

## The European Commission and SME support mechanisms for e-business

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### Keywords

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### Abstract

This paper explores and validates the premise that European small- to medium-sized enterprises (SMEs) are less advanced in their adoption of e-business than their US counterparts. The authors then examine the efforts of the European Information Society Project Office (ECISPO) in encouraging and informing SMEs by using the Internet as an educational, informational and networking tool. The methods employed by the ECISPO are evaluated against an information processing model. The authors then question the validity/usefulness of the site usage statistics which are provided in an aggregated format. The paper concludes that the full interactivity of the Web is being underutilised as an informational tool and proposes an e-business adoption model for the SME sector. The paper also concludes that site usage statistics need to be presented in a disaggregated form to enable more detailed analysis to be performed.

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### Introduction

Tony Blair has warned of an increasing “digital divide” (*Financial Times*, 2000, p. 4) where the informed will stand a much greater chance of prosperity, whilst the uninformed will almost certainly fail to compete. With the world economies developing into clearly identifiable trading blocks (Europe, Americas, Pacific Rim, etc.) the imparting of knowledge in the form of information dissemination will be crucial to large and small firms alike. As Swash (1998, p. 242) argued, the Internet “can no longer be regarded as a peripheral information resource.” It is an information resource that small- to medium-sized enterprises (SMEs) will have to access and contribute to in order to enhance their competitiveness.

This paper focuses on the efforts of the European Commission Information Society Project (ECISP) as an exemplar of the role taken by national and international legislative bodies to take a full and active role in the use of the World Wide Web as an educational, informational and networking tool supporting SMEs to “buy into” the e-economy. In particular, the information aspects of the ECISP are viewed from the context of a typical information processing model. With this approach the quality of effectiveness of the data source, i.e. the ECISP may be undertaken from either the user perspective or the data provider. In the former case one could assess the type of data captured, the nature of processing and the output produced from the process. In practice this would require the investigation of a number of SMEs, assessing these dimensions and the outcomes. The benefits of this approach are the richness of the data captured, though the costs of such a methodology would be significant. An alternative approach would be to monitor usage from the perspective of the data provider. The advantage here is the ability to assess the aggregate level usage, not provided by individual usage and the lower cost of doing so. The paper thus reports the results from the latter approach which forms phase one of the investigation. Two models are presented. First, an information processing model is presented and second, the paper posits a model of e-business adoption.

Despite Andersen Consulting (1999) finding that European businesses anticipate



that e-business will profoundly change their marketplace, primarily in terms of supply chain relationships, it appears that e-business activity in European SMEs is lower than that of comparative organisations in the USA (Troye-Walker, 1999, p. 2). Yet Andersen Consulting (1999, p. 1) conclude that:

Europe has a real opportunity to take the lead. But first it must overcome regulatory uncertainties, telecommunications costs which remain stubbornly high, and a continuing lag behind the US in terms of venture capital.

To take advantage of such opportunities, government support mechanisms are already being developed, e.g. the Department of Trade and Industry Information Society Initiative in Britain (<http://www.dti.gov.uk/infoage/index.htm>). The European Commission has also recognised these issues and has invested in the provision of Web-based resources to disseminate information to organisations, especially SMEs, to enhance their competitive position. Liikanen (2000), a member of the European Commission, in a speech delivered on 23 February 2000, summed up the aims of the European Commission:

Accelerating the take up of electronic commerce amongst SMEs and governments is one of the priorities of the eEurope initiative.

The European Commission has already developed resources such as the Community Research and Development Information Service (CORDIS), whose aims include the licensing of technology ([http://www.europa.eu.int/en/comm/dg23/guide\\_en/cordis.htm](http://www.europa.eu.int/en/comm/dg23/guide_en/cordis.htm)). More recently, the European Community Information Society Project (ECISP) has been introduced. Part of the ECISP:

The Information Society Activity Centre (ISAC) aims at ensuring coherence and maximum synergy among the information society approaches followed within the different policies of the Commission.

(The Information Society Activity Centre is a link from the main European Community Information Society Project page: [http://www.ispo.cec.be/basics/i\\_about.html](http://www.ispo.cec.be/basics/i_about.html)).

### The information processing model

A typical information processing model illustrates the information exchange that exists between the information provider and

the user of the information. This exchange relationship suggests that information will flow both ways, using a particular channel or medium. In order to illustrate the focus of this paper, i.e. the information exchange between the ECISP and the SME, Figure 1 has been provided.

In this model, the provider is the ECISP and the user is the SME, the communication channel being the World Wide Web.

The increased use of data warehousing and data mining has made the monitoring of individual users of a particular product or service essential, in order to maintain quality standards of delivery. With Java<sup>TM</sup> Web tracking devices freely available to download from the Internet, the ability to track and collate detailed data on individual users accessing information sites has become less problematical. All providers should therefore be able to assess the effectiveness of their information in reaching a target audience and by the use of mail-back features and comment forms they should be able to review content in an ongoing iterative process to meet the needs of end users. The technical specification of the ECISP suggests that such data mining is possible.

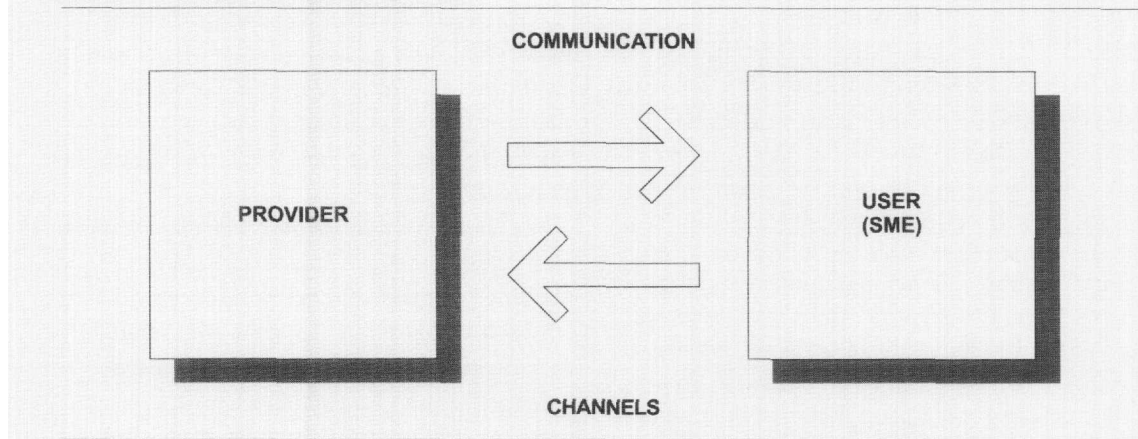
### Methodology

In order to monitor the effectiveness of the European Information Society Project, the European Commission usage statistics are provided on its home pages. The statistics which were focused on were available on the European Community Information Society Project (<http://www.ispo.cec.be/>) and covered the months of September and October 1999 and included the following areas of interest:

- the number of hits for the home page (and related sites);
- the geographical locations of users;
- the most requested pages;
- the most downloaded files on the site; and
- the most active countries.

These statistics have been evaluated in order to identify trends that could lead to greater understanding of the number of users the various information sites are attracting and why. It is hoped that the statistics will demonstrate the most active countries in terms of accessing available information and the subjects which appear to be uppermost in

Figure 1 The information processing model



the minds of users when visiting the site. Table I provides a summary of the statistics available for the period studied.

Initially, the statistics seem to show that there is effective monitoring taking place at the European Information Society Project. However, the difficulties in interpreting these figures becomes apparent when a more detailed disaggregated pattern is sought. One of the major problems that the monitoring system faces is that of e-mail suffixes attached to visitors to the site. If the e-mail address is followed by a .uk or a .us then the geographical location of the visitor can be assessed more easily. Unfortunately given the disparate nature of e-mail providers, a large proportion will be accompanied by the generic .com thus making tracking an almost impossible task. This lack of accuracy means that in September 1999, almost a quarter of all the hits to the home site came from unknown origins representing 6,620 hits in

September and in October, 1999 it represented 7,056 hits. The average user session length of 12:51 for September and 15:20 for October seem impressive but again this aggregation hides the very low and the very high ends of the scale. This would seem to indicate the need for a more in-depth statistical analysis of this figure. Such problems may be overcome to some extent by users signing an on-line visitors card, timing facilities and cookies (an embedded computer programme which recognises when a user has visited the site previously) being used. Where suffixes have identified geographical location, statistics have been provided (see Table II).

It is interesting that the USA emerges as the heaviest user of the European Commission Information Society home page. Although the numbers would seem to back up the Andersen Consulting (1999) survey conclusions, that the USA is more proactive in the area of information on wired working

Table I The number of hits for the home page (and related sites)

Date and time this report was generated	Monday, 18 October 1999, 11:40:16	Monday, 15 November, 1999, 17:14:01
Timeframe	09/01/99-09/30/99	10/01/99-10/31/99
Number of hits for home page	26,523	30,815
Number of successful hits for entire site	2,243,641	2,643,194
Number of page views (impressions)	537,587	698,667
Number of user sessions	113,841	133,258
User sessions from Belgium (%)	3.01	2.86
International user sessions (%)	72.01	74.22
User sessions of unknown origin (%)	24.96	22.9
Average number of hits per day	74,782	85,264
Average number of page views per day	17,919	22,537
Average number of user sessions per day	3,794	4,298
Average user session length	00:12:51	00:15:20

Sources: Information available at: [http://www.ispo.cec.be/infocentre/statistics/l\\_september\\_1999.html](http://www.ispo.cec.be/infocentre/statistics/l_september_1999.html) and [http://www.ispo.cec.be/infocentre/statistics/l\\_october\\_1999.html](http://www.ispo.cec.be/infocentre/statistics/l_october_1999.html)



Table II Statistics based on the most active countries

Countries	User sessions		Countries	User sessions	
	September	October		September	October
1 USA	38,669		USA	47,270	
2 UK	5,178		UK	7,140	
3 Italy	4,661		Italy	5,035	
4 Germany	4,293		Germany	4,891	
5 France	3,544		France	4,289	
6 Belgium	3,432		Belgium	3,823	
7 Spain	2,543		Spain	2,766	
8 The Netherlands	2,184		The Netherlands	2,398	
9 Denmark	1,926		Japan	2,106	
10 Japan	1,785		Denmark	2,068	
11 Finland	1,538		Finland	1,750	
12 Greece	1,337		Australia	1,688	
13 Australia	1,263		Sweden	1,546	
14 Sweden	1,231		Greece	1,440	
15 Austria	1,066		Canada	1,407	
<b>Total</b>	<b>74,650</b>		<b>Total</b>	<b>89,617</b>	

Sources: Information available at: [http://www.ispo.cec.be/infocentre/statistics/l\\_september\\_1999.html](http://www.ispo.cec.be/infocentre/statistics/l_september_1999.html) and [http://www.ispo.cec.be/infocentre/statistics/l\\_october\\_1999.html](http://www.ispo.cec.be/infocentre/statistics/l_october_1999.html)

and associated issues, the disparity in usage between the USA ranked at number 1 and the UK ranked at number 2 is not easily explained. Similarly, the position of Italy ahead of Germany cannot easily be explained by availability of access or population differences. The statistics come with a warning that the location of the user is determined by the suffix attached to their domain name. This could imply that Europeans in America may be accessing the site and so affecting the figures although this again would not appear to explain the disparity in user figures.

In terms of monitoring the issues which are currently engaging businesses and educators, the EC Information Society Project provides details of the most requested pages in the months of September and October, 1999. Table III for September, 1999 is shown in isolation, as the figures for October provide a similar picture.

The figures from Table III identify an apparent lack of interest in e-commerce from the users of the European Commission site as a whole, with only 15.67 per cent of all users logging on to sites concerning e-business and related issues. The relatively small number of users who logged onto sites concerning year 2000 issues can perhaps be explained by the close proximity of the event itself and the fact that most individuals and organisations who

were concerned about this particular problem had already taken remedial steps to limit its impact. Further information on usage can be found by exploring the downloading of files. The top three downloaded sites in September and October, 1999 are shown in Tables IV and V.

For the two months that formed part of the study, the top three downloaded files remained the same. There are approximately 200 downloadable policy and educational documents available on the Information Society Project site and apart from the top three downloaded documents, each attracts 0.5 per cent of the total number of hits. The files ranked at number one and three, are concerned with the EC electronic communications policy, interconnectivity etc. The file ranked at number three acts as a policy update facility. The site makes no mention of the particular attraction of telecommunications policy and whether this site was the subject of disproportional promotional activity. The file ranked at number 2 is a tender document, again concerned with telecommunications policy. It could be surmised that the most downloaded files are not particularly SME-oriented. The files that are, e.g. those concerned with the system requirements of moving to the Euro (<http://www.ispo.cec.be/y2keuro/docs/euewg.pdf>) and a file that outlines pilot projects of companies adopting e-commerce (<http://www.ispo.cec.be/eccommerce/books/aecev2pdf/ecbook.pdf>) are receiving only 0.5 per cent of the total number of hits.

The figures for the most downloaded files show that the majority of files in this category are.txt (Text) files. In terms of informing organisations about legislative frameworks, this kind of file is ideal. However, if the stated aim of the Information Society Project is to educate as well as inform, then the interactive capability of the Web would seem to be under-utilised. Tables IV and V also identify a significant reduction in user figures between September and October, 1999. This may be indicative of the promotional activity that was evident in September. Another explanation may be that the September visitors to the site found exactly what they were looking for and had no need to revisit in October. Alternatively, it may be proffered that the visitors found the site disappointing in content and were not encouraged to revisit. As European legislation, which takes

Table III Most requested pages: September, 1999

Pages	Views	Percentage of total views	User sessions	Average time
1 Information Society Project Office	26,523	4.93	21,355	00:02:39
2 Electronic commerce and the European Union	16,492	3.06	12,389	00:01:31
3 Welcome to the European Union's telecommunications policy pages	7,832	1.45	4,279	00:01:17
4 Information society project office calls	6,641	1.23	3,237	00:00:39
5 Year 2000 and the Euro: IT challenges of the century	5,243	0.97	3,470	00:00:19
6 Search the ISPO	4,680	0.87	2,496	00:00:26
7 Year 2000	4,520	0.84	4,009	00:00:28
8 Year 2000 computer problem	4,317	0.8	3,890	00:02:38
9 Studies and reports	4,053	0.75	3,410	00:06:21
10 Year 2000 page content	3,992	0.74	3,598	00:00:13
Sub total for the page view above	84,293	15.67	N/A	N/A
Total for the log file	537,587	100		N/A

Source: Information available at: [http://www.ispo.cec.be/infocentre/statistics/l\\_september\\_1999.html](http://www.ispo.cec.be/infocentre/statistics/l_september_1999.html)

Table IV Most downloaded files: September, 1999

File	No. of downloads	Percentage of total downloads	User Sessions
1 <a href="http://www.ispo.cec.be/infosoc/telecompolicy/en/erastudy.pdf">http://www.ispo.cec.be/infosoc/telecompolicy/en/erastudy.pdf</a>	26,844	19.72	542
2 <a href="http://www.ispo.cec.be/ida/text/english/testa2/part_ii.pdf">http://www.ispo.cec.be/ida/text/english/testa2/part_ii.pdf</a>	2,352	1.72	33
3 <a href="http://www.ispo.cec.be/infosoc/telecompolicy/en/tcstatus.pdf">http://www.ispo.cec.be/infosoc/telecompolicy/en/tcstatus.pdf</a>	1,679	1.23	138

Table V Most downloaded files: October, 1999

File	No. of downloads	Percentage of total downloads	User sessions
1 <a href="http://www.ispo.cec.be/infosoc/telecompolicy/en/erastudy.pdf">http://www.ispo.cec.be/infosoc/telecompolicy/en/erastudy.pdf</a>	5250	4.29	176
2 <a href="http://www.ispo.cec.be/ida/text/english/testa2/part_ii.pdf">http://www.ispo.cec.be/ida/text/english/testa2/part_ii.pdf</a>	1652	1.35	172
3 <a href="http://www.ispo.cec.be/infosoc/telecompolicy/en/tcstatus.pdf">http://www.ispo.cec.be/infosoc/telecompolicy/en/tcstatus.pdf</a>	1275	1.04	479

Sources: Information available at: [http://www.ispo.cec.be/infocentre/statistics/l\\_september\\_1999.html](http://www.ispo.cec.be/infocentre/statistics/l_september_1999.html) and [http://www.ispo.cec.be/infocentre/statistics/l\\_october\\_1999.html](http://www.ispo.cec.be/infocentre/statistics/l_october_1999.html)

precedence over national law, is subject to constant amendments, it is imperative that SMEs return to the site on a regular basis to remain apprised of current developments, but this point is not stressed on the site publicity.

### Conclusions and further research

The paper started from the premise, supported by recent studies, that European businesses are less advanced in their adoption of e-business than their US counterparts. Our model of e-business adoption suggests that an early stage in the process is the use of the Internet facility to access more general

contextual information (i.e. corporate intelligence) to assist decision making. Evidence was provided from both US, European and UK studies which tends to support this contention. The research sought to examine this dimension of Internet usage by addressing the provision and usage of information on the European Commission Web pages. This was apposite at present, given the commitment by the EC to support the information society through the provision of information and the associated publicity generated to encourage businesses to access the site. The conclusions may be summarised under four broad headings, the patterns of usage by businesses, the nature and quality of the materials available on the site, analysis of



site usage statistics as a research tool and e-business adoption.

#### **Patterns of usage by businesses**

The data analysis provided information of usage by businesses at the macro level only. We were able to establish the overall frequency of access to particular sites and even to categorise these by country of origin. However, the data available did not provide information on the value received by the user, either in terms of information gained or improved knowledge and understanding.

#### **Nature and quality of EC sites**

It is evident that the sites have been designed to provide information and not necessarily to encourage understanding, knowledge or skill. The Web sites are exclusively text based offering no interactive opportunities, simply the option to download preformatted text. Reconsideration of the purpose and the format is urgently required, if the business user is to be engaged with this information resource, develop understanding and be encouraged to return in future. The limited information from the survey suggests a fairly even usage distribution across the sites. The exception appeared to be the high utilisation of sites containing topical information concerning EC legislation (e.g. the telecommunications site within our sample period). The impact of the EC's promotion of the Web site availability generated a significant increase in access during one month, followed by an equally significant fall in the following month. The research needs to be extended over a longer time series to establish the full significance of these trends and the consequences for the EC's promotional strategies.

#### **Analysis of site usage statistics as a research tool**

Researching the usage of the EC Web resources through the access and usage statistics generally available encountered a number of difficulties. Only 75 per cent of user Internet addresses permit the identification of the country of origin, hence the exclusion of a potentially significant subset of users from country-based analysis. The data available indicates the frequency of accessing specific sites but provides no information on the nature of the usage after access. It is possible to infer some statements

concerning usage by investigating the period of time logged into a particular site, though this would necessarily assume that users would not simply download the text to their own PC and exit the site within a short time period. The information concerning the size of business accessing the sites is not available from the general usage statistics available. Hence it is not possible to assess the proportion of SME users as against larger corporate users. More direct questioning of site users at the point of access would assist in determining the type and nature of usage.

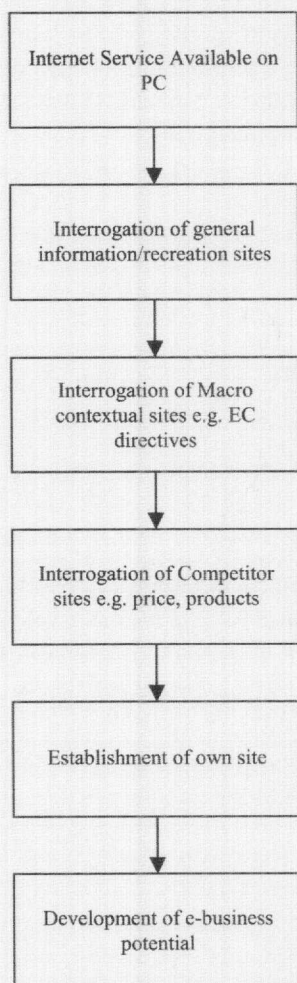
#### **E-business adoption**

The evidence available suggests that UK and European businesses are at an early stage in the adoption of e-business and certainly lagging behind their US counterparts. The EC initiatives to support the Information Society have demonstrated some impact on the level of usage, though this shows no evidence of being self-sustaining at present. Attention needs to be directed towards the objectives of the EC Web sites as to whether they are primarily designed as information dissemination routes or whether they should be vehicles for interactive learning, enhancing the knowledge and understanding of SME users and encouraging them to engage more fully and revisit more frequently.

The model of e-business adoption within small businesses appears to be as illustrated by Figure 2.

Figure 2 suggests a linear stepped process, however, it should be recognised that it need not necessarily be a linear model and could be one which might evolve in different patterns, depending on users. The model may also change shape as future ICT systems become more user-friendly, more accessible and less expensive. However, the model recognises that the catalyst for adoption is ISP availability and familiarity. Confidence in the features of the system and the users' confidence in their own skills is initially developed in relation to personal/recreational information. It is only then that the interrogation of macro contextual sites (i.e. information on the economy in the UK or EC policy initiatives and directives) is begun. The establishment of the SMEs own Web site identifying general company and product/service information is the precursor for the development of e-business. Again this e-business development is usually a staged

Figure 2 SMEs e-business adoption model



development, beginning with a sales facility, before moving to the development of e-business transactions with suppliers and distributors and then the development of an extranet. The final stage is a fully integrated network with suppliers and customers and

internal services and functions. Government initiatives aimed at encouraging SMEs in their e business endeavours need to be cognisant of the features of the e-business adoption model.

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