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**Working Party on Indicators for the Information Society**

**MEASURING ICT USAGE AND ELECTRONIC COMMERCE IN ENTERPRISES: PROPOSAL FOR  
A MODEL QUESTIONNAIRE**

**OECD, Paris, 11-12 October 2001**

*This paper proposes a model questionnaire for measuring the use of Information and Communication Technology (ICT) in the business sector. It is composed of "Modules", including a module on the measurement of electronic commerce transactions. The model questionnaire is a flexible tool that allows the measurement of core ICT indicators on an internationally comparable basis. The Working Party on Indicators for the Information Society (WPIIS) has reviewed the model questionnaire at its last meeting on 26-27 April 2001. It has agreed to recommend to the ICCP Committee to declassify the model questionnaire, contained in Annex 1, which takes into account the subsequent written comments made by Delegates, as well as the Working Party's discussion.*

*The ICCP Committee is therefore invited to declassify this document.*

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## MEASURING ICT USAGE AND ELECTRONIC COMMERCE IN ENTERPRISES

### A proposal for a model questionnaire

#### 1. Introduction

1. The ICCP Working Party on Indicators for the Information Society (WPIIS) has been working since 1997 towards the development of internationally comparable statistics for the Information Society. Given the complexity of the issue, the group adopted a “building blocks” approach. Methodological work and data collection have proceeded in several areas at different speeds, in a step-by-step, pragmatic way, by looking first at supply side statistics for the information society (ICT sector definition and statistics), and then at the demand side (use of ICT by the business enterprise sector, the household sector and the government sector).

2. WPIIS worked since 1999 with the Voorburg Group<sup>1</sup> to develop a model questionnaire of the use of ICT goods and services for the business enterprise sector. The activity was led by the statistical offices of the Nordic countries<sup>2</sup> that were first to establish a project for a common set of guidelines for measuring ICT usage in enterprises<sup>3</sup>. After two years of experience sharing and testing of some of the questions by several OECD Member countries<sup>4</sup>, a final proposal for a model questionnaire on ICT usage in enterprises was discussed by WPIIS at its last meeting (26-27 April 2001). WPIIS recommends the ICCP Committee to declassify the model survey contained in Annex 1.

3. The model is intended to provide guidance for the measurement of indicators of ICT, Internet use and electronic commerce and Member countries are encouraged to use it as a core part of their

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1. United Nations City Group on Service Statistics.

2. Denmark, Finland, Iceland, Norway, Sweden.

3. Nordic Council of Ministers: Guidelines for Measuring use of Information and Communication Technology (ICT) in Enterprises – a first step towards harmonised Nordic Surveys, Copenhagen 1998.

4. The first tests by Statistics Denmark and Statistics Finland in winter 1998/1999 were discussed at the WPIIS meeting in April 1999 and a draft proposal for a model questionnaire was presented at the Voorburg Group on Services Statistics meeting in Christchurch (October 1999). With the input from the Voorburg Group, a revised model questionnaire was developed and tested at the end of 1999/first half of 2000 by Statistics Denmark, Statistics Finland, Statistics Norway and Statistics Sweden. The results from these surveys, together with experiences from similar surveys carried out by the Australian Bureau of Statistics, Statistics Canada and the Department of Trade and Industry (DTI) in United Kingdom, combined with the discussions at the WPIIS meeting in April 2000 [DSTI/ICCP/IIS(2000)6], formed the input to the revision of the model questionnaire that was discussed at the Voorburg Group meeting in Madrid (September 2000). New lessons were drawn from the winter 2000-2001 survey in the Nordic countries, the Eurostat pilot survey launched in the same period and the 2000 surveys of Statistics Canada and Australian Bureau of Statistics. Another round of discussion at the April 2001 WPIIS meeting [DSTI/ICCP/IIS(2001)1] and subsequent written comments have led to this final proposal.

questionnaire development. However, the language used in the questionnaire has to be understood by respondents and it is not expected that the exact wording of the definitions will necessarily be used, unchanged, in collection.

4. The questionnaire is composed of separate, self-contained modules to ensure flexibility and adaptability to a rapidly changing environment. As technology and policy priorities evolve, the model questionnaire will need to be reviewed and adapted over time. While the use of “core” modules allows the measurement on an internationally comparable basis, additional modules and new indicators within existing modules can be added to respond to evolving or country specific policy needs in this area. This is a built-in feature of the module-based approach of the questionnaire.

## 2. The framework

5. The underlying idea behind the elaboration of this model questionnaire is to guide the collection of internationally comparable statistics of ICT usage and electronic commerce in enterprises across OECD Member countries. The model is composed of modules that can be used either in their totality or as separate modules in specific national surveys, thereby adding the possibility of international comparisons to the value of purely national information. The model is designed as an economy-wide survey vehicle but can as well be used in surveys covering specific sectors.

6. The main features of the proposed model questionnaire on ICT usage and electronic commerce in enterprises are:

- *Link of indicators to user needs.* The model questionnaire reflects common elements of national ICT usage surveys that in turn are guided by national policy priorities. It also reflects OECD work on the development of a framework for user needs and priorities, definitions, and statistical measurement of core electronic commerce indicators [DSTI/ICCP/IE/IIS(2000)3/Rev1]. Since electronic business processes are carried out using ICT technologies and applications, core electronic commerce indicators can be measured in the context of the model ICT usage questionnaire proposed here;
- *Flexibility and adaptability.* The model questionnaire has been designed to be a flexible tool composed of modules that allow international comparisons of core indicators as well as the inclusion of country specific features. The modules can easily be revised - and are expected to be - to reflect rapid changes in the technology and evolving users' needs;
- *Minimise burden.* The model questionnaire is designed to reduce respondent burden and enhance international comparability by being short, by making use of filter questions and by using a very limited amount of quantitative questions and of questions related to “intentions”. As a result, most of the questions are expressed as multiple choices and make extensive use of “tick mark” boxes. Both the questions and the questions' flow have been intensively tested by some Member countries. To date they seem to work reasonably well and therefore are most likely to provide an initial harmonised basis for country comparisons. As the model questionnaire will be used by more countries, more experience will be gained.

## 3. The core modules

7. Given the urgent need for internationally comparable statistics on ICT usage and electronic commerce, the priority of the group has been that of developing a first set of five core modules to measure indicators related to the “readiness” and “intensity” of use of ICT and the Internet. Figure 1 shows the flow of questions and the indicators that can be measured by using the model questionnaire. Annex 1

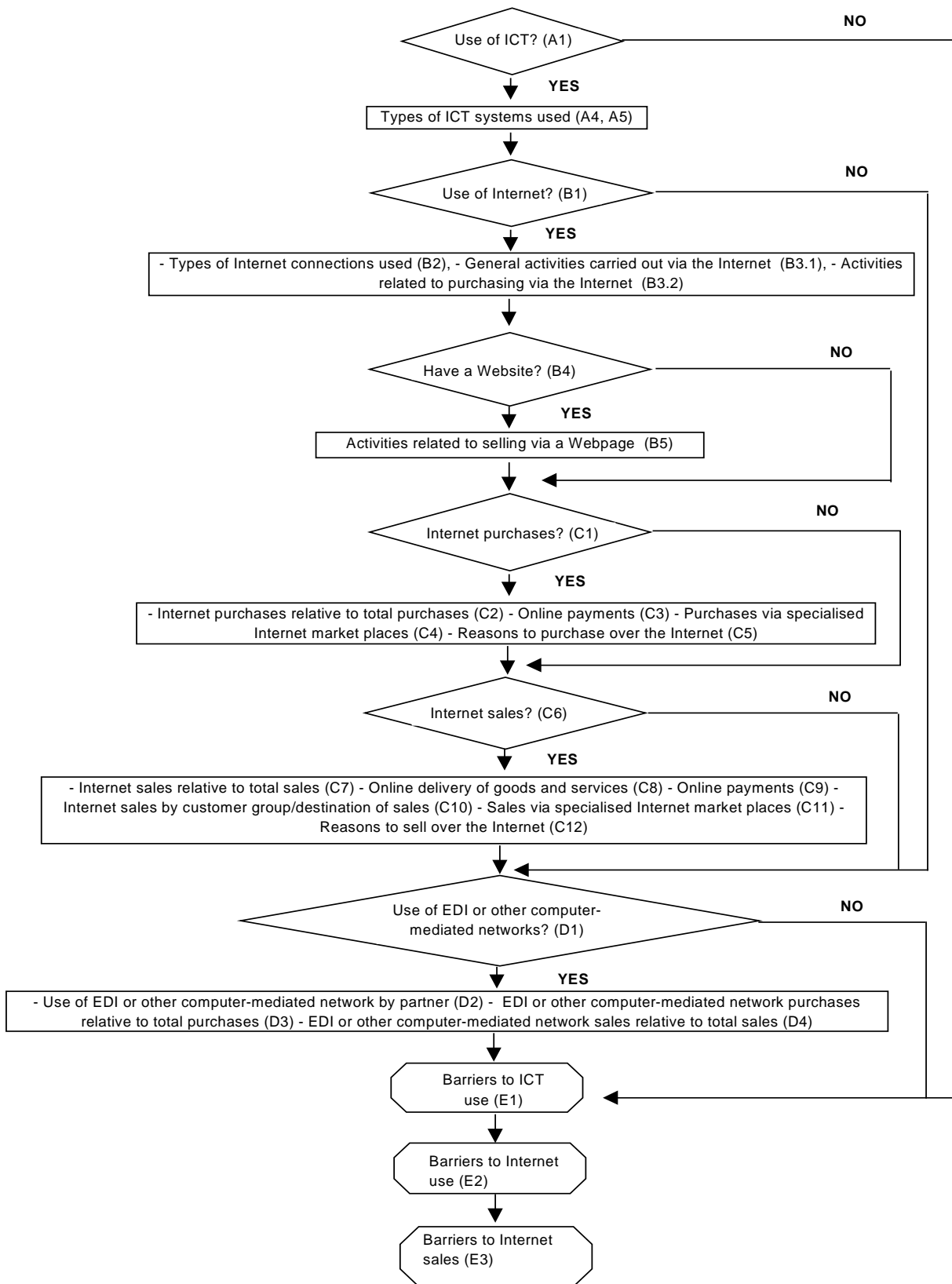
contains the proposed model questionnaire on ICT use and electronic commerce in enterprises. The five core modules are:

- **A. General information about ICT systems.** These questions relate to the type of computer-mediated devices, applications or networks that are used in the enterprise. It also measures the extent to which employees use personal computers (PCs) and the Internet in their daily work.
- **B. Use of Internet.** The module first focuses on the type of connection used and the speed of the connection. The second part relates to the enterprises business processes for which the Internet is used. At this stage the indicators mainly relate to information and communication intensive activities (e.g. information search, banking and financial activities, etc.) and to business processes related to transactions over the Internet. A distinction is made and separate questions are asked about processes related to purchases (the enterprise as a customer) and sales of goods and services (the enterprise as a provider). In the case of selling related activities the indicators are restricted to the functionality of the enterprise's Web site. This in order to focus on innovative ways of marketing, managing information and providing selling, payment facilities and other interactive services to customers.
- **C and D. Electronic commerce: Internet transactions and electronic transactions via EDI and other computer-mediated networks.** Drawing on the OECD work on defining and measuring electronic commerce (see section 4), the questionnaire contains two modules on electronic commerce transactions. **Module C** measures indicators related to both Internet sales and purchases. Questions related to the monetary amount of the transactions, or their breakdown by customer and geographical destination, are here expressed in percentage terms of total sales or purchases in order to maximise the response rate. In general statistical offices will be able to use that information to provide estimates of the monetary amount of the electronic transactions. EDI (Electronic Data Interchange) and other computer-mediated networks are traditionally used to conduct electronic transactions. **Module D** aims at better monitoring the development of new forms of sales by separating the turnover of Internet sales from that of other types of computer-mediated networks. The scope of EDI should be restricted to proprietary EDI and EDIFACT, and ideally EDI transactions both transported over the Internet and in the HTML based format, XML, should be included in module C (electronic commerce via Internet). This would allow to monitor the migration towards Internet technologies and the substitution between computer-mediated transactions and Internet transactions.
- **E. Barriers to the use of the Internet to sell goods and services, and barriers to the use of the Internet and ICT in general<sup>5</sup>.** While information about perceived barriers is perhaps not traditionally collected as part of official statistical surveys, this type of information is important for policy makers. For example, indicators on barriers can help monitoring issues of digital divide, potential bottlenecks related to the technology or the lack of appropriate skills, or issues closely related to the use of the Internet to conduct transactions, such as security and logistics concerns. Answers on perceived barriers and on their evaluation (e.g. 'no importance - some importance - much importance') are inevitably qualitative in nature and limit the use of these indicators for purposes of international comparisons. Nevertheless they can be useful to detect some common obstacles to the diffusion of new information technologies and can be used together with other types of quantitative indicators to explain differences between the intensity of use of new technologies across countries.

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5. The model questionnaire groups barriers on Internet sales, use of the Internet and ICT in general in one integrated module related to barriers. Another possible option is to place questions about barriers to the use of the Internet and to Internet sales right after the respective modules (B and C).

Figure 1. Route of the proposed questionnaire and indicators measured



#### 4 The model questionnaire and the OECD definitions of electronic commerce transactions

8. Because of the extreme policy interest in electronic commerce and the mandate received by OECD Ministers (Ottawa, 1998) to “compile definitions of electronic commerce that are policy relevant and statistically feasible”, WPIIS has devoted great attention to the measurement of electronic commerce. In particular WPIIS worked on the development of a framework for user needs and priorities, definitions, and statistical measurement of core electronic commerce indicators [DSTI/ICCP/IE/IIS(2000)3/Rev1].

9. In 2000 the OECD Member countries endorsed two definitions of electronic transactions (electronic orders) based on a narrower and broader definitions of the communications infrastructure. According to the OECD definitions, it is the method by which the order is placed or received, not the payment or the channel of delivery, which determines whether the transaction is an Internet transaction (conducted over the Internet) or an electronic transaction (conducted over computer-mediated networks). In April 2001 WPIIS developed guidelines for the interpretation of the two electronic commerce definitions (see Table 1)<sup>6</sup>.

**Table 1. The OECD definitions of electronic commerce transactions and proposed guidelines for their interpretation**

E-commerce transactions	OECD definitions	Guidelines for the Interpretation of the Definitions (WPIIS proposal April 2001)
<b>BROAD definition</b>	An <b>electronic transaction</b> is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over <b>computer-mediated networks</b> . The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.	<b>Include:</b> orders received or placed on any online application used in automated transactions such as Internet applications, EDI, Minitel or interactive telephone systems.
<b>NARROW definition</b>	An <b>Internet transaction</b> is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over the <b>Internet</b> . The goods and services are ordered over the Internet, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.	<b>Include:</b> orders received or placed on any Internet application used in automated transactions such as Web pages, Extranets and other applications that run over the Internet, such as EDI over the Internet, Minitel over the Internet, or over any other Web enabled application regardless of how the Web is accessed (e.g. through a mobile or a TV set, etc.) <b>Exclude:</b> orders received or placed by telephone, facsimile, or conventional e-mail.

10. Member countries have been encouraged to use the definitions of electronic and Internet transactions and to take account of the guidelines for the interpretation of the definitions, as part of questionnaire development. Since the language used in the questionnaire has to be understood by

6. See DSTI/ICCP/IIS(2001)M for an overview of the discussion.

respondents, it is not expected that the exact wording of the definitions and guidelines will necessarily be used, unchanged, in collection instruments.

11. Drawing from the above set of working definitions, the model questionnaire contains two modules on electronic commerce transactions; namely Internet based electronic commerce and electronic commerce via EDI and other computer-mediated networks. The fact that rapid technological development complicates precise and unambiguous definitions to be easily implemented in statistical surveys is acknowledged. The ability of respondents to distinguish between sales carried out through different types of computer-mediated applications will need to be tested. Experience in implementing these guidelines will be helpful for their review by WPIIS at its 2002 meeting.

## 5. Concluding remarks

12. The questions presented in the model questionnaire are mainly based on a qualitative approach to the needs for internationally comparable ICT usage statistics. The proposed questions primarily focus on the use of ICT, especially the Internet, as a tool and on the barriers to its use. At the moment the model does not cover questions on the impacts of ICT use on enterprises' organisation, production processes and skills, or quantitative questions such as investment on ICT goods and services. This is because the model has been designed to cover a core set of initial indicators related to the "readiness" and "intensity" of use of ICT and to limit the response burden. As the diffusion of ICT increases and so do its impacts, and as experience is gained in the measurement of internationally comparable indicators, new modules covering "impact" and quantitative indicators will be tested and added to the questionnaire. Also the modules related to the "readiness" and "intensity" of use of ICT will need to be revised and updated to take into account the emergence of new technologies and ICT related services.

13. A number of statistical issues are still outstanding in order to ensure the comparability of the statistics obtained via the proposed model questionnaire. The next steps will be to develop the methodological aspects further. For example, one issue is to develop proposals for the raising of data according to common weighting principles in order to ensure comparability across countries. Another issue is to clarify and harmonise the concept of income used when measuring the monetary value of the electronic transactions. Yet another issue relates to the survey's collection unit in each country. The choice of the statistical unit has influence on the results obtained, i.e. in larger units some ICT applications (such as Intranet applications) are used more frequently than in smaller units. At this stage the model questionnaire refers to the "enterprise" as the unit, in order to measure transactions *between* enterprises rather than *within* enterprises.

14. Despite the work that still needs to be done, WPIIS recommends the ICCP Committee to consider declassification of the model questionnaire on ICT usage and electronic commerce in enterprises. While the model questionnaire needs to be seen as a survey vehicle evolving over time, its adoption will hopefully stimulate the implementation of national surveys in the area of ICT use in enterprises. The experience sharing and testing of OECD Member countries in the last two years shows that a core set of ICT and electronic commerce indicators can be collected on an internationally comparable basis. The adoption of the model questionnaire will thus improve the comparability of ICT statistics and set an important milestone in such a challenging and policy relevant area of measurement.

## ANNEX I – MODEL QUESTIONNAIRE ON ICT USAGE AND ELECTRONIC COMMERCE IN ENTERPRISES

### Explanatory Notes

#### *Column variables*

The following column variables are applied to the majority of the questions:

Column variable	Categories	Application
Starting year	t-1 or earlier, t (reference year), Planned for t+1 If the survey is carried out every year, t-1 might only be used the first time.	ICT and Internet use
Evaluation	No importance, Some importance, Much importance	Barriers and motivations

A general residual category is used throughout the questionnaire 'Do not know/not relevant now' (can optionally be broken down into two separate categories).

#### *Use of column variables*

The column variables are used to sort the enterprises that actually use e.g. Internet from those who have plans. Example: Starting year in connection with Internet filter

B1. Does the enterprise use or plan to use Internet? (Filter question)

	Year t	Plans for year t+1	Do not know/ not relevant now
Does the enterprise use or plan to use Internet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Go to question ..→

## Model questionnaire on ICT usage and electronic commerce in enterprises

### Module A: General information about ICT systems

	Year t-1 or earlier	Year t	Year t+1	Do not know/ not relevant now
<b>A1. Does the enterprise use or plan to use personal computers, workstations or terminals?</b> (Filter question)	<input type="checkbox"/> → Go to question A4	<input type="checkbox"/> → Go to question A4	<input type="checkbox"/> → Go to question A2	<input type="checkbox"/> → Go to question A2

	Year t-1 or earlier	Year t	Year t+1	Do not know/ not relevant now
<b>A2. Does the enterprise use or plan to use Internet?</b> <sup>7</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Go to question E1	<input type="checkbox"/> Go to question E1

<b>A3. Type of equipment used to access the Internet in year t?</b> (Tick all that applies)	
Mobile phone	<input type="checkbox"/> → Go to E1
Other equipment (please specify)	<input type="checkbox"/> → Go to E1

<b>A4. Does the enterprise use or plan to use the following:</b> <sup>8</sup> (One entry in each row)	Year t-1 or earlier	Year t	Year t+1	Do not know/ not relevant now
E-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intranet <sup>9</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extranet <sup>10</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<sup>7</sup> Questions A2 and A3 are addressed to those enterprises that do not use personal computers, workstations or terminals but might use the Internet by accessing it by other means. Those two questions are not to be considered core, therefore they can be eliminated if there is no interest in measuring Internet use through devices other than personal computers, workstations or terminals.

<sup>8</sup> The ICT-indicators such as Internet and EDI should not be asked if they are used as filter-questions in other modules.

<sup>9</sup> An internal company communications network using the same protocol as the Internet allowing communications within an organisation.

<sup>10</sup> A secure extension of an intranet that allows external users to access some parts of an organisation's Intranet.

**Model questionnaire on ICT usage and electronic commerce in enterprises**

Computer-mediated networks other than Internet (e.g. EDI, Minitel, interactive telephone systems)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<b>A5. The share of the total no. of employees using in normal work routine:</b>	
Personal computer, workstation or terminal	%
Personal computer connected to the Internet/www	%

**Module B: Use of Internet**

	Year t-1 or earlier	Year t	Year t+1	Do not know/ not relevant now
<b>B1. Does the enterprise use or plan to use Internet?</b> (Filter question)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> → Go to D1	<input type="checkbox"/> → Go to D1

<b>B2. Type of external connection to the Internet in year t? (Tick all that applies)</b>	
Analog modem (Standard phone line)	<input type="checkbox"/>
ISDN	<input type="checkbox"/>
xDSL (ADSL, SDSL etc.) or other fixed connection < 2Mbps	<input type="checkbox"/>
Other fixed connection >= 2Mbps (Frame relay or other broadband network service)	<input type="checkbox"/>
Wireless connection (satellite, mobile phones etc.)	<input type="checkbox"/>
Do not know	<input type="checkbox"/>

<b>B3. For which of the following purposes has the enterprise used the Internet in year t? (Tick all that applies)</b>	
<b>General activities</b>	
Information search	<input type="checkbox"/>
Monitoring the market (e.g. prices)	<input type="checkbox"/>
Communication with public authorities	<input type="checkbox"/>
Banking and financial services	<input type="checkbox"/>
Information about employment opportunities (recruitment and search)	<input type="checkbox"/>

**Model questionnaire on ICT usage and electronic commerce in enterprises**

<b>Activities related to purchasing goods and services – the enterprise as a purchaser</b>					
Information search on homepages	<input type="checkbox"/>				
Receiving purchased digital products	<input type="checkbox"/>				
Receiving free digital products	<input type="checkbox"/>				
Obtaining after sales services	<input type="checkbox"/>				
	Year t-1 or earlier	Year t	Year t+1	Do not know/ not relevant now	
<b>B4. Does the enterprise have or plan to have a Web site?</b> (Filter question)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Go to C1	<input type="checkbox"/> Go to C1	

<b>B5. Homepage facilities – the enterprise as a supplier</b> (Tick all that applies)	
Marketing the enterprise's products	<input type="checkbox"/>
Facilitating access to product catalogues, price lists etc.	<input type="checkbox"/>
Inquiry/contact facility	<input type="checkbox"/>
Customised page for repeat clients (e.g. customised presentation of product preferences)	<input type="checkbox"/>
Providing after sales support	<input type="checkbox"/>
Capability to provide secure transactions (e.g. firewalls or secure servers)	<input type="checkbox"/>
Integration with back end systems	<input type="checkbox"/>

**Module C: E-commerce via Internet<sup>11</sup>** (asking enterprises with Internet access)

**Purchases via Internet**

<b>C1. Has the enterprise purchased products via the Internet in year t?</b> (Filter question)	Yes <input type="checkbox"/>	No <input type="checkbox"/> →	Do not know <input type="checkbox"/> Go to C5
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<sup>11</sup> See section 4, Table 1, in the paper. This module includes EDI over the Internet.

<b>Model questionnaire on ICT usage and electronic commerce in enterprises</b>
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<b>C2. What percentage of the total purchases (in monetary terms) do the Internet purchases represent?</b>	%	Do not know <input type="checkbox"/>
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<b>C3. Has the enterprise paid on-line<sup>12</sup> for products purchased on the Internet?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Do not know/not relevant now <input type="checkbox"/>
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<b>C4. Has the enterprise purchased products via specialised Internet market places<sup>13</sup> in year t?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Do not know/not relevant now <input type="checkbox"/>
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<b>C5. What significance have the following motives for purchasing via the Internet (Multiple choice)</b>	No importance	Some importance	Much importance	Do not know/not relevant now
To simplify transactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To purchase goods or services at lower costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To increase access to, and awareness of, suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To speed up business processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Sales via Internet</b>
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<b>C6. Has the enterprise received orders via the Internet in year t? (Filter question)</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/> →	Do not know <input type="checkbox"/> Go to D1
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<b>C7. What percentage of the total turnover (in monetary terms) do the Internet sales represent?</b>	%	Do not know <input type="checkbox"/>
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<b>C8. Has the enterprise delivered over the Internet in year t any of the digitised products it sells? (e.g. sales of music, packaged software, professional services, etc.)</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Do not know/not relevant now <input type="checkbox"/>
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<sup>12</sup> On-line is defined as an integrated ordering-payment transaction.

<sup>13</sup> More than one enterprise is represented at the Web site. The market sells either certain goods/services or is addressed to limited customer groups.

**Model questionnaire on ICT usage and electronic commerce in enterprises**

<b>C9. Has the enterprise received on-line<sup>14</sup> payments for Internet sales in year t?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Do not know/not relevant now <input type="checkbox"/>
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<b>C10. Breakdown of Internet sales</b>				
Please break down the Internet sales in year t into the following customer groups/destination of sales (estimate in percentage):				
1) Other enterprises 2) Households 3) Others (1+2+3=100 %)	%	%	%	Do not know <input type="checkbox"/>
1) Homemarket (domestic sales) 2) Exports (non domestic sales) (1+2=100 %)	%	%	Do not know <input type="checkbox"/>	

<b>C11. Has the enterprise sold products to other enterprises via a presence on specialised Internet market places<sup>15</sup> in year t?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Do not know/not relevant now <input type="checkbox"/>
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<b>C12. What significance have the following motives for selling via the Internet (One entry in each row)</b>	No importance	Some importance	Much importance	Do not know/not relevant now
Company image considerations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To reduce business costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To speed up business processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To improve quality of services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To expand beyond normal business hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To expand the market geographically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To launch new products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To keep pace with competitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<sup>14</sup> See note 11.

<sup>15</sup> See note 12.

**Model questionnaire on ICT usage and electronic commerce in enterprises**

**Module D: E-commerce via EDI or other computer-mediated network (other than Internet)<sup>16</sup>**  
(asking enterprises with ICT)

	Year t-1 or earlier	Year t	Year t+1	Do not know/ not relevant now
<b>D1. Does the enterprise use or plan to use EDI or other computer-mediated networks?</b> (Filter question)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> → Go to E1	<input type="checkbox"/> → Go to E1

<b>D2. Has the enterprise in year t used EDI or other computer-mediated networks in relation to:</b> (Tick all that applies)	
Customers	<input type="checkbox"/>
Suppliers	<input type="checkbox"/>
Banks/Financial institutions	<input type="checkbox"/>
Others	<input type="checkbox"/>

<b>D3. Purchases via EDI or other computer-mediated networks</b>		
If the enterprise orders products via EDI, what percentage of the total purchases (in monetary terms) does this represent in year t?	%	Do not know <input type="checkbox"/>

<b>D4. Sales via EDI or other computer-mediated networks</b>		
If the enterprise receives orders via EDI, what percentage of the total turnover (in monetary terms) does this represent in year t?	%	Do not know <input type="checkbox"/>

<sup>16</sup> See section 4, Table 1, in the paper. EDI over the Internet is included in module C.

**Model questionnaire on ICT usage and electronic commerce in enterprises**

**Module E: Barriers on the use of Internet and ICT in general**

**What significance do the following barriers have for the present or future use of ICT and the Internet<sup>17</sup>**

<b>E1. Barriers to the use of ICT in general</b>	No importance	Some importance	Much importance	Do not know/ not relevant now
ICT expenditure too high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New versions of existing software introduced too often	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supply of ICT-technology not matching the ICT needs of the enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The level of ICT skills is too low among the employed personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficult to recruit qualified ICT personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Existing personnel reluctant to use ICT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of perceived benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>E2. Barriers to use of Internet</b>	No importance	Some importance	Much importance	Do not know/ not relevant now
Security concerns (e.g. hacking, viruses)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technology too complicated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expenses of development and maintenance of Web sites too high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lost working time because of irrelevant surfing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data communication expenses too high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data communication is too slow or unstable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of perceived benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<sup>17.</sup> Barriers on Internet sales, use of the Internet and ICT in general are here grouped in one integrated module related to barriers. Another possible option is to place questions E1 and E2 separately after modules B and C respectively.

**Model questionnaire on ICT usage and electronic commerce in enterprises**

<b>E3. Barriers to Internet sales</b>	No importance	Some importance	Much importance	Do not know/ not relevant now
The products of the enterprise not applicable for Internet sales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customers not ready to use Internet commerce	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Security problems concerning payments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uncertainty concerning contracts, terms of delivery and guarantees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost of developing and maintaining an e-commerce system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logistical problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Considerations regarding existing channels of sales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Module X: Background information<sup>18</sup>**

<b>X1. Name and address of the enterprise</b>
<b>X2. Activity of the enterprise</b>
<b>X3. No. of employees end of year t</b>
<b>X4. Total purchases of goods and services in year t (national currency)</b>
<b>X5. Total sales in year t (national currency)</b>

<sup>18</sup>

The information asked for in this module might be totally or partially available from the Statistical Business Register and/or statistical registers and thus might not need to be included in the questionnaire.