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BUSINESS SERVICES IN EUROPE: THE INFORMATION TECHNOLOGY PILOT LAUNCHED IN 5 COUNTRIES

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SESSION 3

Abstract

Many European researchers and statisticians as well as policy-makers are increasingly aware that services statistics are underdeveloped compared to other economic areas. Because of the lack of adequate statistics, in-depth analyses of the performance of sub-sectors within the services sector is seriously hampered.
In recent years the European Union has taken various initiatives to bridge this information gap. For instance, in 1996 a regulation has been adopted with regard to structural business statistics. This regulation requires an annual procurement of certain -mostly accounting- variables for all ISIC sectors. However, as the regulation mainly satisfies the needs for macro-economic analysis, a further development of services statistics is still needed.

1. Introduction

Many European researchers and statisticians as well as policy-makers are increasingly aware that services statistics are underdeveloped compared to other economic areas. Because of the lack of adequate statistics, in-depth analyses of the performance of sub-sectors within the services sector is seriously hampered.

In recent years the European Union has taken various initiatives to bridge this information gap. For instance, in 1996 a regulation has been adopted with regard to structural business statistics. This regulation requires an annual procurement of certain -mostly accounting-variables for all ISIC sectors. However, as the regulation mainly satisfies the needs for macro-economic analysis, a further development of services statistics is still needed.

Within the services sector, the very complex and heterogeneous business services sector (i.e. roughly speaking ISIC 71-74) causes specific measurement problems. Many sub-sectors (i.e. information technology, management consultancy and temporary work agencies) show double digit growth rates year after year. Because of this rapid expansion, but also because of the influence of business services on the organisation and the dynamics of many enterprises it is undisputed that business services belong to the most significant sub-sectors in the European economy today.

In 1996, Statistics Netherlands in a joined effort with Danmarks Statistik and strongly supported by the statistical office of the EU (Eurostat) arrived at an action-oriented approach for the development of business services statistics. This approach can be described as follows:

- The strategy should be output-oriented. This means that results have to be published that create enthusiasm to raise further funds.
- While the detailed accounting statistics derived from the profit and loss account are only marginally used by enterprises, at the same there is an information need that is not yet satisfied. For instance, many potential users showed a great interest in a differentiation of their products as well as by the users of those products. So, an important goal of the approach is to test all kinds of innovative questions.
- Of the utmost importance is the creation of a support from 'the field' i.e. from the enterprises concerned. Consultations with these enterprises or if possible with their representatives, the trade organisations, should *always* take place whenever a new survey –or a new module within an existing survey- on business services is launched. This guarantees expertise from the side of the sector itself and it precludes large mistakes in the construction of the questionnaire
- For reasons of costs and manageability, the number of EU members in a survey should be limited to a maximum of 5. Conclusions on countries not included should be drawn by analogy.
- Not all sub-sectors have to be covered, but only the most important in terms of turnover, employment, growth dynamics, etc.

- The sample size is related to the available scarce resources with more emphasis as usual. This means that aspects such as the degree of concentration are taken into account.
- The administrative burden should be kept at the lowest possible level. Wherever feasible, alternatives (administrative data) should be used.

The combination of these criteria has led to the launching of four pilot surveys financed out of Eurostat's budget: *software and computer services (DG III in Brussels co-funded this project), labour recruitment, industrial cleaning* and *engineering services.*

The general objectives of these pilots went beyond the traditional focus on variables needed for national accounting purposes. With the assistance of a knowledgeable consultant for each pilot project many new questions were included such as on: employment qualifications, globalisation, breakdown of turnover by client's category and by product, concentration of clients, innovation.

In this contribution, some in our view interesting experiences gained from one of these pilots i.e. on software and computer services - quickly but admittedly not fully adequate renamed as: *information technology* - are presented. First, some more information is given on the IT-pilot itself.

2. Project design

Five statistical offices (NSI's) were involved: Tilastokeskus (Finland), Istat (Italy), Statistics Netherlands (co-ordinator), INE (Spain) and ONS (United Kingdom). The survey conducted in each country was a one-off annual survey with reference year 1996 (1995 being the exception).

The sample size was 500 accepted (i.e. good) answers for the large countries and 200 for Finland and the Netherlands. Spain and Italy linked their pilot survey to much larger IT-surveys that already were scheduled in the working programs of INE and ISTAT. For Spain this meant, that only a draft version of the pilot questionnaire could be used because the INE questionnaire (reference year 1995) was sent out before the final version became available. The Italian sample - including the pilot sample- was sent out in the autumn of 1997 (reference year 1996). This caused a slight delay in the timing of the common tabulation program.

Only those enterprises that have computer services as their main activity (i.e. ISIC-Rev.3 group 72) were included in the sample. So, whenever these services are rendered by enterprises whose main activity is different (i.e. trade, business consultancy) they were not covered by the pilot. Although this limitation is obvious for statisticians –since for a convenient data collection we usually follow the institutional approach- this had to be explained to the branch organisations that were interested in the total output of the 'IT-product'.

The model pilot questionnaire was only used as a starting point for the NSI's since a fine-tuning took place in co-operation with national IT branch organisations TIPAL (Finland), AIPA and ANASIN (Italy), CSSA (UK), SEDISI (Spain) and FENIT (Netherlands).

The national fine-tuning included, apart from the contacts with branch organisations that led to country-specific wording and even to some new questions, many other elements:

- Official manuals (such as the manual developed by Eurostat while preparing the regulation on structural business statistics) were used to the maximum extent possible. For new pilot questions there were of course no handbooks available. Discussions in pilot meetings led to practical solutions. We agreed that whenever there was no black and white situation, participants should stick to time-honoured country practices. Examples include: statistical units (enterprise, except for the Netherlands: kind of activity unit) and: employees according to education (differentiation between secondary and tertiary not always the same). Another reason that prevented us from drawing up too detailed descriptions is the rapid change in the information technology branch. Therefore, even some classifications for products valid for e.g. the year 1996 are obsolete in 1997/1998.
- Because the administrative burden should be kept low, countries not only made use of the pilot questionnaire but also of available other sources. Notably Finland used registers to supplement the data set.
- In the Netherlands the 10 largest enterprises are responsible for 1/3 of total turnover, while the 80% majority of very small enterprises accounts for only 6% of turnover. Other countries show comparable concentration ratios. Because of this a top-down allocation of the samples was agreed. Inclusion of the large enterprises -it was thought- would guarantee that results would in any case be significant on a macro-level level. It should be mentioned here already, that notably the UK has had problems with the very large enterprises.
- Both sample sizes and response rates were different in the 5 countries. See the table below.

Sample sizes and response rates for the IT-pilot

	UK	FI	NL	IT	SP
Sample size	1,200	481	390	3,012	3,546
Response rate (%)	21.0	44.5	66.4	36.5	52.8

Apart from the reasons already mentioned this also has to do with the nature of the surveys (voluntary: Finland and UK vs. mandatory: the other participants).

For a more exhaustive treatment of methodological items the reader is referred to the *Methodological Manual for Statistics on Business Services* that has been developed by *Luis Rubalcaba and Jesús Antón (Madrid, March 1988).*

3. Some experiences

3.1 Many stakeholders
There were no less than 6 parties directly involved in the IT pilot: the pilot co-ordinator, the branch organisations, a project consultant, the sample population, Eurostat/DGIII and the national statistical institutes.

Although beforehand it was expected by the co-ordinator that the IT branch organisations, the project consultant and the enterprises concerned would co-operate harmoniously, that the NSIs would be happy to restrenghten their relations with enterprises to promote good

response rates and that Eurostat would solely act as a stimulator and a money giver, real life was more colourful.

The co-ordinator's point of view
The co-ordinator's main task was to create enthusiasm for the actual implementation of the accepted strategy to promote business services statistics, notably IT-statistics, in Europe. Enthusiasm increases as results can be presented. These results should not only cover the information needs for macro-economic analyses of notably the national accounts, but also should focus on the industry itself (enterprises and branch organisations) and on the needs for business policy makers. The co-ordinator's dilemma was: how to satisfy these information needs given small and biased samples and all kinds of methodological peccadilloes?

Although the pilot is not yet finished the results thus far are promising. The first inter-country data set - reference year 1996!- already has been published by Eurostat (*Statistics in Focus*: *Business services Statistics 1998, Software and computer services*, Luxembourg, August 1988)*. Besides, several NSIs already released their own publications based on the pilot.

Branch organisations
While the initiative for the 4 business services pilots was taken by the small task force mentioned in the introduction, and the model questionnaire of the IT-pilot was designed with the help of the pilot consultant, a knowledgeable Dutch branch official, the questionnaires that were actually used in the 5 countries were finalised in close contacts with the branch organisation of each country.
In the UK, for instance, the final questionnaire was drawn up in negotiations with DTI (the Government's Department of Trade and Industry) and CSSA (the Computing Services and Software Association). Data collection for the IT-pilot has been the responsibility of both the Office for National Statistics (sample size: 700) and CSSA (500). On the cover of the questionnaire 4 logotypes - ONS, Eurostat, DTI and CSSA- appeared.
Given these close bilateral contacts, it is remarkable that there still is such a large overlap in the countries' questionnaires (see Annex A).

The project consultant

time period in which to be requesting enterprises participation in projects which require multiple inputs and approvals. Key people are away on holiday. Offices are understaffed and incoming mail may not be managed as carefully as possible.

with our branch consultant. A couple of these hypotheses and their testing results are presented below.

Hypothesis 1: Customers expect more business related knowledge; they to an increasing extent require 'added value' from the IT-supplier. Therefore, enterprises show a tendency to specialise.

Test result: A form of specialisation has to do with the turnover breakdown by type of client. It appears that with regard to the structure of demand, manufacturing inclusive construction and financial intermediation are in general the largest clients for the enterprises in computer

Turnover by type of client (1996)
(%)

Type of client	Sp	It	Nl	Fi
Manufacturing incl. Construction	20.1	25.6	17.8	25.8
Wholesale and retail trade	12.6	15.1	7.6	9.8
Financial intermediation	18.0	23.3	22.7	17.3
Infrastructure related activities[1]	14.1	17.7	37.3	16.8
Public administration	16.4	:	10.4	14.1
Others [2]	18.8	18.3	4.4	16.1
Total	100.0	100.0	100.0	100.0

1 Transport, communication, electric, gas and water supply, health and education
2 Horeca, real estate, renting and business services and private households
UK: no figures available
Source: Eurostat, NSIs

services. The share of each of these two sectors in the total turnover varies between 1/5 and 1/4 in all countries and they comprise together between 40% and 50% of the total demand of computer services.

From the question that allows for a breakdown of turnover by the share of the 3 biggest clients it appears that on average in Spain, the Netherlands and Finland enterprises rely for about 50% on these few clients. For medium sized enterprises this ratio is about 30% for most countries (the UK figures are much lower but these data are suspect). In Spain the large enterprises even depend for more than 70% of turnover on the 3 biggest clients.

The hypothesis can be rejected nor affirmed because the pilot only measures 1 point in time. It seems that many software and computer services enterprises are quite vulnerable (dependant on only a few clients) and that they specialise mainly on manufacturing and financial intermediation.

Hypothesis 2: IT is a male's environment.

Test results: With the exception of Spain, the great majority of the employees in computer services are employed on a permanent basis (see the table below).

Employees divided by working time and gender (1996)
(%)

	Sp	It	Nl	Fi	UK
Permanent	69.3	94.8	:	95.4	98.0
Temporary	30.7	5.2	:	4.6	2.0
Total	100.0	100.0	:	100.0	100.0
Full-time	90.0	90.5	96.2	97.9	:
Part-time	10.0	9.5	3.8	2.1	:
Total	100.0	100.0	100.0	100.0	:
Male	65.0	51.9	78.6	68.4	69.0
Female	35.0	48.1	21.4	31.6	31.0
Total	100.0	100.0	100.0	100.0	100.0

:   Not available
Source: Eurostat, National Statistical Institutes

  The ratio between full time and part time is about the same. In Spain , Finland and the UK about 1/3 of the employees are women whereas in Italy this is almost 50%. These figures together with the low number of teleworkers found in the surveys suggest that software and computer services are indeed a man's world.

Hypothesis 3: The IT-business is a knowledge business. In former days this did not require heavy investments. Nowadays IT activities require sophisticated methods and tools and licenses for the use of these tools. Therefore, IT companies can not start as easily as in former days because of the necessary large investments in tools and training.
Test results: It turned out that this hypothesis could not be tested in a proper way. The question on 'workbenches' caused a lot of confusion (see par. 3.3). Another indicator is the % of turnover spent on intangibles (R&D, computer software, marketing and training). According to our survey, this % is rather low for a knowledge based sector. It needs to be added, however, that these items caused serious inter-country measurement problems (see also par. 3.3)

From these examples it is clear that singular hypotheses (IT is a male's world, IT is not an export intensive sector) can be tested quite easily. However, testing of more complex and/or dynamic hypotheses usually requires a combination of questions. Especially when the answers are contradictory, further analysis is advisable.

3.3 An evaluation of the innovative questions

In the following sections the experiences of the 5 participating countries with regard to the questions of the IT-model questionnaire are evaluated. From our list we have left out questions that have been tested time and again in other surveys. These are mostly related to general characteristics of the enterprises or to accounting variables. The evaluated questions were classified into three groups:

A. Questions to be included as such or with minor modifications
B. Questions "to be considered"
C. Questions to be excluded

For each question a brief evaluation together with conclusions is included. In some cases also proposals for improvements of future surveys are given.

A. Questions to be included as such or with minor modifications

Turnover breakdown according to type of product (Question 3.1 of model questionnaire)

Hardware consultancy services
Software consultancy and supply services
  Recorded data bearing media of a kind used in automatic data processing machines
  Programming services of packaged software products
  Software consultancy and other supply services
Data processing services
  Computer facilities management services
  Computer processing services
Database services
Maintenance and repair services of office, accounting and computing machinery
Other computer-related services
Other products

This framework is based on the Classification of Products by Activity (CPA) , December 1995 version (the CPA is more or less the EU equivalent of United Nations' CPC). Each country could create a further breakdown.

In discussions it appeared that the CPA breakdown was not considered appropriate by branch experts. The UK breakdown, for instance, has been devised by the branch association CSSA (see the table below).

UNITED KINDOM	IN % OF TOTALS PER CATEGORY			
PILOT STUDY FIGURES	All enterprises	Small	Medium	Large
IT Consultancy	20%	20%	24%	10%
Custom software development	2%	1%	3%	0%
Systems Inegration	2%	3%	1%	0%
Turnkey solutions	1%	0%	2%	0%
Value added reselling	1%	0%	2%	0%
Hardware maintenance	5%	6%	3%	0%
Software maintenance	1%	1%	1%	19%
Support services	14%	15%	4%	0%
Bureau processing	4%	4%	3%	6%
IT Outsourcing (facilities management)	6%	6%	0%	0%
Business Process Outsourcing	0%	0%	0%	0%
Education and training	0%	0%	0%	3%
Networking services	6%	5%	8%	0%
Information, Internet, Intranet and web services	0%	0%	2%	0%
Staff services	2%	2%	1%	0%
Software supply	20%	20%	23%	49%
Other services	17%	16%	23%	14%

Even though the modified classifications in most countries were more detailed than the CPA-framework, the enterprises did not judge this question problematic and the quality of the responses appeared to be good.

Conclusion: the breakdown of turnover according to products provides data which is not otherwise available. It is also highly relevant for the National Accounts and the CPA testing perspective. The question, even modified, is recommended to be included in future surveys.

Turnover breakdown according to type of client (Question 3.3)
Hotels and restaurants
Manufacturing incl. construction
Wholesale and retail trade
Transport and storage
Communication
Financial intermediation
Real estate, renting and business services
Public administration and defence
Education
Health and social work
Electric, gas and water supply
Private households: incl. leisure software

The classification used here was derived from NACE headings (i.e. the EU equivalent of ISIC) at the most aggregated level of detail. This question clearly was more difficult to answer than e.g. the breakdown according to products. The classification does not explicitly make a breakdown into public and private customers, which is a problem particularly for 'health and social work' and 'education'. In some cases agriculture was indicated as being a client, but private households have in practice no importance.
Especially for the UK this breakdown was rather problematic. For all enterprises as the group "other industries or clients" accounts for almost 80% of turnover. This does not imply that there are other categories; many respondents were unable to provide the split of their turnover by client because they do not record it in their accounts.

Conclusion: to be included in future surveys, but with country specific modifications. Possibly an explicit breakdown into public and private customers should be included. This question is also relevant for national accounts purposes.

Turnover breakdown according to the three biggest clients (Question 3.4)
The three biggest clients of the enterprise constitute:
Less than 10% of turnover
10 - 49% of turnover
50% or more of turnover

This question was included to give an indication of the vulnerability of enterprises. It turned out that this question was easy to answer and interpret. Particularly the differences by enterprise size classes are interesting from an analytical point of view.

Conclusion: To be included in future surveys.

Number of persons employed (Question 5.1)

Total number of persons employed as of end December
Number of persons employed converted into FTEs (full time equivalents)

The question on persons employed should explicitly ask about employees and working entrepreneurs (own account workers). For the pilot this is, however, a minor issue since the great majority of the respondents are limited companies with no unsalaried owner workers. The conversion to FTE's caused no problems to enterprises.

Conclusion: As a basic background variable this question should be included in future surveys.

Number of employees according to type of contract by sex and full time/part time (Question 5.2)

	PERMANENT		TEMPORARY	
	Male	Female	Male	Female
Full time				
Part time				

Conclusion: To be included and modified for future surveys.

B. Questions "to be considered"

Exports (Question 4.1)
Total
    To European Union countries, namely ....(max. 3 countries)
    To countries outside the European Union, namely...........................(max. 3 countries)

Available data on exports related to computer software and services is scarce and this question was included to fill that gap. Most countries (the exception being Finland) did not give the 3 most important export countries. Finland used this question to make a ranking list of the export countries available. UK and Spain experienced that this question (and others on exports) were answered very well.

Conclusion: to be included in future surveys

Organisation of the export (Question 4.2)
We use our own domestic organisation to trade on foreign markets
We use foreign agents, trade houses, dealers etc.
We use an organisation of a foreign affiliate
We use a domestic joint venture
We use a foreign joint venture
We use licenses
Other (for instance: Internet)

Spain, Italy and the Netherlands (accidentally) did not include this question. This question for Finland and the UK was asked on a tick mark basis and thus easily answered. It was a clear question and it revealed also the differences in export channels between small, medium and large enterprises.

Conclusion: to be considered for future surveys.

Employees according to age (Question 5.4)
Below 25 years
Between 25 and 39 years
39 Years and over

The age structure of the dynamic IT-branch was considered of particular interest. The classification started below 25, which appeared to be of minor importance probably due to increasing educational requirements in this activity. For future surveys the age classification is suggested to be revised. The limit of the lowest class could be raised to 29 years.

Conclusion: This employment related data could also be provided from other sources such as Labour Force Surveys or Censuses. If the data is available on this activity level, this option should be preferred.

Recruitment policy (Question 5.5)

IT-experienced vs. generally oriented personnel

        Percentage of personnel recruited in 1996 with a strong IT-experience

        Percentage of personnel recruited in 1996 with a more general knowledge of the business they are working for

 and:

Occupation of employees and recruited personnel during the last year (Question 5.6)

	EMPLOYEES	RECRUITED DURING THE LAST YEAR
Development (programmers, analysts)		
Processing (operators, shiftleaders)		
Education and training (trainers)		
Marketing and sales		
Managerial and staff		
Total	100	100

These two questions were considered to reflect the dynamics in labour markets. In the case of IT, this area was thought to be particularly relevant. We do know that the number of persons employed in IT has been growing substantially during this decade. However, the movements of labour within the industry and between the other industries are largely unknown.
The questions introduced here generated data on gross movements of personnel, which could be related to total employment. It did not ask the number of employees that have left during the last year, which means that the total net increase cannot be evaluated.

The first question was related to the background of newly recruited persons, i.e. whether they had a strong IT-experience or not. Only Italy and the Netherlands stuck to the model question and received good answers. This question was modified for Finland by making the breakdown into less/more than two years working experience, which was in general properly answered. Spain and the UK (on the advice of the UK trade association) did not include this question.

splitting total expenditure into two parts explicitly: personnel and other costs. This would indicate all the labour costs involved in the intangible operations without the danger of different interpretations of this question.

Another option would be to harmonise the items asked with the enterprises' cost accounting practices, but it might be that they are not followed on this level. To finalise this question for the next surveys would probably need fieldwork among enterprises.

Conclusion: to be considered for future surveys but the question has to be formulated better.

C. Questions to be excluded

Breakdown of turnover by products that did not exist 1 year ago (Question 3.2)
Categories used: see question 3.1 (7 main product categories)

This question was only included in the Italian and UK pilots. Istat wants to publish the results. In the UK survey very few businesses answered this question. This may reflect the difficulty in measuring this variable. Finland did not ask this question due to expected problems in the interpretation of new vs. updated products.

Conclusion: even though this question would indicate the dynamics in IT-products, the interpretation is too difficult in order to obtain valid answers. Suggestion: not to be included in future surveys.

Teleworking as a % of total employees (Question 5.3)
Full time
Part time

Teleworking was thought to fit quite nicely in the IT-branch as an implication of new technology and development of communication networks. However, an obvious conclusion to be drawn from the figures (4 countries, Spain excluded) is that teleworking is only of minor importance in IT-enterprises. The figures also indicate that inter-country differences between full time and part time workers are too large to be plausible.
The definition of teleworking is important for the interpretation of results, since the normal homeworking after office hours is not generally considered as teleworking.

Conclusion: as the importance of teleworking appears to be low, this question is suggested to be excluded in future surveys. The best solution for the follow-up of teleworking development is probably in the context of specific Labour Force(and other employment) surveys.

Breakdown of employees according to education (Question 5.8)
Lower secondary
Upper secondary
Tertiary

As company training is more an indicator of maintaining the competitiveness of human skills, the educational background is an indicator of existing human capital in the enterprise. Both are important indicators of the competitiveness of knowledge intensive industries such as the one investigated.

However, the difficulties in providing comparable data due to classification problems and differences in educational systems turned out to be severe. This data need to be provided in a harmonised way i.e. based on registers, Censuses or some other consistent sources. Even then there are comparability problems expected.

Conclusion: Not to be included in future surveys due to severe comparability problems.

Does your company use workbenches and/or support tools? (Question 6.1)
> If yes, then how many legal licenses does your enterprise use with regard to
>   Designer workbenches (to specify and formulate the requirements of the system)
>   Analyst workbenches (to transform specifications into more specific documents for the
>   implementation)
>   Programmer workbenches (to create, change, implement and test components)
>   Project manager workbenches (to calculate, estimate, plan and control the project)
>   Support tools

The following commentary to this question was –after a lot of deliberations- included in the model questionnaire: *a workbench in software engineering consists of a set of tools, procedures and documents together with an encyclopaedia of all system information. The result is that all system information is available to all participants in relation to the planning, design, analysis, implementation, testing and maintenance of information systems.* Even this text caused a lot of confusion. The contact persons from the NSIs did not understand what was meant and the representatives of various branch organisations suggested that this question be omitted. UK and Spain indeed skipped this question. Only Istat seems to have obtained answers that were judged good enough to be published.

Conclusion: not to be included in future surveys

4. Some concluding remarks

1. In spite of many problems, both expected and unforeseen, we have a good feeling about the IT-pilot. The first data -although sometimes further analysis is absolutely necessary- have

been made available very rapidly and this has led -at least potentially- to interesting new information on the software and computer services sector.

2. We believe that this pilot paves the way for follow up surveys. These could be based on the *Methodological Manual for Statistics on Business Services*, mentioned earlier in par. 2.2. In the future, statistical units must be harmonised, samples drawn should be more representative, grossing up methods and accounting periods need to be the same for all countries, etc. Again it is stressed here that the two main goals of the IT-pilot were different: to create enthusiasm and to test many new questions.

3. The creation of a good communication network between all parties concerned is something that should be taken care of. If this is neglected, problems of a -at least at first sight- trivial nature (language, telephone numbers, contact persons) are becoming very annoying.

4. The model questionnaire was in general considered too complex and its scope too broad (blocks such as production, accounts, exports, employment next to other separate and detailed questions). The questionnaire could not be dealt with by one department or division within a company but had to be passed around.
    Furthermore there was a complaint that the complicated and detailed questionnaire caused specific problems for small enterprises. The data breakdown of these enterprises often was too broad for the specifications asked.

5. Due to the burdensome questionnaire it was tried to supplement the pilot data with other existing sources. Apart from Finland the use of registers is not yet well-developed, so the bulk of the information had to be gathered by means of the paper and pencil method. Other existing sources are worth being investigated, particularly when related to employment variables

6. The NSIs of the UK, the Netherlands and Finland for some time produce annual statistics on the IT-sector. Spain and Italy experienced lots of teething troubles, because they investigated this sector for the first time. Both countries excluded many questions that were judged too difficult to ask beforehand. But then, several specific questions were added: for Italy e.g. various employment specifications (geographic distribution, professional categories), advertising media used, modalities for recruiting skilled labour.

7. The survey was to provide data for one year i.e. 1996. However, this is hardly adequate when trying to analyse the dynamic IT-activity. For future surveys we suggest an inclusion of time series related to at least some key variables, such as turnover, employment, exports. The time dimension could also be introduced by asking something on the expected future trends together with the realised development.

8. The questionnaire asked in practice only quantitative data on IT. Taking into account the response burden and the need to include dynamic elements in the survey, the balance between quantitative and qualitative questions should be re-evaluated and a set of qualitative questions could be introduced as has been the case e.g. in the EU-innovation survey design. This would also improve the interpretation of the questions and thus international comparability.

9. Finally, the current pilot survey was carried out without harmonised explanatory notes. This would also improve the quality on national level analysis and international comparisons.

ANNEX A OVERVIEW OF COMMON QUESTIONS

x	included in the pilot questionnaire
a blank	not asked
x-	less detailed than in the pilot questionnaire
x+	more detailed than in the pilot questionnaire

	Pilot questionnaire	Neths	UK	Finland	Spain	Italy
1	**General characteristcs**					
1.1	Main economic activitity	x	x	x	x	x
1.2	Legal status	x	x	x	x	x
1.3	Foreign ownership	x	x	x	x-	x
1.4	Does enterprise possess affiliates?	x	x		x	x
2	**Accounting variables**					
2.1	Accounting period	x	x	x	x	x
2.2	Turnover	x	x	x	x	x
2.3	Other revenues	x	x	x	x	x
2.4	Purch. for res. in same cond. as rec.	x	x	x	x	x
2.5	Total purchases of raw materials, etc	x	x	x	x	x
2.6	Personnel costs	x	x	x	x	x
2.7	Profit or loss		x			
3	**Breakdown of turnover**					
3.1	According to type of product	x	x	x	x	x
3.2	Acc. to prod. not existing 1 year ago	x-	x			x
3.3	According to type of client	x	x	x+	x-	x
3.4	According to the three biggest clients	x	x	x		x
4	**Exports**					
4.1	Exports, total	x	x	x		x
4.2	Organisation of the export		x	x		
5	**Employment**					
5.1	Number of persons employed	x		x	x	x
	5.1.2 Idem, converted into FTEs	x	x	x	x	
5.2	According to type of contract					
	5.2.1 Permanent/temporary	x-	x	x-	x+	x
	5.2.2 Perm/temp acc. to male/female	x-	x	x-	x+	x
	5.2.3/5.2.4 As 5.2.2, full/part time	x-	x-	x-	x+	x
5.3	No. of telew. as share of work. hours	x	x	x		x
5.4	Employees according to age	x		x	x	x
5.5	Recruitment: IT-exp. vs. general	x		x-	x-	x
5.6	Recruited last year	x		x		x
5.7	Breakdown of training	x-		x		
5.8	Employees according to education	x		x	x	x
6	**Licenses in use**					
	Does ent. use workbench/support tools	x-		x-		x
6.2	No. of licenses in use?	x-		x-		x
7	**Expenditures on intangibles**	x-	x-	x	x-	x