INNOVATION IN THE SERVICE SECTOR

Eurostat pilot.
Voorburg 8.6.95
Final Report

1. INTRODUCTION

With the development of future innovation surveys in the service sector in mind, EUROSTAT has taken the initiative for a pilot outlining the possibilities. To this end, Statistics Netherlands (CBS) interviewed a number of companies over the last couple of months. Below follows a synopsis of its most essential findings. The conclusions and recommendations presented are of a preliminary nature.

The interviews have been conducted in accordance with a set of Guidelines (see enclosed annexe) that are based on EUROSTAT's draft questionnaire, dated March 1995. The main purpose of this pilot is to find out how innovation is conceived by companies in the service industry.

Measuring innovation in the manufacturing industry has recently produced useful data. Generally speaking, this result can be seen as a consequence of the fact that industrial innovation often refers to **physical** aspects of products or processes. Subsequent innovations in that field will be measured mostly on the basis of clearly visible technological characheristics or by means of detectable activities in the laboratory. Furthermore, statistical data collection is helped by the fact that the innovating company can be considered as the 'innovation proprietor', even if the required innovation activity is being subcontracted.

By contrast, the innovation picture in the service industry is more obscure and tends to spread in different directions. Consequently, the notion of 'innovation proprietor' is less evident. Some branches function first and foremost as 'innovation agents', such as engineering firms. Firms of architects might be looked upon as innovators by definition, whereas different sectors, like the business consultancy and the software market, have to be considered as 'innovation initiators'. Yet, in other cases, one might indeed refer to 'innovation proprietors', especially in technology driven sectors, like for instance the telecommunication market.

Innovative behaviour in the service industry focuses on achieving innovation within the distribution line from supplier to customer. One might conclude that innovation in this industry finds its roots predominantly in the field (infrastructure) with service companies amongst themselves and/or in the relation between the service provider and his customers or suppliers. Furthermore, unlike the manufacturing industry, there is hardly any question of formalised R&D in specific departments, and one must subsequently look elsewhere to detect it. This might be achieved by survey questions focusing on organisational aspects such as project groups that have been specifically set up for innovation purposes ('pilots').

In a narrow sense, it will be easier to look at process innovation, although we also encountered a difference of consensus in respect of related organisational matters such as Business Process Redesign. With regard to process innovation, the application of new information technology (IT) is the predominant factor.

One must not underestimate the reluctance shown by companies in reporting on innovation. There is always considerable appropriation danger, the risk of being imitated, and the possibilities for protection are limited.

In one particular case, this reluctance traced back to the conviction that statistical innovation research is impossible and, subsequently, the anticipated interview did not take place. Innovative behaviour is tantamount to good entrepreneurship, which in turn is a question of psychological qualities (and cannot, therefore, be measured...). This is a crucial point of which statisticians as well as policy makers have to be more aware.

The following paragraphs deal with summaries of the sectors that were interviewed, an evaluation of the innovation definitions and a selection of potential variables regarding innovation in the service industry.

In each sector concerned (Banking/Insurance, Software industry, Enineering and technical services, Communication and Wholesale & retail) two interviews has been performed, except in the banking/insurance sector (4) and the Wholesale and retail (1). On top of that, researchers of the University of Amsterdam have been consulted with regard to their experience with the recent Innovation Survey performed in the Dutch service industry. As to the banking and the software industry additional interviews were performed with two representing branche organisations.

2. INTERVIEWED SECTORS

2.1 Banking/Insurance

Banking. Recently, deregulation and a decline in customer relations have firmly stirred the banking markets. Their principal business aim is improvement of the servicing **process**, the focal point of their innovation attention. That is why innovation such as electronic banking systems must be viewed against this background and not be thought of as an isolated application of new technology. Only fundamental alterations of the servicing process could justify any talk about product or process changes that go beyond the level of product differentiation as indicated in the Guidelines and therefore classify as innovation. Of course, laboratory-type activities rarely take place at banks. In some cases, however, laboratory research is carried out on the "ergonomics of new technology".

Information technology and telecommunication form the most significant breeding ground for innovation in banking. For instance, circulation of money has been replaced on a large scale by electronic payment techniques. Furthermore, long distance service has been introduced through tele-information. In this manner, Electronic Data Interchange (EDI) opens up new communication channels for commercial transactions, as well as participation in international capital markets. Branch offices have recently been developing into financial supermarkets, focusing as much as possible on tailor-made client services. This is borne out by computer aided round-the-clock systems ('any time, any place').Moreover, deregulation leads to branche diversification, so that products related to travel and insurance can now all be obtained from branch offices. Consequently, competition in the consumer market becomes a battle for distribution channels, and much innovative effort is directed that way. In the end, one has to bear in mind the aim for progressive innovation by banks is always curbed by continuous attention to security requirements and risk management.

In a more restricted sense, it is practically inconceivable to define bank product innovation. The question of derivates, for instance, must also be looked upon more as product differentiation than as a matter of innovation. Liberalisation of the capital markets, for its part, has led to new (innovative...?) investment opportunities. However, the prevailing activity is that banks are continuously on the look-out for new products adapted to changing tax regulations and other governemental rulings. Research into credit granting and merger mediation is

also geared to optimising (international) fiscal regimes. In this respect the question remains open whether we are indeed entitled to label these tax orientated activities as innovative.

On the other hand, clear process innovation occurs quite frequently, such as data processing in respect of innumerable bank transactions. Information technology plays a decisive role in this. As regards non-competitive data processing issues, banks are increasingly co-operating with each other. As soon as competition is involved, however, banks apply independently their own IT efforts to develop new expert systems for credit rating, market research, efficient customer approach, etc.

Contrary to the Guidelines and in the knowledge that IT is an 'innovation facilitator' par excellence, we were recommended to treat reorganisation activities as innovation. As it is, Business Process Redesign is mostly inextricably bound up with new IT which, in turn, is indispensable to innovation exploitation. Nevertheless, one of the banks which we interviewed held a totally opposite point of view! Moreover, we did not obtain any clear answer to the question of which indicator to use for innovation output. We were advised against relating innovation to the net operating results, since they are too much determined by non innovative factors, like varying interest rates and fluctuations of margins between funding costs and interest received.

Insurance. The innovation picture presented by the insurance companies bears resemblance to the banking world, especially in respect of development of process innovation, chiefly aimed at cost reduction and efficiency. Over and above, considerable investments are made in an effort to maximise services to the market, motivated principally by risk management, reduction of claims and, therefore, a more selective acceptance of future policyholders. As in banking, it is literally impossible to define genuine insurance product innovation. After all, insurance boils down to protection of possessions and income, two items that will stay the same for ever..

All product innovation is really a matter of services innovation. This is more apparent amongst direct writers than non-direct writers, who serve the market through intermediaries whom they leave in charge of client relations. Direct writers sometimes introduce innovations like electronic underwriting of incidental risks like, for instance, holiday pleasure flights. In the meantime, some insurance companies have started writing motor insurance without any intermediary. Direct

writers tend to take the lead in matters of innovation. Other insurance companies give the impression of being much more prudent when it comes to introducing innovations. For the time being, they are inclined to optimise the complicated data processes that are typical of the insurance industry.

Against this background, it will be difficult to define an innovation output indicator, even if premium income provides an excellent variable for turn-over. However, it appeared to be nearly impossible to answer the question as to how much turnover should be attributed to innovative insurance products. We may have to restrict ourselves to measuring input activities, although this is also hampered by a noticeable decentralisation of innovation responsibilities within firms and, therefore, frustrates data collection. Perhaps IT budgets are the most indicative clue towards quantifying innovation. Another adequate measurement of innovation would probably be by finding out whether new departments have been set up as pilots with a view to (future) innovation activity.

Even more than banks, insurance companies focus innovation policy on efficiency and the inter-relationships in the wide area of their complex internal data processes. The manufacturing industry has been aware of this for decades, and Process Engineers have often been put in charge. At present, insurance companies are looking for similar expertise. They are in urgent need of what is called Financial Process Service Engineers. In this respect, training expenses must be seen as part of innovation costs.

2.2 Software industry

This industry may be broken down roughly into three segments. In the first place the larger concerns, where a shift is noticable from traditional software system development to allround business consultancy. A second group is made up of a large number of small and innovative companies developing new IT disciplines, but whose life cycle is, generally speaking, short and usually ends in a take-over or bankruptcy. Finally, there is a third group of firms - including software package suppliers - engaged in sub-areas of administrative and industrial automation.

Amongst small and medium-sized businesses, the innovators are predominantly technology-driven. This also applies to the first group, although one of its equally characteristic features lies in product differentiation, in view of its shift to-

wards all-round consultancy. By contrast, traditional management consultancy firms show a move in the opposite direction. They increasingly break fresh ground in IT consultancy. Statistically speaking, this is a complicating factor, since figures for service provisions, published in accordance with the NACE, are becoming more and more obscure in this way.

The aforementioned product and branche diversifications complicate still further the discussion on finding a plain definition of innovation. It would be a justifiable point of view to regard the software industry's penetration into new markets as product differentiation and, therefore, not as innovative Generally speaking, this is a important point for Oslo Manual discussions on bordering innovation in the service sector. The software industry itself, however, definitely considers branche diversification to be a matter of genuine innovation. Up till now, the software market hardly ever addressed the explanatory variables regarding fundamental business processes and organisational matters, and limited itself to the supply of isolated IT products. This is changing rapidly. According to the firms interviewed, current diversification activities by the industry have to be interpreted against the backgroud of its **new** role as innovation initiators. To underline this, IT and consultancy products are increasingly offered on a risk-sharing venture basis (no cure, no pay).

2.3 Engineering and technical consultancy

In common with the software industry, technical consultancy firms are technology-driven as well as 'agent' innovators. In fact, the latter type of innovating is vital to the image of engineering firms. Consequently, that is their reason for finding it difficult to reconcile with the interpretation of the innovation definition as given in the Guidelines. As it happens, engineering firms - at least the larger ones - have to treat every order as a unique case. Furthermore, unforeseen design or engineering problems nearly always crop up when work is in progress and innovative solutions **must** be found. We were advised to review the definition, bearing this in mind.

The activities of engineering firms border on theory and practice. Innovations are mostly the result of a catalystic development between the client and the performing firm. Therefore, it is not clear who should be dubbed 'innovation proprietor', which makes subsequent measurement more difficult. After all, as soon as the engineer has done his job, the completed project (and, by the same token, the client) becomes

the actual carrier of the innovation. This complicates also a quantitative break-down between innovative and non-innovative turn-over of engineering firms.

Data collection is easier when investigating engineering firms using innovative tools in their production phase, since this innovation concerns mainly IT, like CAD and CAE tools. They are clear examples of process innovation in its narrower sense.

2.4 Communication sector

The information results from discussions with a road transport firm and a large telecommunication supplier. In spite of considerable differences between the two companies, the innovative behaviour patterns of each of them have many points in common. Once again, a large number of innovations addresses the overall service process vis-à-vis the client, focusing on providing added value to their main product that basically will remain the same, i.e. the unchanging function of transport between two points.

It seems that only the larger road transport companies aspire to innovate, in all a few dozen of them. Thousands of other providers just follow and often act as sub-contractors for these larger companies. Furthermore, the market is characterised by fierce competitive pricing and significant dependence on the short term business cycle. This forms the background to efforts made by the larger transporters geared to widening their scope of activity in order to improve turn-over stability. In this way, in the eighties, considerable progress was made in the field of Value Added Logistics, i.e. offering additional services at one's own distribution centre, like elementary assembly, labelling and packaging. Moreover - because of time lags - the need for storage is inherent to the transport trade, which results in an innovative development, where transport firms are increasingly marketing permanent storage capacities. These additional services have only been made possible by IT and efficient business reorganisation.

We also detected a movement towards the development of new optimising techniques for transport routing. In addition to vital use of IT, we established that these questions are specifically approached in the light of reorganisation and staff training. That is why in the sector subsequent Business Process Redesign was given the label of innovation. Furthermore,

the interviewees remarked on considerable time lags between the start and final implementation of innovation, often much longer than anticipated. Therefore, surveying on an annual basis or even every second year should be viewed with great caution.

The telecommunication market has experienced similar innovative developments. Here we also noticed that fast growing competition (as a result of liberalisation of telephone networks) is aimed at differentiation and expansion of existing services, for instance, by insourcing the maintenance of world wide networks owned by multi-nationals. Much attention is also given to ways of improving customer services, by means of developing market research and new marketing philosophies with a view to realising a more tailor-made approach to their numerous clients. These developments are classified as innovative, all the more so because the appropriate tools must be derived from new IT applications (such as integrating 'voice-response' systems). Finally, new telecommunication possibilities offer a variety of opportunities for genuine technology-driven multimedia innovation, like video-on-demand, teleshopping, telegames, call centres, telelearning, and working from home.

The aforementioned developments are bound to have repercussions on the organisational structure of companies and firms, and innovation detection could therefore be made through surveying techniques directed at those changes. Innovation expenditure as an input factor could be taken from IT budgets that have been set aside for new software application development, as well as from costs for fundamental research in telematics.

2.5 Wholesale and retail trade

In the introduction, we concluded that innovation in the service sector finds its roots chiefly in the infrastructure with service companies amongst themselves or in the relation between the service provider and his customers or suppliers. This applies, in particular, to the wholesale and retail trade, with many branches using cross-border applications: on the one hand prominent business specialisation, on the other increasing cross-border miscellaneous product ranges, as well as 'zero stock strategies', quality care, client management and implementation of Product Data Interchange. We see a clear transition from internally oriented innovative efforts to innovations that go right across trade and branch, made possible by IT and telecommunication.

An important secondary effect is that the existing balance of power will be changed drastically, since some parties are in danger of being excluded from participation in new cross-border networks. Furthermore, the question of who manages the network (network governance) also provokes tension. These developments have a restraining effect on further innovation in this branch. However, traditional retailers are making a concerted effort to save the distribution channels through their well-established cartels. Furthermore, a fierce fight is being fought against falling prices following the appearance of new electronic distribution channels that cannot be influenced by many of the smaller firms. This applies, for instance, to the recording trade. A similar development is noticeable in the world of travel, where electronic booking systems have given rise to an intensified battle for distribution channels between transporters and tour operators on the one side, and the established travel agents on the other.

There is no easy answer to the question of how to measure innovation in the wholesale and retail trade. This business has many different 'innovative faces'. The largest concerns will be able to report on their own innovative activities as actual 'innovation proprietors' in areas like electronic order retrieval, matters of logistics and PDI. However, smaller firms will not be able to do so, for they are faced with inevitable cross-border innovation as described above, without being able to exercise much influence. We wonder, in the end, if this kind of innovation that goes right across trade and branch, should be surveyed at firms individually.

3. THE CONCEPT OF INNOVATION

Below, we evaluate the concepts of innovation that are at hand. We have based them on the definitions as laid down in Eurostat's memorandum (D3 17.3.1995) and in the enclosed Guidelines.

A) The Guidelines give the definition as follows:

"Innovations are (combinations of) products, services or processes which are new or which imply significant improvements in relation to comparable earlier products, services or processes.

In that connection, the application of new or considerably improved technologies is a prerequisite, whether or not in combination with substantial investment in new know-how in the field of information technology, training of personnel, marketing or market research. The use of existing technologies - provided they are applied in an original manner - is also regarded as innovation."

The following prerequisites have been adopted for the presentation of this definition:

a. The assumption that product/service innovation on the one hand and process innovation on the other are nearly always in line with each other and cannot be described separately in the service sector.
b. The attempt to clarify the concept of innovation by emphasising the use of new technology.

B) Eurostat's draft definition as a starting point can be broken down in three parts:

- General description: Innovations in the service sector comprise new services and new ways of producing services as well as significant changes in services or in their production or delivering. An innovation has been implemented if it has been introduced on the market or used in producing services.

- Product innovations are services whose intended use or

performance characteristics differ significantly from those already produced. Innovations could be the result of using new or new combinations of technology as well as other substantial investments in new knowledge.

- Process innovations are new or significantly improved ways of producing or delivering services.

C) The following provisional conclusions and recommendations can be made:

1. Probably only a small minority of service-oriented firms will be able to distinguish adequately between product & service innovation on the one hand and process innova-

tions on the other, as listed under B. Even if that distinction were only to be made in a qualitative sense (a question of 'yes' or 'no'), it would still be unlikely that a consistent dividing line could be drawn between both types of innovation. Furthermore, this conclusion implies that one would tread on dangerous ground if one were to make a further quantitative segmentation of product innovations into 'major' and 'incremental' as a percentage of the turn-over. It is quite likely that subjective appreciation, when questions concerned are being answered, would diverge too much.

2. Emphasis in the Guidelines on the use of new technology can be justified, in spite of the fact that a large number of detected innovation activities are clearly not driven by new technology itself, but by other variables such as general business aims and strategies as well as new marketing philosophies. On the other hand, technology is and will remain the prevailing innovation enabling factor, with significant exceptions, like activities in the field of Business Process Redesign.

Therefore, we think that the first sentence of the above Eurostat definition gives the best lead for a comprehensive description of the concept of innovation. That phrase runs as follows:
"Innovations in the service sector comprise new services and new ways of producing services, as well as significant changes in services or in their production or delivering." This description justifies the apparent efforts by virtually all service providers to look for innovations that are different from those used by competitors in the distribution line from supplier to customer. Nevertheless, this general innovation description must be tailored to the different sectors that will be surveyed. For instance, communication and engineering firms cannot be confronted with an identical definition of innovation.

3. The concepts of 'new' and 'significantly changed' services in the Eurostat definition are linked to the question whether services or processes have been put into practice. We may wonder whether this premise is adequate for obtaining a complete picture about innovative behaviour, since companies frequently develop research or pilot activities that have not yet produced operational re-

sults. We must, therefore, make an additional selection of variables to reveal this initial phase towards innovation.

4. The Eurostat definition deals with innovation in three parts: a general (and adequate) description of innovation (see under 2) and two additional descriptions of product/service innovation on the one hand and process innovation on the other. If one still wishes to make a distinction between both types of innovation (see also the definition under B), then our recommendation would be as follows:

Move the deviding line between product and process innovation towards process innovation, thus narrowing the latter to purely internally-oriented production process modernisation. At the same time, service innovation - as recommended in the interviews - is enlarged to encompass all market and internal supportive activities and processes directly related to the development and exploitation of innovated services. Ignoring this enlarged interpretation would be dangerous at the risk of overlooking some product innovation. Besides, it would not do justice to the basic features of product innovation in the industry, which principally becomes manifest in the distribution line from service supplier to customer. Illustrating product innovation with examples such as telebanking, credit cards, teleshopping, PDI, etc. is no guarantee that the interviewee remains on the same wavelength when reporting on service innovation. Only using these examples have a disadvantage, inasmuch that they narrow down the issue and only touch the tip of industry's much more comprehensive 'service innovation iceberg'.

5. Although we recognised the advantages of defining innovation by imposing the use of new technology, we should to draw a different conclusion. In contrast with the definition presented in the Guidelines (see annexe), we must allow for non-technological entities in describing services innovation, despite the imminent danger of including the non-innovative variables like product differentiation, as is often pursued by firms. We suggest tentatively to define service innovation as follows:

"Service innovation comprises entirely new or significantly modified services and/or entirely new or significantly modified ways of delivering or producing existing services. 'Significantly modified' is understood to mean the

embodiment of material improvement for the user compared with similiar earlier services and/or implies material improvement in the way services (whether or not existing) are being delivered".

Firstly, this description underlines the importance of the relation between the services and their user, rather than the emphasis on technological conditions. Secondly, it tries to include all linked business processes, necessary for the innovator to make sure that the new (ways of delivering) services will be realised. In so defining product innovation, process innovation can be presented in a narrower sense, which will helps to understand the differences (if required?) between the two aspects of innovation:

"Process innovation comprises the application of new or considerably improved techniques (like Business Process Redesign & Information Technology) aimed at improving efficiency of all remaining internal business processes not related to product innovation. In other words, process innovation is performed irrespective of intended services innovation."

4. POTENTIAL VARIABLES SERVICE SECTOR

Feasibilities for future postal innovation surveys in a three point scale referring to measurement possibilities: positive (1), as yet unknown (2) or negative (3). The following statements are preliminary.

General concept of innovation	1		
Product differentiation vs. innovation	1	2	
Distinction technological / functional changes			3
Detection innovation through organisational changes	1		
Qualitative distinction 'new for the firm' vs 'new for the sector'	1		
Product versus process innovation		2	3

Quantitative innovation output indicators:

- one conclusive indicator (% of sales)			3
- indicators differentiated per sector	1	2	
- 'major' versus 'incremental'			3
- 'new for the firm' vs 'new for the sector'		2	3

Quantitative innovation input indicators:

- R&D costs (R&D practically non existent)			3
- IT costs related to new application develoment	1		
- Initial innovation exploitation training costs	1		
- Other training innovation costs		2	
- Pilot budgets for developing new services/processes, whether or not through outsourcing	1		
- Market research for services to be innovated	1	2	
- Marketing department costs	1	2	

Annex: GUIDELINES FOR INNOVATION INTERVIEWS IN THE SERVICE SECTOR

1. Sectors to be interviewed

- Wholesale and retail trade
- Transport and communication
- Banking and insurance
- Computer service and software industry
- Engineering and technical consultancy

2. Concept of innovation

For future measurement of innovation in your sector it is necessary to obtain a clear picture of what innovation is meant to be. The main emphasis will be on this vital question. In the course of the interview different innovation aspects will be discussed.

Innovation will be defined as follows:

" Innovations are (combinations of) products, services or processes which are new or which imply significant improvements in relation to comparable earlier products, services or processes. In that connection the application of new or considerably improved technologies is a prerequisite, whether or not in combination with substantial investments in new know-how in the field of information technology, training of personnel, marketing or market research. The use of existing technologies - provided they are applied in an orginal manner - is also regarded as innovation ".

NB: The implementation of reorganisations (Business Process Redesign) is regarded to be non-innovative. The same applies for the use of new advertising and/or promotion techniques" .

Do you consider this definition sufficient in order to be able to answer the question whether you firm has performed innovative activities in 1994? Yes/No:

If so: please give a few examples. Describe the innovative chararistics.

.....

If not: what is the main reason:

.....

3. Innovative services and/or products

Regarding your entire range of products and/or services, do you consider it possible to make the following subdivision:

a) No change in 1994. With regard to 1993 there are no substantial changes in our range of services and/or products.

b) Changes in 1994, which have to be considered as mere product differentiations by introducing new varieties of existing products and/or services, mostly as a result of new marketing philosophies.

c) Technological changes. Changes which have to be considered more than just product differentiation, since new technologies or new combinations of existing technologies have been implemented.

d) Functional changes. Changes which have to be considered more than mere product differentiation, since - despite the absence of new technologies - the intended use or performance characteristics differ significantly from those already produced.

Further observation:

.....

Innovation and output

Shares of sales 1994 due to innovation 1992-1994		... %
If possible subdivided by:		
- major innovation	... %	
- incremental innovation	... %	
Unchanged or slightly changed services		... %
Total sales 1994		100 %

What is your opinion about the subdivision between major innovation and incremental innovation?

.....

Sources of information for this question?

.....

If not available, is it feasible to give a rough estimate?

.....

Are there any different problems in answering the sales question?

.....

Innovation and sector

A different estimate for the economic relevance of innovated products or services could be derived from the following question:

Did your firm introduce services new for your market in 1992-1994? Yes/No. If so, please estimate the sales share of these services compared to total sales 1994.

Two remarks:

a. It is sometimes difficult to make a clear distinction between innovative and non-innovative. Would you consider it helpful to draw this line by making a comparison to the markets on which you deliver your services?

b. A different problem with regard to innovation, especially in the service sector, could be the impossibility to differentiate explicitly between services on the one hand and processes on the other. Would you advise to make a remark in this context in the introductory notes of part 2.

4. INNOVATIVE ACTIVITIES

So far innovation has been discussed in terms of characteristics of products and/or services. We shall also consider the possibilities to measure innovation through human activity within your firm. An additional advantage of such a characterization is that services and processes still under development become manifest. We mention the following human activities and invite your comments.

a. Development and implementation (whether by your own company or through outsourcing) of new technologies, including IT.

b. Transformation or appropriation of existing technologies into new commercial products and/or services (already introduced by competitors?).

c. Market research and marketing activities in relation to products or services which are to be innovated.

d. Investment in (new) know how. This includes the necessary conditions within your firm to maintain and/or enlarge the levels of strategic know how and can be achieved by means of:
   - R&D departments or different units for services development.
   - Emphasis on education and training of higher qualified staff.
   - Development of kwow how through external advice, recruitment of personnel, take over or joint ventures, partnerships/cooperation with universities, customers, suppliers and/or competitors.
   - Organisational changes in asmuch if it effects fundamental changes in the main structure of your firms' organisation.

e. Other activities: .....

5. Innovation costs

Definition (slightly amended after a few interviews): "All expenditure for innovative activities. Not only expenditure for innovation introduced in 1994; also include expenditure for innovation still under development. Other components of innovation costs are R&D, pilot budgets for developing and testing new services or processes, IT costs if related to developing new (data processing) systems, training costs for personnel responsible for the implementation and initial exploitation of new services. Costs of outsourcing and external advice. Market research costs and costs of marketing departments or personnel (please, if possible, exclude usual market research and marketing costs in connection to existing, non-innovative services)".

	Current costs	Investments
R&D expenditures	.....	.....
Other expenditures as mentioned above	.....	.....
Total innovation costs	.....	.....

Sources of information for this question?

.....

Difficulties in answering this question

.....

Do you think it would also be possible to describe innovation input in terms of FTE's of the personnel responsible for development, testing and initial exploitation of innovations? Please give your comments

.....