Enablers: factors that drive e-business adoption

Enabling factors driving the adoption of e-business technologies in the business services sector can be found on the supply side as well as on the demand side. On the supply side, basic ICT infrastructure, like computers or internet connections, is becoming increasingly powerful while prices remain stable or even fall. An example of this trend is the success story of DSL as a powerful internet access technology available at comparatively low prices. More than half of business services enterprises in the knowledge-intensive sub-sectors already use this technology. The availability of a modern internet access technology is also the basis for the introduction of more sophisticated ICT applications such as video conferencing to support the management of third-party relationships.

In addition, an increasing number of ICT solutions suitable for SMEs is becoming available. Many software manufacturers and ICT service providers have modified their solutions in order to win small and medium-sized companies. Thus, an increasing number of new solutions that show a proven ROI and do not require extensive resources are entering the market. Enterprises in the business services sector in particular, which is dominated by small enterprises, may benefit from this trend.

Moreover, manufacturers of ERP (Enterprise Resource Planning) solutions and other enterprise applications have discovered the management of service production as an interesting market. They have introduced new applications that are targeted at the specific needs of business services sub-sectors such as facility management or consulting. Installing such pre-configured solutions tends to be cheaper than modifying a general-purpose solution to specific demands.

On the demand side, business services enterprises seem to be well prepared for a further adoption of e-business technologies. They are well equipped with basic ICT infrastructure: nearly all companies use computers and have access to the internet. E-mail is used in nine out of ten enterprises in this sector. This provides the technical basis for the introduction of further e-business applications. At this stage, many enterprises are experienced in the use of e-business technologies. Five years after the dotcom-boom many e-business projects have been completed (see also case studies in Section 2), and companies in the business services sector know better which solutions work and which don't.

Companies have now become more realistic about the true potential of e-business technologies. Myths from the dotcom era have disappeared, which should benefit the adoption of practical e-business technologies with a realistic return on investment.

Barriers: factors that inhibit e-business diffusion

The main barrier inhibiting the e-business diffusion in this sector is the small company size of most of the enterprises. This has been confirmed by the results of *e-Business W@tch*. More than 40% of business services enterprises do not see e-business playing an important role for their company, and more than two thirds of these companies said that this was due to the small size of their companies.

There are different underlying reasons for these results. First of all, many sophisticated e-business applications are indeed targeted at larger companies and are too big and complex for smaller ones. Software manufacturers have only recently started to target the SME market more aggressively. ASP (Application Services Providing) solutions might be easier to use for SMEs, but these have developed more slowly than originally anticipated. Secondly, the term e-business might have been misunderstood by the companies surveyed. They might not subsume all activities that support business processes by ICT under this heading. If these activities have been beneficial, their omission when asked about an assessment of e-business technologies would bias the answers towards a more pessimistic outcome.

Furthermore, missing knowledge about the actual benefits and challenges might be a further barrier for e-business adoption in this sector. Particularly small companies often do not have significant ICT knowledge and will therefore miss opportunities and will not be able to use available technologies to the best extent possible.

e-Business scepticism might have been accelerated by bad experiences with the use of e-business technologies. In particular, during the dotcom boom the adoption of ICT and e-business technologies was often considered as a "must". Questions such as how to integrate them into the processes of the company were often considered as secondary. Many small companies, for example, have started to implement a website, but did not know how to support and accelerate its use by (potential) customers. Thus firms had to bear the costs of design and support of the website but did not perceive much benefit.

Moreover, particularly for knowledge-intensive business services enterprises, barriers are the non-standard outputs as well as sensitive customer relationships. The low degree of standardisation inhibits online offers through the company websites or e-marketplaces. And a certain degree of standardisation is required for various customer-related services such as, for example, online calculation tools on the company website. Even the uses of simple tendering procedures on internet trading platforms are more appropriate for offering services that are easy to standardise. Operators such as workXL or Elance, for example, confirmed that the most popular platform offers are services with a high degree of standardisation such as translation or mailing services.

In some knowledge-intensive sub-sectors such as tax or law consulting the quality of services provided may crucially influence the success of the clients' business. Consequently, customer relationships in these sub-sectors are rather sensitive. Having and showing a reputation as a serious, competent and trustworthy service provider turns out to be a key success-factor, which makes companies rather conservative – in using e-business technologies as well. Even though there are already best practice examples such as advo24 (see case study on websites in Section 2.5), the widespread use of e-business technologies in these sub-sectors will most likely need more time.

4   Policy challenges

4.1   General considerations on electronic business as a policy challenge

Independent from this particular sector report, there are a number of areas where electronic business developments could coincide with European or national policies. These are in particular the following areas:

1.   The regulatory environment for telecommunication services
2.   Innovation and technology policy
3.   Education and labour market policy
4.   The role model of the public sector
5.   Other policy areas which have possibly some overlap with electronic business developments (e.g. patenting law, trade regulations)

This section discusses on a general level how these policy areas relate to ICT use by enterprise and for electronic business development. It points out some concrete policy challenges as well as some caveats with respect to possible policy actions, based on evidence delivered by the *e-Business W@tch*. The focus is on the first four issues mentioned above, which are the most obvious and direct ones, placed at the intersection of technological development, policy and regulatory environment.

4.1.1   Regulation of telecommunication services

The regulatory environment for telecommunication services and goods provides an important basis for the provision of ICT access in the European Union, both for enterprises and private households. A highly developed telecommunication infrastructure with a high quality of service, easy access for anyone and anywhere, and affordable prices are preconditions for a fast take-off of Internet usage and – at least at this stage of the development – for e-business technologies.

A good example to support this argument is the diffusion of internet access in European households. It became evident as early as the mid 1990s that Internet access would eventually become a standard in most households. However, it was only after the massive tariff reductions for online connections (compared to voice telephony), which were introduced mostly after the liberalisation of the EU telecommunication markets in 1998, that the Internet access boom started in most countries. The situation is now similar with regard to broadband deployment. While many households have connected to the Internet, the diffusion of broadband connections differs considerably between regions and depending on socio-economic configurations of households. While basic Internet access has become affordable for a vast majority of citizens in Europe, the costs for broadband Internet access remain rather high and constitute a main barrier for adoption.

The European Commission is currently working on the timely and effective transition to the new EU framework for electronic communications networks and services, which was adopted by the Parliament and the Council in March 2002. The new framework is designed to ensure that ex ante regulation is applied only where the level of competition in defined markets is considered to be insufficient on the basis of an analysis consistent with competition law methodology. Newly emerging markets also should in principle be free from regulation. Other

key aspects of the framework are designed to support this approach to regulation and promotion of consumers' interests. The new framework is an important initiative that will support the continued growth and development of the electronic communications sector in Europe.[15]

A favourable regulatory environment is not in itself a sufficient condition for a high usage of the Internet and associated technologies and services within a region, but it is definitely an enabler and an important requirement. Positive examples of such framework conditions within Europe are the Nordic countries, Ireland, Italy, Austria, Estonia, and the UK. Empirically, these examples show that countries with a modern, competitive telecommunication infrastructure are usually among the early adopters of ICT. This facilitates the development of internationally competitive enterprises in the provision of ICT products and services, along with competitive advantages for enterprises using these products and services.

However, not all countries in the European Union have yet realised a regulatory environment that enables them to develop a modern, competitive telecommunication infrastructure. In some of the new Member States, the regulatory environment of telecommunication markets as well as the de facto market structure is still underdeveloped in terms of competition and offer compared to the markets in the former Member States of 2003.[16] Also, six of the former Member States currently face Court action for failing to put in place the new rules on electronic communications. Thus, regulatory challenges are not unique to the new Member States.

It will certainly constitute an important challenge and objective for policy – both on the European level as well as in the concerned Member States – to ensure that the take-up process in these markets occurs as rapidly as possible and that the new regulatory framework will be fully implemented soon. This requires constant monitoring of market developments and, possibly, further improvements in the regulation of telecommunication services in the respective Member States.

4.1.2   Innovation and technology policy

Technology adoption at the firm level

The adoption of e-business technologies at the firm level is essentially an investment decision which carries risk for the business owners and is subject to a multitude of relevant framework conditions. These include the sector and type of business, the market structure, endowment and resources of the firm, the behaviour of competitors, suppliers and customers, and the availability of alternative technologies to carry out a specific task. Risk means in this context that the payoff of the investment into technology adoption is uncertain at the time of the investment decision. However, it is also possible that individually optimal investment decisions lead to sub-optimal outcomes on the aggregate level (market failure).

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[15]   http://europa.eu.int/information_society/topics/ecomm/all_about/implementation_enforcement/index_en.htm;
Further information on the current initiatives of the European Commission can be found at
http://europa.eu.int/information_society/topics/ecomm/index_en.htm

[16]   This assessment was confirmed by speakers from the new Member States at the e-Business W@tch Workshop on "e-Business in Acceding Countries", Brussels, 10 December 2003.

According to normative economic theory, policy intervention would be desirable in both circumstances: in the case of market failure and in the case of sub-optimal investment decisions by firms due to unequal access to information. Such an asymmetric situation could occur, for example, if a lot of complex information has to be gathered and evaluated, which is very time consuming and therefore costly. In such a case, it could be argued that large enterprises with strong economies of scale have an incentive to gather this information, while small companies do not. This could result in sub-optimal investment decisions in SMEs because of a lack of relevant information. The objective of policy action in such a case could be to improve the availability of objective and reliable information about the technologies for all market players.

Other possible sources of market failure are the company-external network effects of a new technology. For example, if the value of a new technology to the user strongly depends on the number of other users, the individual decision to adopt will be largely influenced by expectations about the behaviour of others. In such a situation, market failure can theoretically occur as a result of either of two equilibriums: one in which everyone adopts, one in which nobody adopts. It could be that one of the two equilibriums dominates the other in terms of social welfare (for example, everyone could be better off with the adoption scenario), but that the less favourable one develops in the market. This would also indicate a need for policy action.

A good example for such a situation is general purpose ICT, such as Internet access (and preferably via broadband connections). In this case, there is broad agreement that every country would be better off with a high connectivity of private households and enterprises. In countries where the development of infrastructures and user access is still in its infancy, government support or subsidies to build up infrastructures could be worthwhile policy actions. On the other hand, in countries with highly developed infrastructures, such policy action to "steer the market towards the better equilibrium" will no longer be needed.

However, due to the complexity of the investment decision framework of each enterprise, it is extremely difficult (if not impossible) to identify actual over- or under-investments in many technologies. This applies, in particular, to technologies that are highly specific in their purpose and do not exhibit strong firm external network effects. For example, the lower diffusion of some e-business technologies among SMEs (such as ERP or SCM systems) compared to large enterprises does not necessarily imply that SME under-invest in these tools. There can be many good reasons for these adoption patterns, as pointed out in many of the sector studies. A small company, for example, which is a supplier of specific parts to a small number of other firms, will hardly gain significant advantages from a CRM system.

Eventually, it is barely possible to determine precisely why certain firms do not adopt some of these technologies, while others do. One possible reason for non-adoption of a specific e-business technology is that firms may have a more efficient way to carry out specific tasks, or that more profitable investment opportunities exist (for instance investments in new products or services which are not based on Internet-technology, or hiring a new employee instead of investing in technology).

Consequently, there are good reasons to argue that policy should be cautious about promoting the adoption of non-general purpose technologies in enterprises, especially if there is no unambiguous indication of a market failure.

Economic consequences of technology adoption

ICT based applications for doing business electronically, if successfully implemented and used, can be viewed as a change in the production technology of a firm. From an economic

perspective, this constitutes a change in the cost-function of the firm or the creation of a new supply function, if the technology is used to create a new product or service. Hence, e-business technology adoption coincides with innovation.

Evidence from the *e-Business W@tch* suggests that Internet-based technologies are currently an important enabler of innovation in the European economy. However, many firms also improve their internal processes or create new products or services for their customers without making use of Internet-technologies, or by using online technologies only peripherally. Innovation research shows that all sorts of innovations, whether based on the Internet or not, are in the majority of cases positively associated with business success. Thus, it is not yet proven that investments into Internet-based innovations yield superior returns to other kinds of innovation.

This means that policy should focus on stimulating a climate that is generally favourable to investments in innovation, and not exclusively on Internet-based technology investments. An important aspect of such a policy is to reduce the ambiguity and risk faced by potential investors. This involves the entire environment in which enterprises operate, not only the uncertainty about specific investment opportunities such as the adoption of e-business technologies.

As a means of conducting innovation, technology adoption has the potential to influence other important economic measures, such as the optimal size of the firm, the optimal market structure (degree of industry concentration, large vs. small firms), the optimal degree of vertical integration, productivity, competitiveness, and changes in the demand for different types of skilled labour. The degree to which technologies actually influence these measures is hard to estimate a priori. Even empirical ex-post analysis whether and to what degree e-business has exercised an "impact" on these parameters is extremely difficult, since it is hardly possible to filter the impact of ICTs and e-business from other factors and externalities.

However, it is acknowledged that the impact of electronic business implementation can be substantial. Policy-makers are therefore well advised to closely observe these technology-induced changes in order to identify areas which may require policy action. For example, if certain technologies tend to reinforce the development toward monopolistic market structures in an industry, policy should consider interventions. In this context, the sectoral analysis of the *e-Business W@tch* and the resulting empirical evidence has already revealed important insights and provides a sound basis for further analysis of specific aspects.

4.1.3   Education and labour market policy

Information and communication technologies need complementary inputs in the form of specialised human capital in order to function properly and to generate economic value. Consequently, an economy that lacks a high level of general education, computer and Internet literacy, and an adequate supply of highly skilled specialists will not be able to realise the full potential of ICTs. In addition, the rapid technological progress in computer, network and software technologies leads to a fast depreciation of ICT skills and hence requires a constant updating of skills, which eventually leads to the "life-long learning" paradigm.

Since basic schooling and higher education systems are to a large extent public responsibilities in the European Union, this could be a starting point for policy-makers to develop and induce the implementation of educational schemes that are favourable for an

economy that is "tech-savvy" and innovative. In addition, the realisation of life long learning in the Member States could probably be supported by a further deployment of public-private partnerships. A substantial involvement of the private sector will be necessary to create sufficient opportunities for employees to participate in specific training and in a general continuing education, irrespectively of their age and work experience.

The surveys of the *e-Business W@tch* confirm that firm-size and training offers for employees are interrelated. Large enterprises are able to provide more and better training opportunities for their employees than SMEs.[17] Economies of scale in large enterprises play an important role in this context. A company with many employees can more easily delegate responsibilities to other workers. Temporary replacement of employees participating in training by co-workers, which severely inhibits formalised training programmes in SMEs (possibly more than the mere direct costs for training programmes), is therefore less complicated in large than in small firms. Public-private partnerships might eventually help to narrow this gap between SMEs and large enterprises. Such initiatives concern, for example, training initiatives carried out in cooperation with e-business technology providers, training organisations and the public sector, or SME networks that cooperate in offering training to their members.

4.1.4   Role model of the public sector

The active use of ICT, the Internet, and e-business applications in the public sector can spur an active use of these technologies in the private sector, for example via the creation of positive network externalities.

An excellent example is the case of Estonia. The Estonian government played a very active role in promoting the development and usage of Internet infrastructures. For example, the Estonian Parliament approved a proposal in February 2000 to guarantee Internet access to each of its citizens[18] and immediately began to take action. The Government kick-started a high-tech drive by setting up 500 public computer centres across the country. The centres were established in cities, but also in tiny Baltic Sea islands and converted barns in desolate forests.[19] The government also makes very active use of Internet technologies itself, playing the role of an "e-champion" in Estonia. For example, public agencies use the Internet for procurement purposes and parliamentary meetings are often organized as virtual conferences, saving substantial time and travel costs. Today, Estonia is the ICT leader amongst Eastern European countries, ranking 25th out of 102 countries (ahead of Italy, Spain, Portugal, and Greece) in the Global Information Technology Report by the World Economic Forum (2002/03 edition). The active use of ICT in the public sector helped Estonia to leapfrog other countries that are still wedded to older technologies, and has also helped to make the public sector in Estonia efficient and slim.

Similarly, the public sector in the European Union and its Member States can help to support the development and usage of ICT in the private sector by making intensive use of the new technologies itself. This includes active use in providing services to its "customers" (citizens

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[17]   cf. CVTS2; Statistisches Bundesamt, 2002

[18]   ebusinessforum, 2001

[19]   Wired News, 21. April 2003

and businesses), but also the internal use for improving and optimising their own routines (Government-to-Government).

Government institutions with their experience in handling public calls can also serve as a role model by increasingly using public electronic tendering procedures, provided that the main objective of this technology can be achieved: realising cost advantages for all parties involved. For governments, cost advantages can stem from cheaper procurement prices or from more efficient procurement processes. A cost advantage for companies that participate in public tendering procedures via the Internet will mainly result from reduced efforts, both for getting access to calls and for submitting tenders.

However, a caveat in this context is that the technical development and implementation of electronic tendering procedures in the public sector could – to some extent – compete with already existing, functioning solutions and services from the private sector. This requires an assessment on a case-by-case basis, carefully weighing the gains and losses of either way from an aggregate economic perspective.

4.2   Policy challenges at the sectoral level

Following these considerations (and caveats) on the policy relevance of electronic business developments in general, the question is which instruments policy could use to intervene in this development, in order to counteract undesirable outcomes on the aggregate level. This chapter presents a synthesis of policy challenges which have been identified in the first series of Sector Impact Studies (published in May 2004) on 10 sectors. As this analysis bears close links to ongoing policy initiatives of the Commission's DG Enterprise, the introduction offers a brief summary of the current approach to e-business policies. The analysis attempts to map the challenges identified by the *e-Business W@tch* into the policy framework that was proposed in the Communication from the European Commission "Adapting e-business policies in a changing environment: The lessons of the Go Digital initiative and the challenges ahead".[20]

4.2.1   Taking stock of existing policies – a record of recent EU initiatives

In this context, the Enterprise Directorate General has already undertaken a substantial effort to systematize "e-business policies" with respect to their objectives, targets and contents. The "Go Digital" campaign can be regarded as the starting point and initial background of this activity, and in particular the Communication "Helping SMEs to Go Digital",[21] in which the Commission identified benchmarking as a major step to further promote the use of ICT and the Internet by SMEs.

The Communication defined a policy-oriented objective for this benchmarking activity, namely "to describe and benchmark national and regional policies and instruments for the promotion of e-business for SMEs". The objective was to help Member States and regions to assess their policies and identify best policy practices. This policy benchmarking initiative received widespread political support and attention from all relevant stakeholders.

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[20]   COM(2003) 148 final
[21]   COM(2001) 136 final

In February 2002, the first Synthesis Report "Benchmarking National and Regional E-Business Policies" was issued. It summarised the process, which was envisaged at that time, in five steps:

1. Getting a clear picture about the adoption of ICT and e-business by SMEs

2. Benchmarking policy initiatives in favour of helping SMEs

3. Presenting the results of this benchmarking initiative, including examples of good practices in policy-making, to a broader audience of policy-makers in a high-level conference

4. Identifying a number of quantitative targets to be achieved by national and/or European policies

5. Monitoring the implementation of the policy targets

Since the publication of this report, the first four steps of this process have been addressed and mostly successfully accomplished. The e-Business Surveys carried out by the *e-Business W@tch* and Eurostat since 2002, and the analysis of issues in the Sector Studies of the *e-Business W@tch*, have largely contributed to a substantial improvement of the picture about the adoption of ICT and e-business by SMEs.

Step 2 has been addressed in special reports, including the above mentioned Synthesis Report and, in particular, the Final Report of the e-Business Policy Group on Benchmarking national and regional e-business policies for SMEs from June 2002. This report provides an impressive documentation of different types of policies that have been applied in the Member States of the European Union. The report structures the policies into four categories:

Exhibit 4-1: E-business policy objectives and categories identified in the EU in 2002

Main policy objective / category	Examples of good practice
Framework policies	• UK: UK online for business • Greece: the e-business forum • Norway: the VeRDI programme • NL: The Netherlands Go Digital Programme • Spain: Catalunya on the Net
E-business awareness raising and training	• Finland: eAskel • UK/Scotland: First Steps Workshop Series • Austria: ECaustria ("Let's e-biz") • Sweden: SVEA • Germany: the B-on-line project
Promoting SME support networks	• Ireland – The PRISM II initiative • Germany – Network of e-business centres • The Netherlands – 'Digikringen' • UK – Opportunity Wales
Promotion of Internet platforms for SMEs	• Denmark - Rakat in Roskilde • Ireland – Empower • Spain – The ARTEPYME II • France – project Achat-ville • UK - Local Shops On Line

Source: European Commission, DG Enterprise: Final report on benchmarking national and regional e-business policies for SMEs by the e-Business Policy Group (June 2002)

The collection and case-study like description of these policies in the quoted report can be regarded as a breakthrough in systematizing European e-business policies. In parallel to this initiative of gathering evidence on e-business policies, and as a vehicle for so doing, DG Enterprise had started to develop a network of stakeholders and policy intermediaries to advance the processes of policy-making and policy coordination across Member States. This led to the founding of the e-BSN (e-Business Support Network), which had its first European workshop in January 2003 in Athens, in the context of the Greek EU presidency.

This e-BSN Workshop was the kick-off event for the fourth step of the master plan, as the title of the event already indicates: "Workshop on quantitative targets for e-business policies". From the beginning, it was a courageous move by DG Enterprise to promote target oriented policy-making processes, considering the substantial amount of debate and scepticism whether and to what extent policy objectives can be translated into concrete (measurable) targets or not. This debate has not yet ebbed away, but has rather increased, in particular in the context of the eEurope benchmarking which shows all the difficulties and challenges that are inevitably connected with this approach. The first challenge is that the stakeholders involved have to agree on targets and on adequate indicators to measure the achievement of a target. The second challenge is whether the required data can be collected in a comparable and reliable way, and – an important aspect with all data collection activities – with a reasonable economic effort.

In this context, it must be considered that most e-business policies are implemented on a regional or national level. Therefore, when it comes to setting targets for these policies, the European Commission can only act as a promoter and catalyst, but cannot enforce any targets for regional or national governments. To stimulate the debate in this area, and as "food for thought", the Commission issued in March 2003 the Communication "Adapting e-business policies in a changing environment: The lessons of the Go Digital initiative and the challenges ahead" (COM(2003) 148 final). This Communication, which proposed a further elaborated framework for e-business policies, attracted considerable attention and was praised for its clarity and practical applicability. The European Economic and Social Committee, for example, believes that "the European Commission has produced an excellent proposal document on the need for Member States and regions to re-orient e-business policies" and welcomed "the highly practical approach".[22]

The Communication outlines a framework for SME specific e-business policies that consists of three main challenges and nine objectives related to them (three each, see Exhibit 4-2). Continuing from this framework, the latest workshops of the e-Business Support Network at Paris (October 2003), Budapest (February 2004) and Barcelona (May 2004) have advanced the debate on appropriate targets for each of these objectives. Moreover, DG Enterprise has recently launched an evaluation study that will benchmark 10 selected e-business policies with respect to measurable targets and criteria.

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[22] Opinion of the European Economic and Social Committee on [COM(2003) 148 final], published in the Official Journal of the European Union, 2004 / C 108 / 02, 30 April 2004, p. 23-28

Exhibit 4-2: A framework for SME specific e-business policies
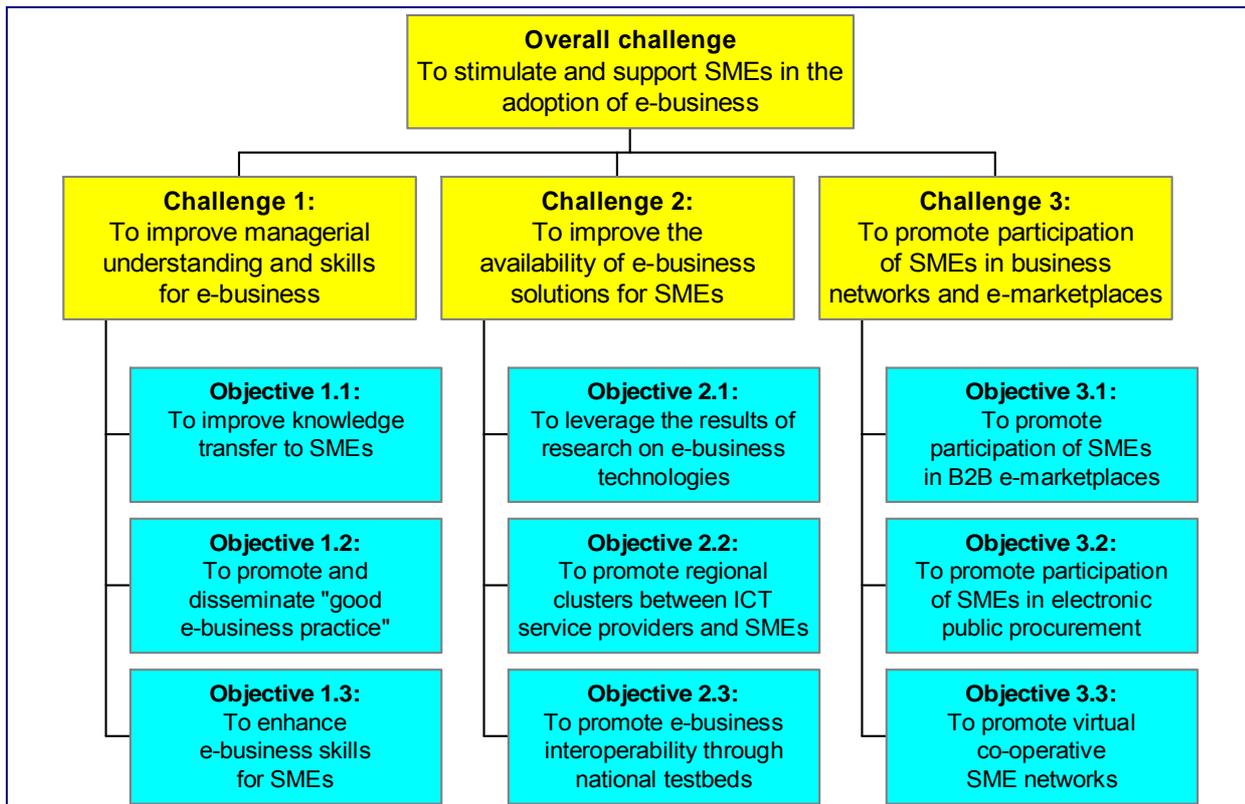
Source: European Commission [COM(2003) 148 final]

Based on these achievements, the Commission has now gradually moved to start the fifth step of the process according to the "Road Map" outlined above: monitoring the implementation of the policy targets. In this context, the recently established European e-business policies portal on the Internet (www.e-bsn.org) will play an important role. The portal already provides a valuable overview of e-business policies and best practices across the European Union, with links to related resources.

4.2.2   Synthesis of policy challenges identified by the *e-Business W@tch*

The policy challenges which the *e-Business W@tch* has identified and outlined in the previous series of Sector Impact Studies (May 2004) on a sector-by-sector bases can – to a large extent – be mapped into the framework developed by the EC Communication [COM(2003) 148 final] as shown above. This can be expected, as the framework covers a broad range of policies. In this chapter, an effort is undertaken to synthesize the various sectoral policy challenges by integrating similar issues under one heading, and to provide an overview of the relative importance of various policy areas by sector.

As a first overview, Exhibit 4-3 indicates the relevance of the three main e-business policy challenges identified in the EC Communication on adapting e-business policies. The mapping has been made from the perspective of small and medium-sized enterprises, and not from the large firms' point of view. This appears to be consistent as the EU framework for e-business policies has been developed specifically for SME policies, and as the conclusions on policy challenges drawn by the *e-Business W@tch* in its Sector Studies also concentrate on the SMEs aspect.

Exhibit 4-3: Relevance of SME e-business policy objectives by sector

	To improve managerial understanding and skills for e-business among SMEs	To improve the availability of e-business solutions for SMEs	To promote participation of SMEs in business networks and e-marketplaces	Other measures (sector specific)
Textile industries	●●	●●●	●●	●
Chemical industries	●●	●●	●	○
Electronics	●●	●●●	●●	●
Transport equipment	●●●	●	●	●
Craft and trade	●●●	●●	●●●	●●●
Retail	●●●	●●	●●	●●
Tourism	●●●	●●	●●●	●
ICT services	●	●●	●●	●●
Business services	●●●	●●	●	●
Health services	●●●	●●	●●	●●●
○ = not relevant; ● = some relevance; ●● = rather relevant; ●●● = highly relevant				

Source: *e-Business W@tch* (2004)

In summary, the following conclusions can be drawn from this overview, backed up by the analysis and recommendations from the various Sector Studies presented by the *e-Business W@tch*:

- The policy objective "to improve the availability of e-business solutions for SMEs" has certainly some relevance for all sectors. It holds true for all sectors that the major (positive) impacts of e-business stem from rather powerful applications that are mainly adapted to the needs of large enterprises. However, the objective to stimulate the development of useful applications for small business is even more relevant for manufacturing than for service sectors, as handling the supply chain of physical materials is a major application area for systems under consideration.

- The policy objective "to improve managerial understanding and skills for e-business among SMEs", which includes awareness raising activities, appears to be most important for those sectors which are dominated by a huge number of micro (and very small) enterprises, for example the textile industries and in the craft and trade sectors. There are two main arguments in support of this position. Firstly, small enterprises cannot employ specialised staff in the way larger enterprises do. A company of five people cannot afford a (full time) "IT manager", but needs to assign related tasks to one of the five. Therefore, some public support mechanisms can be justified. Secondly, it has frequently been experienced that the adherence to traditional, established business cultures can be very strong among small firms, particularly in craft and trade sectors. This can be an impediment to introducing new, IT based processes.

- A certain reluctance among many small firms to abandon traditional business cultures and models, even if for the benefit of doing things more efficiently, can also be an obstacle to cooperation among themselves. In some sectors, however, new ways of cooperation among SMEs have already proved to be successful and necessary, for

example in the furniture and in the textile industries.[23] Policy measures to stimulate the participation of SMEs in business networks are therefore particularly relevant in sectors where such cooperation appears to have the highest potential.

The grouping of policy challenges identified in the *e-Business W@tch* Sector Studies into the three objectives of the EC framework is a useful but rather crude simplification. Furthermore, the framework does not indicate whether the challenges must or should rather be dealt with at a European, national or regional level. Some policy approaches require a coordination of the different governmental levels, for example RTD oriented policies, while others need to be implemented predominantly on a specific geographical level. The support of standardisation developments, for example, which has been recommended in several of the reports, can best be addressed by the European Commission or European industry groups, if at all (considering that standardisation is mostly a voluntary process). Awareness-raising targeted to SMEs, on the other hand, can only be effectively achieved through intermediaries on the regional level.

Exhibit 4-4 groups suggestions for possible policy initiatives that were raised in the Sector Studies according to the underlying objective and the policy level (from regional to European) on which the suggested action should probably be addressed, although many of the policies could of course be addressed at different levels. Thus, it can be considered as an extension of the SME e-business policy framework proposed by the EC.

It is not possible in the context of the *e-Business W@tch* to develop blueprints for how to implement these policies. Clearly, the methods and instruments used will depend on the local situation, the administrative structures, and the sectors to which activities are mainly targeted. However, such blueprints are available, as it must be assumed that most of the policy measures proposed have already been implemented in some place in the EU, whether successfully or not. It is the main objective of the e-Business Support Network (www.e-bsn.org) that these blueprints are communicated and exchanged across the EU, together with the lessons learned. Replication of successful policies, while avoiding making the same mistakes again, is the goal of this exercise.

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[23]   There are many examples for ICT supported SME collaboration; see, for example, case study on Textilebusiness.it in the Sector Study on the Textile Industries, No. 01-II, August 2004.

Exhibit 4-4: Suggestions for policy actions mapped by objectives and level

Objective \ Level	EU	National	Regional
To improve managerial understanding and skills for e-business among SMEs	Make it easier for small firms to participate in European RTD programmes Monitor the demand for ICT skills among enterprises, possibly at sectoral level (at least on the levels of manufacturing and services), develop profiles of skills required and assess the supply situation for those skills	Public administration as a role model in using electronic procurement Promote IT and e-business training opportunities, for instance by providing incentives for participation Develop high-quality ICT education programmes (at university level) Collect good e-business practice examples to overcome mental/cultural reservations among SMEs	Encourage ICT training, especially among micro and small enterprises and in the new Member States Improve access of SMEs to information about e-business Improve the knowledge transfer between competence centres, business development agencies and SMEs Educate SMEs about opportunities of using simple Internet applications Encourage links between small firms and schools & universities to give them access to young skilled people Change the investment attitude of SMEs from saving costs by not investing to building value by investing in ICT
To improve the availability of e-business solutions for SMEs	Encourage the adoption of e-standards In particular: promote the standardisation of computer languages used for more advanced forms of supply chain management	Provide financial incentives for innovation through e-business adoption Develop web-based resources and interactive modules for e-business support in craft and trade Stimulate the customisation of e-business tools as part of innovation policies	Stimulate cooperative projects involving software providers and regional SMEs
To promote participation of SMEs in business networks and e-marketplaces	Monitor the evolution of marketplaces / internet trading platforms and the related business practices	Monitor the participation of SMEs on electronic marketplaces	Support the establishment of local e-commerce platforms for SMEs, particularly in retail Emphasis on and support for the development of network relations among SMEs and customers
Other measures	Monitor market concentration in online retail markets	Reduce legal barriers to craft business market entry (e.g. in DE, LUX), particularly in ICT-related crafts Create the regulatory environment for a competitive telecommunication market, so that companies have access to services at low prices	Educate SMEs about regulatory changes and consequences of the EU enlargement

Source: *e-Business W@tch* (2004)

4.3   Sector specific challenges

Policy challenges regarding the use of ICT in business-related services

In December 2003 the European Commission published a communication on the competitiveness of business-related services (ICT services, financial services, business services and trade) and their contribution to the performance of European enterprises. This Communication emphasised the importance of business-related services for the European economy. They constitute the sector with the largest share of employees and also the most dynamic one in terms of establishments of companies. But business-related services also have a strong influence on the performance of other sectors. They show strong links to manufacturing as well as to the public sector. The attractiveness of manufactured products often essentially depends on the services provided for their production.[24]

There exists, however, a number of challenges for policy-makers to provide measures in support of the competitiveness of business-related services. With respect to the use of ICT in this sector the Commission has formulated the following challenge:

> *"There is a need to further stimulate the integration of ICT into business processes. Of special importance for business-related services is improvement of framework conditions for digital delivery in terms of sufficient network infrastructure, establishment of messaging standards, quality certification and accreditation."*
>
> *Source: COM (2003) 747 final, Communication on: "The competitiveness of business-related services and their contribution to the performance of European Enterprises", p.20, Commission of the European Communities, Brussels, 4.12.2003.*

In the report at hand the use and importance of ICT and e-business technologies in the business services sector has been analysed as one segment of the more broadly defined business-related services. It is worth noting that the e-*Business W@tch* results have revealed some significant differences in the adoption of ICT and e-business among the sectors ICT services, business services and retail. Moreover, there are significant differences even within the business services sector itself, e.g. between knowledge-intensive and operational services (see Section 2.2). Therefore, a first conclusion from our analysis is that policy measures should, as much as possible, be adjusted for the needs of specific sub-sectors.

> *Recommendation 1: Policy measures should consider the specific needs of sub-sectors.*

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[24] See COM (2003) 747 final, Communication on: "The competitiveness of business-related services and their contribution to the performance of European Enterprises", Commission of the European Communities, Brussels, 4.12.2003.

Customer relationships, for example, are more sensitive in some knowledge-intensive sub-sectors (e.g. law and tax consultancies) than in most operational services such as in cleaning or security services. Therefore, security requirements for the adoption of e-business technologies to support customer relationships are different. Such aspects should be taken into account when the use of technologies for the support of sell-side activities is concerned.

In the policy challenge cited above the importance of framework conditions for digital delivery of services is emphasized. In fact, supporting sell-side activities by e-business technologies constitutes a challenge for the business services sector. The proportion of companies selling goods or services online is only marginal and below the average of all sectors covered by the *e-Business W @tch.*

However, most of the business services are not well suited to being actually "sold" online. They differ inherently from products as they are often produced individually for each customer and at the customers' premises. Therefore, the potential of ICT and e-business technologies to enforce actual online sales in these sub-sectors is fairly low.

But there exists a large range of ICT and e-business applications suitable to support other sell-side activities than the actual selling process, e.g. marketing, the reduction of trust barriers or collaboration in the service production process. In Section 2.5 it has been shown that websites and internet trading platforms can support these processes. A further conclusion is therefore that policy measures should not only be directed at "digital delivery" of services, but rather should focus on the support of all sorts of sell-side activities by ICT and e-business technologies.

> **Recommendation 2: Policy should focus on overall support of sell-side activities, not on "digital delivery" only.**

The above-mentioned Communication emphasises the need to establish "*a sufficient network infrastructure, messaging standards, quality certification and accreditation*". According to the analysis of this report, however, the provision of a basic network infrastructure as well as the existence of messaging standards do not appear to be the most pressing specific problem in this sector. Business services enterprises turned out to be well equipped with basic ICT infrastructure. For the exchange of information, Word or Excel sheets are often used, which are widely established and to a large extent supported by the required e-business applications. Therefore, missing messaging standards do not seem to constitute a main barrier for e-business adoption on the sell-side.

The analyses in Section 2.5, however, support the significant importance of quality certification and accreditation. Since the quality of many business services may directly influence the business success of customers, the verification of competencies and trustworthiness of the services providers is of outstanding importance. This holds particularly for sell-side activities carried out over the internet due to missing personal contact. Problems arise especially for small enterprises, since they often do not have a strong reputation or a famous brand name.

Moreover, it has been shown that the procurement of business services often includes the management of the service production process as well. Many services evolve step-by-step and require some form of continuous collaboration with customers. Appropriate applications that support the management of this process are, therefore, a further important requirement for the enhancement of sell-side e-business activities by business services enterprises.

> *Recommendation 3: Technologies and services that support the quality certification and accreditation as well as the management of services provision are important requirements for sell-side activities in the business services sector and should be considered appropriately in policy measures.*

The analysis in this report has shown that internal collaboration as well as collaboration with external suppliers and customers is an important element of business services, especially of knowledge-intensive business services. While companies already use simple electronic means such as e-mail for collaboration, it is safe to assume that they could improve their processes and increase their competitiveness by using sophisticated collaboration tools. A variety of tools, which are also suitable for SMEs, does exist. However, learning about them and using them go beyond the capabilities of many smaller companies. It often requires an understanding of ICT-based collaboration that these companies currently do not seem to possess.

> *Recommendation 4: Smaller business services enterprises especially should be made aware of the potential of more sophisticated collaboration tools than plain e-mail.*

There are also some B2B trading platforms that are well-suited to solving critical problems of business services enterprises on the sell-side. Awareness about these platforms should be improved. The same applies to the fact that the focus of many platform services today strongly differs from that of e-marketplaces during the dotcom boom. Most trading platforms today provide process support rather than a service to match supply and demand efficiently. Many companies and the general public, however, consider trading platforms still to be traditional e-marketplaces. It is therefore also appropriate to use the term internet trading platform instead of e-marketplace to make this change.

> *Recommendation 5: The term "e-marketplaces" is often misleading when describing B2B trading platform services and should therefore be avoided. Awareness about internet trading platforms that support business services should be improved.*

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Schütz, Andrea: Marketing manager at workXL

Sheth, Beruud: Found and vice president of Elance

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- www.dws-online.de
- www.verbaende.com/Management/online-weiterbildung.htm

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Elance: www.elance.com

eMarket Services: www.emarketservices.com

Heistermann-Gebäude-Service GmbH: www.heistermann.de

LanguageWire: www.languagewire.com

T-Mobile: www.t-mobile.de

Tempore: www.tempore.com

workXL: www.workXL.de

Annex I: Glossary of technical terms

Term	Definition
Access	The ability to retrieve information and to communicate online through the use of digital information and communication technologies.
B2B	Business to Business. Electronic transactions between companies.
B2B e-marketplace	Electronic trading platforms on the Internet where companies can sell and/or buy goods or services to/from other companies. They can be operated by a single buyer or seller or by a third party. Many marketplaces are industry-specific. Some marketplaces require registration and membership fees from companies that want to conduct trade on them.
B2C	Business to Consumer. Electronic business processes between companies and consumers.
Bandwidth	The physical characteristic of a telecommunications system that indicates the speed at which information can be transferred. In analogue systems, it is measured in cycles per second (Hertz), and in digital systems in binary bits per second. (Bit/s).
Broadband	High bandwidth internet access. In this report, broadband is defined as the capacity to transfer data at rates of 2Mbit/s (megabits per second) or greater.
Channel	In communications, a physical or logical path allowing the transmission of information; the path connecting a data source and a receiver.
CRM	Customer Relationship Management. Software systems that promise the ability to synthesize data on customers' behaviour and needs and thus to provide a universal view of the customer.
Dial-up	The process of establishing a temporary connection (to the Internet) via the switched telephone network.
DSL	Digital Subscriber Line. A family of technologies generically referred to as DSL, or xDSL, capable of transforming ordinary phone lines (also known as "twisted copper pairs") into high-speed digital lines, capable of supporting advanced services. ADSL (Asymmetric Digital Subscriber Line), HDSL (High data rate Digital Subscriber Line) and VDSL (Very high data rate Digital Subscriber Line) are all variants of xDSL
E-business	Electronic business. The *e-Business W@tch* uses the term "e-business" in the broad sense, relating both to external and to company internal processes. This includes external communication and transaction functions, but also ICT supported flows of information within the company, for example, between departments, subsidiaries and branches.
E-commerce	Electronic commerce. As distinct from the broader concept of e-business, e-commerce refers to external transactions in goods and services between companies (B2B), between companies and consumers (B2C), or between companies and governments (B2G) and may therefore be seen as a subgroup or component of e-business activities.
EDI	Electronic Data Interchange. A way for unaffiliated companies to use networks to link their businesses by using a common technical standard for exchanging business data. While electronic mail between companies is common, electronic data interchange passes bigger bundles that replace large paper documents such as bills and contracts. Besides saving paper, computers could save time by taking over transactions such as regular purchase orders that now require human intervention.
E-readiness	Readiness for e-business is defined as the capability to engage in electronic transactions. This comprises appropriate network access (including sufficient bandwidth), internal hardware and software solutions as well as the procedural and managerial readiness to deal with online transactions from simple web presence through to fulfilment of customer orders and related after sales services.

ERP	Enterprise Resource Planning. A software system that helps to integrate and cover all major business activities within a company, including product planning, parts purchasing, inventory management, order tracking, human resources, projects management, and finance.
Extranet	A network using Internet protocols that allows external organisations (for example customers or suppliers) access to selected internal data. Essentially it is an Intranet which gives external users restricted access (often password protected) to information through the firewall.
ICT	Information and communication technology. ICT includes networks, computers, other data processing and transmitting equipment, and software. The application of ICT in business processes leads to e-business, if non-proprietary networks are used.
Information security	Measures taken to protect information systems against unauthorised use and attacks
Internet	The world's largest computer communication system, with an estimated 700 million users worldwide.[25] The Internet is a loose confederation of principally academic and research computer networks. It is not a network but rather the interconnection of thousands of separate networks using a common language.
Interoperability	The technical features of a group of interconnected systems (includes equipment owned and operated by the customer which is attached to the public telecommunication network) which ensure end-to-end provision of a given service in a consistent and predictable way.
Intranet	An internal Internet, that is an internal network running using TCP/IP, which makes information available within the company. Most intranets are connected to the Internet, and use firewalls to prevent unauthorised access.
ISDN	Integrated Services Digital Network. An international telecommunications standard for transmission of voice and data over dial-up lines running at 64 Kbit/s (kilobits per second). It allows sharing of multiple devices on a single line (for example, phone, computer, fax).
LAN	Local Area Network. The most common way of connecting computers in a small area (typically inside a building or organisation) for sharing databases and communication facilities. The two most common versions are Ethernet and Token Ring. Implementation is based on coaxial cables or plain wires. Speed achieved ranges from 10 to 100 Mbps.
Leased line	A private communication channel leased from the common carrier. It is usually a dedicated fixed-route link (e.g. point-to-point frame relay).
M-commerce	Mobile commerce. E-commerce that takes place using mobile connection devices and through data transmission via technical standards for mobile communication.
Micro enterprise	A company with less than 10 employees.
Modem	Modulator/Demodulator. A device that modulates outgoing digital signals from a computer or other digital device to analogue signals suitable to be transmitted through a conventional telephone line (copper twisted pair telephone). The reverse procedure takes place for incoming signals.
MRO goods	Maintenance, repair and operating goods. Supplies which companies need to maintain their operations, for example office supplies, in contrast to "direct production goods" which are components of the goods and services the company produces.
Processes	Business processes are operations that transform the state of an object or a person. This can, for example, be an order placed via the internet. Ordering an object or a service creates a liability for the supplier to deliver, and initiates the transfer of property rights from one entity to another. The electronic handling of processes is likely to speed them up and to introduce new processes in the realisation of the same transaction.

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[25] Cf. Global Internet Statistics by Global Reach, www.glreach.com

Remote access	The ability of a company computer network's transmission points to gain access to a computer at a different location.
SCM	Supply Chain Management. Software that helps businesses to match supply and demand through integrated and collaborative planning tools.
Sector	Sectors of the economy with comparable business activities. These constitute the main research unit of the *e-Business W@tch*. Aggregated information at the industry level is used to document the diffusion of activities within the industries as well as the overall importance of the observed phenomena for changes in the economy as a whole. The definition of sectors follows NACE Rev.1 classifications.
SME	Small and medium-sized enterprises with 0-249 employees. To be classed as an SME, an enterprise has to satisfy the criteria for the number of employees and one of the two financial criteria, i.e. either the turnover total or the balance sheet total. In addition, it must be independent, which means less than 25% owned by one enterprise (or jointly by several enterprises) falling outside the definition of an SME or a micro-enterprise, whichever may apply. The thresholds for the turnover and the balance sheet total will be adjusted regularly, to take account of changing economic circumstances in Europe.
Transaction	Electronic transactions can be subdivided into several steps, each of which initiates a process. There are pre-sale (or -purchase) phases, sale and after-sale phases. Typically a transaction starts with information gathering, price and quality comparisons and possibly pre-sale negotiations. During the sale phase contracting and delivery are the core processes, and payment is the final stage of this phase. After-purchase transaction stages comprise customer service, the administration of credit payments and the handling of returns as well as marketing activities preparing for the next purchase.
Value added	Gross output minus intermediate inputs. It is valued at producers' prices and includes all indirect taxes but excludes VAT and subsidies.
WAN	Wide Area Network. A network allowing the interconnection and intercommunication of a group of computers over a long distance.
WAP	Wireless Application Protocol. A communication protocol for delivering data over mobile telephone systems, allowing cellular phone sets and other mobile hand-set systems to access WWW pages and other wireless services.
Website	A related collection of World Wide Web files that includes a beginning file called a home page.
Wi-Fi	Short for "wireless fidelity", popular term for a high-frequency wireless local area network (W-LAN). Wi-Fi technology is rapidly gaining acceptance as an alternative or complementary infrastructure to a wired LAN.
W-LAN	Wireless Local Area Network. An implementation of a LAN with no physical wires, using wireless transmitters and receivers. It allows a mobile user to connect to a LAN or WAN through a wireless (radio) connection. A standard, IEEE 802.11, specifies the technologies for wireless LANs.
WWW	World Wide Web. The collection of pages in html format which reside on web-servers. Although WWW and the internet are different, the terms are increasingly becoming interchangeably used.

Annex II: Methodological Notes on the e-Business Survey 2003

Background

Most of the data presented in this report are results of a decision-maker survey about e-business in European enterprises in 2003. This is an annual survey carried out by the *e-Business W@tch* – the first one took place in 2002 –, constituting a cornerstones of its monitoring activities. For organisational and contractual reasons, the e-Business Survey 2003 was split into two parts. The first consisted of 3,515 telephone interviews which were conducted in March 2003 with decision-makers in enterprises from five EU countries. The second part had a scope of 4,570 interviews in the EU, 100 interviews in Norway and 2,632 interviews in the 10 new EU Member States (NMS) and was conducted in November 2003. The questionnaires used in the two parts of the survey were largely the same. A few new questions were added in the second part in order to cover issues of special topical interest for policy.

Fieldwork

The fieldwork of the surveys in the EU-15 and in Norway was carried out by Ipsos Germany in co-operation with its partner organisations on behalf of the *e-Business W@tch*. Fieldwork in the 10 new Member States was carried out by NFO Aisa (Czech Republic) and its network.

Country	Organisation	Country	Organisation
Belgium	INRA Belgium, Avenue de la Couronne 159-165, 1050 Brussels	UK	Continental Research, 132-140 Goswell Road, EC1V 7DY London
Denmark	Gallup TNS Denmark, Masnedogade 22-26, 2100 Copenhagen	Norway	Norfakta Markedsanalyse, Kjøpmannsgt. 5, 7013 Trondheim
Germany	INRA Deutschland GmbH, Papenkamp 2-6, 23879 Mölln	Cyprus	Synovate (member of the Aegis Group plc), Nicosia
Greece	Synovate, 24 Ippodamou St., 11635 Athens	Czech Republik	NFO AISA s.r.o., Slezská 113, 130 00 Praha 3, Česká republika
Spain	IPSOS ECO Consulting, Avda. de Burgos, 12-8a, 28036 Madrid	Estonia	Saar Poll, Veetorni 4, 10119 Tallinn, Estonia
France	Ipsos Insight Marketing, 99, rue de l'Abbé Groult, 75739 Paris Cedex 15	Hungary	MEDIAN, Opinion and Market Research, POB 551, BUDAPEST, H-1539
Ireland	TNS mrbi, Blackrock, Co. Dublin 2	Lithuania	BALTIC SURVEYS, 6A Šermukšnių str., Vilnius LT-2001, Lithuania
Italy	Ipsos-Explorer, Via Mauro Macchi 61, 20124 Milano	Latvia	TNS – baltic data house, Kronvalda Blvd. 3 – 2, Riga LV-1010, Latvia
Netherlands	INRA in Belgium, Avenue de la Couronne 159-165, 1050 Brussels	Malta	MISCO – Market Intelligence Services Co. Ltd., Valetta
Austria	Spectra Marktforschung: Brucknerstr. 3-5/4, 4020 Linz	Poland	CASE Consumer Attitudes & Social Enquiry, ul. Nowy Świat 64, PL 00-357 Warsaw
Portugal	Ipsos Portugal, Rua Joaquim António de Alguiar 43-5.°, 1070-15 Lisbon	Slovenia	CATI – Marketing, Media and Social Research & Consulting, Tržaška 2, 1000 Ljubljana
Finland	Taloustutkimus Oy, Lemuntie 9, 00510 Helsinki	Slovakia	NFO AISA s.r.o., Slezská 113, 130 00 Praha 3, Česká republika
Sweden	GfK Sverige, Box 401, 221 00 Lund		

Interview method

The fieldwork was carried out using mostly computer-aided telephone interview (CATI) technology. Face-to-face interviews were used in Lithuania, and a mixed approach in Malta. The decision-maker in the enterprise targeted by the survey was normally the person responsible for ICT within the company, typically the IT manager. Alternatively, particularly in small enterprises without a separate IT unit, the managing director or owner was interviewed.

Population coverage and sampling

The highest level of the population for the e-Business Survey was the set of all enterprises which are active at the national territory of one of the respective countries and which have their primary business activity in one of the sectors specified by NACE Rev. 1 categories (see table). The selection and composition of sectors took into account their economic importance and the relevance of e-business activities.

The most important viewpoints used for breakdown of the population in the survey were (i) the economic activity, (ii) the national territory of the enterprise and (iii) the size in terms of employees. The survey was carried out as an enterprise survey, i.e. data collection and reporting focus on the enterprise (rather than on the establishment), defined as a business organisation of one or more establishments comprised as one legal unit.

The sample drawn was a random sample of companies from the respective sector population in each country where the respective sector was to be surveyed with the objective of fulfilling strata with respect to company size class. Strata were to include a share of at least 10% of large companies (250+ employees) per country-sector cell, 30% of medium sized enterprises (50-249 employees) and 25% of small enterprises (10-49 employees). Micro enterprises with less than 10 employees were also included in the survey. Samples were drawn locally by fieldwork organisations based on acknowledged business directories and databases (see table).

No.	NACE Rev. 1 Section	Division/Group	Sector Name
Population coverage of the e-Business Survey (2003)		
01	D	17, 18, 19	Manufacture of textiles and textile products, leather and leather products
02	D	24, 25	Manufacture of chemicals and chemical products
03	D	30, 31 *(except 31.3 - 31.6),* 32	Manufacture of Electrical machinery and electronics
04	D	34, 35	Manufacture of transport equipment
05	D	Parts of (17-19), 20, (30-32), (34-35), 36, 45	Crafts And Trade: In addition to companies from sub-sections covered by other sectors: Manufacture of wood products; manufacture of furniture; construction and site preparation. Only enterprises with 0-49 employees.
06	G	52.11, 52.12, 52.4	Retail
07	H / I / O	55.1, 55.2, 62.1, 63.3, 92.33, 92.52, 92.53	Tourism
08	K	74	Business services
09	I / K	64.2, 72	Telecommunications and computer-related services
10	N	85.11, 85.12, 85.3	Health and social services

Country	Directory / Database	Country	Directory / Database
Austria	Herold BUSINESS MARKETING database	UK	Dun & Bradstreet
Belgium	Dun & Bradstreet	Norway	Dun & Bradstreet
Denmark	KOB (Købmandsstandens Oplysnings Bureau)	Cyprus	Census of economic activity
Germany	Heins und Partner Business Pool	Czech Republic	Merit – CDF, Meritum Software, Enterprises database 2003
Finland	Blue Book - TDC Hakernistot OY	Estonia	Estonian statistical bureau + Krediinfo (register of taxpayers)
France	IDATA, based on INSEE Siren file (the National Institute of Statistics) and other directories	Hungary	Company Information Data Store, provided by Hungarian Central Statistical office
Greece	ICAP directory (the major database for Greece)	Lithuania	Department of Statistics and National Register at Ministry of Economics
Ireland	Bill Moss	Latvia	Business Register of Republic of Latvia
Italy	Dun & Bradstreet	Malta	National Statistics Office, Employment and training corporation
Netherlands	Dun & Bradstreet	Poland	REGON (GUS) data (National register of business)
Portugal	MOPE database	Slovenia	IPIS directory, published by Noviforum (list of active Slovenian enterprises)
Spain	Dun & Bradstreet	Slovakia	Albertina, Albertina Data, Enterprises database 2003
Sweden	Swedish Post Address Register (PAR)		

Scope of the e-Business Survey 2003: No. of interviews per country and sector

Scope	Part I (March 2003)	Part II (Nov/Dec 2003)
No. of sectors covered	7 sectors	10 sectors
No. of EU Member States involved	5 countries	25 countries
No. of sector-country-cells	35	98
No. of interviews	3515	4670 (EU+NO) + 2632 (NMS) = 7302

	Food, beverages and tobacco	Textile industries	Chemical industries	Electronics	Transport equipment	Crafts & trade (Construction ; Wood & furniture)	Retail	Tourism	ICT services	Health & social services	Business services	Total int.
Belgium			101				100				100	301
Denmark								67	67		66	200
Germany	100*	100	100*	100*	100*	100	100*	101*	100*	100	100	1101
Greece		84		76	89	75		75				399
Spain	100*	101	100*	100*	100*	108	100*	100*	100*	101	100	1110
France	100*	100	100*	100*	101*	101	101*	99*	100*	100	100	1102
Ireland			70					70	71			211
Italy	102*	100	101*	101*	100*	100	102*	102*	101*	100	101	1110
Luxembourg **												0
Netherlands		100							101	102		303
Austria					68			132		100		300
Portugal					104		100				100	304
Finland		75		75					76			226
Sweden			80	75	79						80	314
United Kingdom	100*	100	101*	101*	100*	100	101*	100*	101*	100	100	1104
Cyprus								64				64
Czech Republic			60		60			60	60	60		300
Estonia		50	50	50	21	65	50	50	50	50	50	486
Hungary				80	80						80	240
Lithuania								57				57
Latvia		51	49				51					151
Malta								51				51
Poland		80	80	80	80	80	80	80	80	80	80	800
Slovenia				56				51	53	55	58	273
Slovakia		50		50			50				60	210
Norway		30					70					100
TOTAL	**502**	**1021**	**992**	**1044**	**1082**	**729**	**1193**	**1138**	**993**	**1014**	**1109**	**10817**

* interviews carried out in March 2003   ** was covered in the e-Business Survey 2002

Problems encountered

No major problems were reported by the fieldwork organisations with respect to interviewing (e.g. comprehensibility of the questionnaire, logical structure). The overall feed-back from the survey organisations was that fieldwork ran smoothly and that they had the impression that the questionnaire was well understood by most respondents. Some difficulties occurred, though, mainly with respect to the following issues:

- The main challenge was the fulfilment of quotas regarding company size-bands. In many countries, it was not possible to accomplish the objective of including a minimum share of large or even medium-sized enterprises in specific sectors. In such a case, these were replaced by interviews with smaller companies or from other sectors.

- Another well known issue in this type of survey stems from the difficulties of conducting research projects among ICT decision-makers in general. Dedicated ICT professionals are heavily researched and therefore securing their participation can be difficult. This is a particular problem in larger companies.

- In some countries it was difficult to carry out interviews within businesses and retailers not using or with a very basic use of computers, because of the number of questions on related issues. The French fieldwork

organisation, for instance, reported that the questionnaire was too specific for some organisations, for example for small companies in the health & social services sector. These are mostly doctor's surgeries, where it was felt that the e-business related questions were not applicable to them. Also, small companies from the crafts' & trade sector, which often have just a computer but no network at all felt that the questionnaire was not sufficiently adapted to their activities.

- A related issue is that there are some compromises to be made if the same questionnaire should be used for micro-enterprises as well as for large companies. Some of the questions, while only scratching the surface of e-business activities in large companies, are hardly relevant for micro-enterprises with less than 10 employees. The Hungarian survey company, for instance, reported that some questions seemed to have little relevance for companies with only one or a few employees.

- Finally, an issue which was known in advance but is unavoidable in telephone interviews is that there is no "ideal target person" to be interviewed. Fieldwork organisations reported that sometimes a data processing manager is not very aware of the consequences of e-business on the whole of the company, on the personnel level and on the financial level. On the other hand, the general manager may not always be aware of the technical implementation status. The Irish fieldwork organisation, for instance, reported that some of the smaller companies were not familiar with technical terms such as used for standards ("EDI" or "EDIFACT").

Weighting principles

Two weighting schemes have been applied: weighting by employment and by the number of enterprises. Data are presented in either way depending on the kind of the analysis to be made.

- Values that are reported as weighted by employment should be read as "enterprises comprising x% of employees". To give an example: The indicator "percentage of companies selling online" – if weighted by employment – is defined as "companies comprising x% of employees sell online". The reason for using employment weighting is that there are very many more micro enterprises than non-micro enterprises. The unweighted figure would effectively represent mainly the smallest sizes of firm.

- Values that are reported as enterprise-weighted figures are to be read as "x% of enterprises", reflecting the number of enterprises as legal entities but not their relative economic importance in terms of employment.

Weighting was based on the latest available universe figures by Eurostat. Missing or undisclosed universe data had to be imputed. The imputation procedures depended on auxiliary or proxy data availability, taking into account where available information about higher industry aggregations, nearest neighbour data, turnover-employment correlation and secondary sources other than Eurostat. It also allows for the constraint of predetermined ranges such that imputed data had to be contingent with published sectoral, national and European universe totals as well as for final plausibility checks for every single imputed data item. The weighting cells correspond to the data reporting pattern used as regards industries and employment size-classes. Uniform expansion factors are applied to enterprises within one of the four size-classes per industry per country. As for data that refer to a base other than the universe of all enterprises (e.g. indicators appropriately reported for online selling enterprises only), expansion factors are adjusted to the different shares of observations per cell that build the computation base.

Variables - indicators

The set of ICT and e-business indicators for which data were collected in this survey was organised into the following modules:

- Background information (basic company data, innovation activities)

- ICT infrastructure and e-skills development in the company

- E-commerce and e-business activities (internal business process automation, procurement and supply chain integration, exchange of standardised data between trading partners, marketing and sales activities, use of e-business software)

- Impact of e-business (impact of selling and procuring online, perceived effects on work processes, satisfaction with outcome)

- Assessment of future importance of various e-business technologies

The choice of indicators considers relevant statistical work by the OECD and Eurostat and includes a basic set of widely accepted measures for e-commerce and e-business, but also tries to introduce innovative indicators which have a pilot character and are not yet widely tested.

The full list of variables which was the basis for preparing the questionnaires can be downloaded (as a spreadsheet) from the *e-Business W@tch* website (http://www.ebusiness-watch.org).

Annex III: Sector Impact Studies
of the *e-Business W@tch* in 2003/04

No.	Sector	Date
1	Textile, clothing and footwear industries	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
2	Chemical industries	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
3	Electrical machinery and electronics	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
4	Transport equipment manufacturing	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
5	Crafts' and trade sectors	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
6	Retail	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
7	Tourism	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
8	ICT services	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
9	Business services	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004
10	Health and social services	
	• Report I: The Quantitative Picture: Diffusion of ICT and e-business in Europe	May 2004
	• Report II: Key Issues, Case Studies, Conclusions	August 2004