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Sundbo, Jon

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Jon Sundbo
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Service development, Internationalisation and Competences

Jon Sundbo
Roskilde University Department of Social Sciences
PO Box 260, DK-4000 Roskilde, Denmark
telephone : +45 46 74 21 61, fax : +45 46 74 30 81
e-mail: sundbo@ruc.dk

DENMARK

1. Selected sectors and data

This report describes the investigation into innovation in services in Denmark. It includes analyses of the following service sectors/industries: Financial services, knowledge intensive business services (consultancy, accountants etc.), manual services (cleaning, catering etc. to business and private households), welfare services. tourism, and retailing. IT/tele services are also included to some degree.

The material used in section 2 is based on national reports on business development in a macro perspective, selected studies published in articles or reports and key-interviews. The used literature is listed in appendix 1, key-interviews in appendix 2. The material used in section 3 is case studies of service firms.

2. State of the art and macro perspective on innovation

2.1. Characterizing service functions and innovation types

2.1.1. Innovation types in services

Service innovations may be categorized into different types:

a. Product innovations (e.g. a new type of bank loan)
b. Process innovations (e.g. introducing self service in banks)
c. Organizational innovations (e.g. a new form of working organization)
d. Market innovation (e.g. an insurance company starts selling holiday trips)

An investigation of the most important innovations within the financial services industry in the 1980s shows the following distribution of the types:

	per cent
a. Product innovations	54
b. Process innovations	16
c. Organizational innovations	19
d. Market innovation	12

Source: Sundbo 1997a

This demonstrates that product innovations are the most important type of innovation in financial services. Case studies of the financial and other service industries conclude that product innovations have been emphasized more in the late 1980s and the 90s than in the former period when service firms emphasized process and organizational innovations (Sundbo 1997a). This points to a different pattern than Barras (1986, 1990) in his study of the financial service industry in the early 1980s. New market possibilities have appeared as the service sector has become the focus of attention in terms of policy as well as the awareness of the customers. This has brought about greater emphasis on product innovations.

Service innovations are not necessarily technological as in the manufacturing sector. Some innovations in the service sector are technological, others not. Some while not being technological, are depend on technology if they are to be realized. E.g. a new insurance is developed as a non-technological innovation, but must be administered by using IT if the costs of production are to be sufficiently low to compete. The most important innovations in the financial services industry in the 1980s can be distributed within these three categories and the types above (technology is in this case information technology - IT):

Table 1 Innovations, dependence on technology

Per cent

Type of innovation

	Organizational	Process	Product	Market	All types
Not technological	94	16	47	70	54
Not technological, but depen-dent on technology	6	23	42	30	30
Technological	0	62	11	0	16
TOTAL	100	101	100	100	100
N	16	13	45	10	84

Source: Sundbo 1995

Most of the innovations are non-technological. Only 16 per cent are technological, most of them are process innovations.

The historical development of the technological innovations and those dependent on technology for each type of innovation is an important question. The Danish material gives no possibilities of concluding anything about this issue. There is no statistical or case-study data that analyses this.

A national survey has focused on flexibility and innovativeness (Erhvervsredegørelse 1996). It shows that business services have the highest degree of flexibility (defined as changes in work organization, training of employees, the employees plan their own work, cooperation with customers and/or suppliers). Flexible service firms had a much higher productivity than flexible manufacturing firms while inflexible service firms had a slightly lower productivity than inflexible manufacturing firms. Flexible firms also innovate more than inflexible firms and the process of organizational learning is better (there is no data specifically for service firms)

2.1.2. Entrepreneurship

In the material one can find data about establishment of new firms. However, there is no investigation as to whether the firms are established on the basis of an innovation. Some are and some are not. Data show the birth and death rate of new firms.

Table 2 New firms and survival rate of new firms (1993)

	Number of new firms 1993	Rate of establish-ment[1] 1993	Rate of survival[2] 1990-93
Manufacturing	1,096	3.3	62
Construction	1,038	3.6	63
Car sale and repair	529	4.0	-
Wholesale	1,968	6.6	47
Retail	3,281	8.2	50
Hotel, restaurant etc.	850	5.4	56
Transport	685	4.5	56
Financial services	99	2.8	-
Hire services (incl. apartments)	563	1.9	77
Business services	5,235	6.9	57
TOTAL	15,494	5.4	56

[1] Number of new firms in percentage of total firms in the sector

[2] Percentage of firms established in 1990 that have survived until 1993

Source: Erhvervsredegørelsen 1996 p. 410-11

The highest rate of establishment of new firms is in retailing, which also has the second lowest survival rate. The new firms within retailing are rarely established on the basis of an innovation according to investigations (Serviceydelser 1994). Business services and wholesale have the next highest rate of establishment, but again low rates of survival. There is no indication of whether the new firms within these two sectors are based on innovations. Business service is the sector that has the highest absolute number of new firms. From other sources we know that most of them are owned by a single person without any employees and a very small turnover (most of them under 100.000 Dkr = £ 10.000). They are often a way of organizing extra income for academics.

The rate of survival in Denmark is lower than in France and the Netherlands (Erhvervsredegørelse 1994 p. 165). This is true to all sectors, but particularly in the service sectors.

The entrepreneurs in services have a higher educational standard than those in manufacturing. This does not in itself ensure innovation, but it gives these entrepreneurs a better basis for solving problems. Nevertheless do fewer of these firms survive. Whether it is because many of them are created to gain extra income, and then quickly closed down again, we do not know.

The Danish government has created a system of financial support for entrepreneurs establishing new firms. However, there is no demand that the establishment should be based on an innovation and the financial support is mostly directed towards unemployed people. These factors may also contribute to the low survival rate.

2.1.3. Innovation activities based on information technology

Investigations of the impact of IT have been rare in Denmark within the last decade. The government has published an analysis of the perspectives of the information society (Info-samfundet år 2000, 1994). This, and a few other reports, highlights many aspects of IT use, also that the IT sector is very innovative. The reports stresses hardware development more than software and IT-services.

There is little investigation of how much the IT development means to innovations in services in these reports. The case studies (modul 2) include this issue. The key-interviews only answer the

question generally. IT means more, and more services and service innovations are made by means of IT, but exactly how much and how is impossible to tell.

A general survey of the literature suggests that there has been three phases in the IT use in the services:

1. The central system with large mainframes until mid-1980s.
2. A decentral system with PCs in the late 1980s-early 90s.
3. The international IT-network system in the mid-1990s. The last phase is assessed to give possibilities for new trade and innovations, but no empirical studies of the possibilities have been done.

In the report on the information society (Info-samfundet år 2000, 1994), the Danish government has concluded that the development of new services in tele-networks is limited by the price structure. The policy is thus to reduce the prices. The means is a thoriugh liberalization of the tele-sector, which started in the early 1990s. Then, four regional tele-companies were merged by the government. In 1996 the tele-network was opened for private service providers. Foreign and domestic companies offer cheap telephone calls (which may also be used for data communication) by dialling a certain number. From 1998 there will be practically free admission for any private tele-communication company.

An analysis concludes that the service sectors use much new IT-technology, but they develop to a much less degree (Erhvervsredegørelsen 1995). This means that generally only a few service innovations are technological, but many may be dependent on technology. The use of IT in service sectors has not made a massive contribution to improving the national economy, neither by increasing productivity or by creating many or radical product innovations. The innovations - whether product or process - are nor reproduced and diffused to a large degree. Thus, each innovation has only limited local effect within one firm, or maybe a sub-industry.

Some experiences concerning innovation processes and IT have been investigated by the bankers association (Info-samfundet år 2000, 1994). The banks have many possibilities to use IT for innovations. Self service by using ATM and similar machines, payment cards, electronic payment transmissions etc. have been used since the 1980s. Home banking was introduced in the late 1980s, but without success due to the poorly developed systems of that time (SELFI 1988). It has recently been re-introduce with success. However, the innovation potential of the home banking system have not yet been utilized very much. The chip-card - “smart card” (a payment/credit card with a chip) creates many possibilities for innovations. It can be used as a carriable bank which can hold information and be used for transactions independent of bank branches and PCs (SELFI 1988). An innovation has already been made in the form of a coin-card which can be used for payment and can be refilled in ATMs. The bankers association concludes that there are some barriers to the development and diffusion of IT-based innovations. One is that it takes a long time to develop the innovation because different technical systems must be adapted to the innovation. It also often demands organizational developments and training of the staff. Another barrier is that the time until it becomes accepted by the customers is long. An innovation in Denmark was a common payment system for all banks (including the Post Giro) with a common payment card (the Dan-Card). In 1994 2.4 mil. Danes had a Dan-Card (inhabitants: 5 mil.), but this diffusion has taken nine years.

A problem with IT-network services, that has been discussed much in Denmark, is the data security problem. A commonopinion is that information about individuals should be highly protected. This can be an impediment to IT-based service innovations, but it can also be a basis for innovations (systems with build-in protection).

2.2. Identifying innovation patterns

2.2.1. Characteristics and parameters indirectly linked to innovation

Here is a few set of relevant data presented for selected service industries:

Table 3 Employment growth in service industries 1980-1990

Wholesale	1.4
Retail	- 8.7
Financial services	20.1
Business services	41.2
Welfare service	13.4
Household service	- 9.6
Tourism (including leisure)	28.2

(Source: Serviceydelser 1994, Turisme/Fritid 1993)

This development has changed since 1990 for the financial services sector, which has had a decreasing employment. Nevertheless, the Danish financial services sector is still among those that have the lowest productivity compared to other countries. The interest rate marginal in Denmark is among the highest in Europe. Although the Danish financial services industry is innovative, the incentives to increase productivity may not be that big for that reason.

Table 4 contents some indicators of developments in the Danish service sectors.

Table 4 Growth, factor employment and productivity in market services in Denmark 1966-93

a. Market services total

Average annual change in %	1966-1974	1974-1982	1983-1988	1988-1993	1966-1993 total	Manu-facturing 1966-1993
Value-added	3.7	1.4	3.6	1.3	2.5	2.2
Employ-ment	1.0	0.1	2.1	- 0.7	0.7	- 0.7
Labour produc-tivity	2.7	1.3	1.5	2.0	1.8	2.9
Capital intensity						
-total stock	3.3	2.3	- 0.6	1.7	1.8	3.4
-machinery and equip-ment	3.9	3.4	9.0	5.3	4.9	3.8

b. Service industries

Average annual change in %	Retail and whole-sale	Hotels and restau-rants	Trans-port	Commu-nication	Financial services	Business services	Personal services
Value-added	2.4	0.6	2.1	6.2	1.1	4.3	0.0
Employ-ment	- 0.6	0.8	0.3	0.6	3.0	3.9	- 0.2
Labour produc-tivity	3.0	- 0.2	1.8	5.7	- 1.9	0.4	0.2
Capital intensity							
-total stock	3.8	1.4	2.3	1.4	0.6	2.0	3.5
-machi-nery and equip-ment	4.7	3.3	5.8	5.3	5.5	3.2	4.0
Contribu-tion to value added							
- Labour	- 0.6	0.8	0.3	0.6	3.0	3.9	- 0.2
- Capital	1.6	0.4	0.9	0.5	- 0.6	0.8	1.4
-Total factor produc-tivity	1.4	- 0.6	0.9	5.2	- 1.2	- 0.3	- 1.2

Source: Technological and Organisational Change 1996 p. 53-55

Table 4 shows that growth in value added changes from period to period. There is an constant increasing labour productivity growth, except for hotels and the financial services in particular.

2.2.2. Structural characteristics directly linked to innovation

The contribution of the above service areas to Danish exports has increased from 1.9 per cent in 1980 to 3.3 per cent in 1990. The largest export rate has technical services (engineering, hiring out IT-equipment, chemical laboratories, other technical services). Next comes management consultancy and data-processing. Denmark has a strong position in the world market in technical business services and in operational business services (cleaning, catering etc.). It could also have a strong position in welfare services, but there is not much tradition for international trade with those. The retail and financial service industries are not assessed to be in a special strength position. The exceptions are a very few retail fields where Danish firms have made market innovations and have established abroad, and bond trade where Denmark has an efficient system.

(Source: Serviceydelser 1994).

The conclusion of the industry analysis is that the service industries are not sufficiently innovative (Serviceydelser 1994, Turisme/Fritid 1993). The firms are too conservative and have often not

understood that innovation can develop their business and sometimes help them survive. However, the awareness of innovation is increasing in most service industries.

There is a general tendency towards a larger standardisation of services, also in knowledge intensive services (Serviceydelser 1994). The service firms still focus on customer orientation and service management, but combine it with standardization in a modul system (Sundbo 1994a). The modulization or standardisation increases innovation because the innovations can be reproduced more easily and the service firm thus get higher return for the development costs.

Knowledge intensive business services have been internationalized. Many foreign companies have established themselves in Denmark and have bought up Danish companies. This is assessed as an advantage by key-persons in the industries. The foreign companies transmit knowledge and innovations from other countries to Denmark, which is an advantage to Danish manufacturing companies, service companies and public institutions. Further, the foreign owned companies create employment in Denmark since they need to employ Danish labour because of the cultural barriers. The opposite situation existsss within manual business services, where Denmark has a couple of the world's largest companies which have established themselves in many countries. They have not created many Danish jobs abroad. They have head offices and innovation departments in Denmark. The latter contribute to the development of the companies. The effect on Danish employment and economic growth of these innovation departments cannot be measured, but is assessed to be low. The conclusion is the opposite of that in the industrial society: Imports (as foreign firm establishment) are good while export (foreign establishment by Danish firms) is neutral or bad for the economy (it might lead to Danish innovations will be used abroad which means that the Danish society will not benefit from it).

The issue of externalization-internalization of business service has been studied. In the 1980s it was found (Pedersen 1986) that the more internal service firms produced, the more external services they bought. The explanation is that the internal service personnel know the field and what they could get from the external service providers and they can communicate with them (Illeris 1996 p. 68). In the period 1984-94 34 per cent of Danish manufacturing firms had outsourced services. However, this seems to be a difficult question to answer since 35 per cent of the firms questioned were unsure of what to answer. 45 per cent of the manufacturing firms had outsourced production. 31 per cent of them had insourced activities formerly performed by sub-contractors. This includes production and service activities; one may guess that the answers primarily concerns the former. (Technological and Organizational Change 1996 p.83). In 1991 customers of consultancy services were asked about their expectations of future use of consultancy services. 30 per cent expected increased use, 55 per cent the same and 15 per cent less use (Poulfelt 1991). This indicates a continuous, but not dramatically, increasing externalization. As treated above, this may be followed by an increase in internal competence resources within the same field in the customers' firms. There is no data about internal service resources in manufacturing or service firms.

The Danish financial services industry has not yet been involved in the internationalization process as much as prognoses have shown (Arthur Andersen 1989). Nevertheless, national competition has increased, because of deregulation among other reasons. It has resulted in mergers, industrial sliding through establishment of financial supermarkets and rationalization of the production. The Danish financial sector has had an increasing market competition with the customers becoming more critical (although not as critical as when they go to buy in the supermarket) (Sundbo 1997b; Sundbo 1995)). The industry has decreased its employment by about 20 per cent the last six years. The financial services industry is a mature industry that must be very innovative not to stagnate or fall in turnover and profit. Concerning employment it is a matter of not having an exponential fall. The industry has attempted to be innovative in at least three ways: 1. To develop new types of advice. 2. To develop self service concepts (ATMs, home banking etc.) by using IT. The self service tendency started in the 1980s, stopped around 1990 because of other strategies, but is reintroduced in the last

two years. 3. To combine financial services with other services (such as insurance companies providing holiday services). An evaluation (Serviceydelser 1994 p. 22) recommends that new financial services are developed in closer relation with other service industries such as retailing, household services etc. This may be an advantage to financial service firms, but there is generally a potential tendency to sectorial sliding. The latter means that other service industries take over financial services such as accounts, loans etc. Further, the bank industry has attempted to increase income by demanding fees for different types of services. This has been difficult. The customers are used to getting the services free and there is often an unclear logic in the fee system (e.g. higher fees on services that does not imply as high costs as other services where the fee has been lower). (Sundbo 1997b).

Retailing in Denmark has been assessed not to be very innovative (Serviceydelser 1994). There is a tendency towards internationalization which leads to larger units and more rational processes where logistics will be a core competition parameter. This demands new strategies in retailing. Danish retailing can, to some degree, enter international competition, but it is difficult to assess how successful it is. The evaluation part of the report proposes innovation within the following areas: 1. Including new goods categories to extend the assortment. 2. Development of new shop concepts. 3. Development of value adding services (e.g. information etc.). 4. Greateruse of IT.

The evaluation of Danish wholesale concludes that this sector is in a strong position (Serviceydelser 1994). Nevertheless the evaluation recommends that the industry should be developed. It should focus on adding value instead of just transport goods from manufacturers to retailers. If not, it may disappear. Further, the wholesale industry could play an active role in the innovation process of manufacturers and retailers because it is a mediator. The wholesaler as developer of new goods/service packages and as innovation experts is a role that this report has introduced.

The development of welfare services in Denmark is generally related to tendencies in the public sector since by far the most are public. This means either innovations in public welfare services or outsourcing to private service firms which should then innovate. The tendency is to increasingly outsource operational services (cleaning in public institutions, catering in hospitals, cleaning in elder peoples' home etc.). There might be a tendency to outsource some social tasks such as kindergartens and old peoples' homes. Outsourcing most often leads to more rational production. Whether it implies innovation (whether in products, processes or organization) is an open question.

Household and personal services are characterized by very little development in quantity and content. The Danish tax system makes it necessary for a household member to work up to five hours to pay for one hours household service. The household service firms are particularly weak in organizational and strategic competencies and in innovativeness (Serviceydelser 1994).

The evaluation of the total Danish service sector (Serviceydelser 1994) (which includes knowledge intensive and operational business services, financial services, welfare, household and personal services) concludes that the following six points are the strategically core issues for the future development of the service sector in Denmark:

a. International competence building.
Increasing globalisation makes it necessary for Danish service firms to go abroad to get knowledge about production and delivery systems, innovations, management, competencies etc. from other countries. Simultaneously, foreign business service companies establishing themselves in Denmark can deliver new knowledge to the Danish service sector and their Danish customer firms. The latter may improve innovation in Danish manufacturing and services in general.
b. Outsourcing
The tendency to outsource service activities will increase the business service sector. Outsourcing may also lead to innovations will be created in the meeting between the service firm, the outsourcing

firm and perhaps its customers. The outsourced activities may be delivered to firms or to private customers. The latter is the situation when the public sector is outsourcing.

c. Better relationship between the manufacturing sector and the business service sector

Business service and manufacturing are increasingly intertwined. However, the business service sector does not sufficiently fulfil the demand of the manufacturing sector for specialised and branch related services. In other words: the business service is often too general.

d. Innovation

If the service sector should grow in the future, it is necessary that it becomes more innovative in itself and that it participates more closely in the customers firms' innovation process.

e. Profesionalization of small and medium seized service firms

The small and medium seized service firms must be more professional than they currently are. The small and medium seized business service firms may foresee a specialization in the future. They may either specialize in particular types of services or in servicing small customer firms in general.

f. International IT-networks

Development of an efficient international IT-network will be an advantage to Danish service firms. Through the network they can collect information internationally and they can create new information services which will be delivered via the international networks. The networks will also increase competition for Danish service firms since foreign service firms can deliver information (including financial) services directly to Danish customers.

Concerning tourism, Denmark has a problem of low innovativeness and being dominated by low-spending family tourists (discount tourism). There is a low degree of internationalization in the ownership structure (except in outgoing tourism - Danes going for holidays abroad). A larger degree of international ownership could have increased innovativeness by transmitting new ideas. There is an over-capacity in many destinations. Even though many new firms are established, very few of them are based on an innovative idea and the death-rate of new firms is above average. The overall assessment is that although internationally tourism will be a growing industry in the future, the Danish tourist industry has some strategical and developmental problems. Thus, there is a danger that tourism in Denmark will have a less than average growth..

The strategy for the future is to get more business tourism (congresses and businessmen spending extra time as tourists) and having the families spending more money in the country. The latter demands innovation. There has recently been an attempt to develop new attractions (amusement parks, special museums or other original activities). The policy is also to change the heavy emphasis on summer holiday tourism in Western Jutland into short-time city and town tourism in Copenhagen and the towns in the eastern part of the country. This demands product or market innovations.
(Source: Turisme/Fritid 1993).

This again demands cooperation between different and same types of tourism firms, which has turned out to be very difficult. Tourism in Denmark is dominated by small firms. There are very few large firms selling tourism in Denmark. The country has some large firms for outgoing tourism, but not for ingoing tourism. In particular has the formation of regional or local networks in each destination been stressed as a necessity to develop the industry (Turisme/Fritid 1993 p. 147).

The tele sector is extremely important to service development and innovations. It is the basis for development of other sectors. It is also the basis of development of new information tele-services. In Denmark the former regional semi-public telephone companies have been merged by the state. There has been a merge between the telephone sector and other communication sectors such as television, film, entertainment, education etc. The telephone company has moved into the television/film industry in alliance with film producers. New technical infrastructure for data and television transmission has been established in the last decade. The Danish telephone company has

also been engaged in exporting know how and have established abroad within telephone traffic and tele services.

These developments demands and induce innovations in technical fields as well as information-service fields. The Danish telecommunication sector is in a relatively strong position on the world market, but the general liberalisation in Europe demands that Danish telecommunication companies makes alliances with other companies - telephone, communication/television and data-processing companies. The integration of hardware, software and services (whether business information services or entertainment) could be the basis for an innovative development.
(Source: Transport/Kommunikation 1993).

2.2.3. Areas of particular political policy: Welfare and household services

The Danish government has particularly emphasized innovation in welfare services (social, health care, educational services) in industrial policy. Denmark is supposed to have a developed welfare state. The public welfare services is therefore supposed to be a great export article. It may either be in form of system exports where Danish firms or public institutions run welfare services in other countries. It may also be in form of establishment of welfare services (including buildings) in other countries, which then take over the running of the service. It has been realized that both demands a cooperation between public authorities and private service firms so the competencies could be combined. The welfare services are not new in Denmark, but could be innovations in the importing countries.

This attempt has only been a very moderate success until now. Cultural barriers seem to have been an impediment to export. The innovativeness in the projects may also have been too low and Danish welfare service products are thus insufficiently different from domestic systems. Investigations also show that flexibility and innovativeness are too low in Danish welfare services (Serviceydelser 1994 p. 273). The competencies within the welfare service sector are too little commercialized. It has been difficult to transform the public services into smooth market oriented services that could be sold on the world market.

The experience has shown that there is a cultural barrier between the public institutions and the private service firms. The private firms think in terms of sales and profits and the public institutions think in terms of general welfare. This barrier is an impediment to innovations and developing the welfare services into service products that could be new and sold on the world market.

In 1993 the Danish government has created a system for developing household services, called the Home Service system. This is manual services sold to households (cleaning, gardening etc.). It has in been pointed out that this is the only sector where employment for poorly educated people can be increased. Since most unemployed people are in this category, this is an attempt to solve the unemployment problem. At the same time this attempt should solve the problem of illegal work (people working without reporting it to authorities within the tax authorities, unemployment fund etc.). The system has the goal of creating more private service firms. The firms will get a subsidy per working hour they invoice (the subsidy is 85 Dkr = £ 8 per hour). The households buy the service from the firm at the market price. Because of the subsidy, the market price will be lower than normal.

This system has been of moderate success (Sundbo 1997c). More than 500 new firms have been created from 1993 to 1996, where totally 2,800 firms used the system. It has created between 4 and 5.000 new jobs (compared to 2,800 full time jobs). Since the ministry of finance declared that more than 100,000 jobs could be created by the system, this is not a great success.

Innovatively it is not a great success either. Nearly all the firms entering the system are new or existing small firms. Only very few existing large firms within the cleaning branch etc. have entered the system. The reasons are that they find the subsidy too low, they are not used to negotiate with private customers about contracting, quality assessment etc. (they are business service firms) and

they find it difficult to increase productivity by the Home Service system: Since the subsidy system awards the number of hours and not the total service, it provides no incentives to process and organizational innovations which could improve productivity. Investigations have also demonstrated that very few product and market innovations have been made (Sundbo 1997c).

2.3. Effects of innovations on economic parameters

There is no data that can tell us anything about this issue. The investigation of the effect of IT on productivity generally concludes that IT has not had the supposed productivity-increasing effect, nor in services. There are examples in the interviews of innovative service firms that have had economic success, but also examples of innovative service firms that have lost money and have come into a bad economic situation. It seems to be more a question of balance in relation to market situations than a question of maximal innovation.

2.4. Indicators of innovation in services

Exact indicators of innovative activities do not exist for the service sector (Erhvervsredegørelse 1995 p. 159). Neither does valid information about training investments for service firms. No survey which could measure innovation activities in the service sector has been done. The regular statistics may include some indicators (like patent statistics etc.) that could measure some innovation activities. Because of the special situation for service innovations (e.g. they are very rarely patented), these indicators are so poor that they are useless. The only type of indicators that are approximately valid, are indirect indicators such as growth in value added and productivity (even the latter has many validity problems).

Data on entrepreneurship do not indicate innovativeness, but only establishment of new firms as mentioned. The death-rate of new service firms would be the indicator that comes nearest to expressing innovativeness (which would be higher the lower the death-rate). The death-rate in services is higher than in manufacturing, cf. table 2.

2.5. Service sector links to knowledge infrastructure and other links

The evaluation of the Danish service sector concludes that a research and development infrastructure that can generate knowledge about the service sector and support the service firms' capability of systematic innovation is lacking (Serviceydelser 1994 p. 10).

Case studies have also concluded that the knowledge structure in services is weaker than that of manufacturing (Sundbo 1994b). There is very little research focused particularly on the function of the service firm, nor is much education focused on that. Relationship between service firms and universities or other knowledge institutions is relatively poor. It is assessed as poorer in Denmark than in other countries since Denmark does not have a tradition of people moving between universities and business service firms. The network between service firms is weak due to the fact that service innovations traditionally have been easy to imitate. This has made the service firms afraid of giving information to potential competitors. In interviews in the financial services industry this has been mentioned as a reason for using IT as an instrument for developing innovations. It is more difficult to imitate an IT system than for example a new type of advice from a bank.

Most innovations within services are internal, quick, ideas and are not based on research or often even not intensive knowledge. However, that is to a certain degree the case even to manufacturing, so the difference is only a matter of degree.

Within tourism there are some educational institutions. The financial services sector has its own private education institutions. There is a large public and private system of training people within technical and IT service fields.

The financial services industry has had some limited relations to law and particularly to economics. The economic and statistical sciences may be considered as a fundamental science for

the financial services industry (e.g. as chemistry is for pharmaceutical industry). The relationship to these areas has recently been improved. The largest Danish bank has for example sponsored professorships in economic institutes at the two largest universities.

Also retailing has some tradition of relationship with the business schools, mostly about market analyses.

Within business services lawyers and accountants have had the closest relationship to the education and research system.

Denmark has a large system of semi-public knowledge agencies for improving innovation, on national and regional levels. The problem is that it is officially mostly oriented towards manufacturing innovations. It has been demonstrated that the customers of the system often comes from the service sector, but the agencies have limited competencies in service areas. The agencies should develop new competencies. There is a political discussion of such a strategy. Some of the knowledge intensive business service firms express the opinion that they should deliver that knowledge and they see the semi-public agencies as unfair competitors.

The issue of creating new public institutions (knowledge, research or consulting institutions) for supporting innovation in services has been broadly discussed. All industrial areas have been analysed in a very large project in the Ministry of Industry 1993-94 (Publications for service industries: Serviceydelser 1994 (business, financial, welfare, household, wholesale, retail) , Turisme/Fritid 1993 (tourism, leisure, entertainment), Transport/kommunikation 1993 (transport, communication)). As a follow-up working groups have discussed proposals for each area.

Within the service industries included here, four institutions have been established or proposed:

1. Within IT-software/service a public centre of development and research has been established in 1996. It should cooperate closely with the IT industry and private firms.
2. A quality institute for welfare services has also been established in 1996. The institute receives public funding, but must sell some services on the market; after five years it should exist on pure market conditions according to the plan. It has concentrated on developing quality assurement methods for outsourcing public welfare services to private firms. It is difficult to say how much innovation will result.
3. A public institute for development of tourism has been established in 1996. Its purpose is to market Danish tourism and create innovations. It is supposed to cooperate with tourist firms.
4. Within knowledge intensive business services the representatives from the industrial associations have been sceptical towards creating knowledge or innovation institutions. An outcome of the working group for this area has been that a university, a semi-public knowledge agency, one industrial association and four business service firms have established a consortium that should develop innovations for the firms involved and accumulate general knowledge of how to organize innovation activities in business services. The state gives financial support.

2.6. Potential for and impediments to innovation in services in a European perspective

2.6.1. Potentials

As stated above internationalization will improve innovations, not only in the service sector, but also via business service firms in the manufacturing sector. Internationalization has two major effects:

1. Through establishment of efficient international IT/tele-network a new market place for information services is created. This will call for knowledge and information service innovations.
2. Internalization of knowledge intensive business service firms diffuses new ideas and will in itself create innovations through the meeting between many professionals and departments from national divisions of the same company or between small firms from different countries. The same can be the case in manual services, even household services. All countries can benefit from this development,

even to increase employment - unlike manufacturing where innovation and development in one country often result in reduction of employment in other countries.

For financial and telecommunication services this demands deregulation as EU and nation states have already introduced.

2.6.2. Impediments

Besides the impediments of regulation mentioned above, two other types of innovation barriers related to internationalization can be observed:

1. Linguistic, political and cultural barriers.
Obviously, language is a barrier to the international innovation movement mentioned in point two above. The fact that political systems (e.g. pension systems, systems of public care for elderly people etc.) are different in European countries is a barrier to innovation, or at least to diffusion of innovation. It is for example extremely difficult for Danish life pension and life insurance companies to export new pension systems to other European countries because law and political systems are different and very complicated. Also general cultural differences are a barrier. These facts might be a challenge that could lead service firms to adapt new services to other countries, eventually in a modulized form. However, this possibility demands much more focus on the possibilities within the service firms. EU could make an effort here by awareness campaigns and concrete projects.
2. Too little international entrepreneurship
Another type of barrier is a lack of entrepreneurship and interest in going into international markets in the small and medium seized service firms. This has particularly been a barrier to development for the Danish service industries because the country has many such firms due to its seize. The only exceptions are sea and air transportation and manual business services where Denmark has some large, innovative international companies. An investigation of the Danish service sector (Serviceydelser 1994) concluded that small Danish service firms were led to the internationalization route by participating in EU projects with foreign partners. The determinant was not as much the EU project as such, but the personal relationship the Danish firms got to foreign partners - service and manufacturing firms, universities, other knowledge institutions etc. In that way EU has a mission by creating project groups across the boarders - almost no matter what the projects are about.

2.7. Political instruments

Could new political instruments be created to improve the innovativeness in the service sector? According to the industrial representatives themselves not many. The financial services industry has pointed to deregulation. The issue has been discussed in a commission for knowledge intensive business services. A centre for innovation was proposed, but most of the representatives were against the idea. They do not believe that the firms need such an institution to be innovative. Some representative pointed to a general decrease of the income tax as a means to increase turnover in the service sector, but how this particularly should increase innovation is difficult to say from current knowledge. The result of the work in the commission is the conglomerate of a university, a semi-public change agency and four business service firms mentioned in section 4 above.

The cleaning industry attempts to establish a large development project which should emphasize innovation as well as work environmental problems and should be financed by the government. The Ministry of Business and Industry is sceptical and has not yet granted the money.

However, analyses (e.g. Serviceydelser 1994) and the case studies referred in modul 2 demonstrates that the service sector including knowledge intensive business services have problems. Although many service firms are innovative, too many are not. Many of these are small, often

individually owned where the owner is conservative in his or her business, focused on the nearest future and not aware of the necessity to innovate to survive in the long run.

3. Case studies

3.1. Characteristics of the interviewed firms

This section is based on a multi-case study of innovation in Danish service firms (Sundbo 1992a,b, 1995, 1996, 1997a) supplemented with a few extra cases. Between 1 and 15 interviews have been done in each case firm. The case-firms, their seize, ownership, industry and whether they are international are listed in table 5.

Table 5 Selected case firms

Activities of the case firm	Industry	Seize (number of employees)	Ownership	International or only domestic
A. Catering (The company delivers several manual business services)	Operational business service	400 (Catering division - The total company: 120,000)	Limited company	International
B. Ambulance, fire, car break-down, guard service	Operational business and household service	7,000	Limited company	International
C. Marketing of tourism in a destination, development of new tourist products	Tourism	5	Co-operative (Owned by local tourist firms)	Domestic
D. Marketing of tourism in a destination, development of new tourist products, initi-ated by the lo-cal bank	Tourism	5	Co-operative (Owned by local tourist firms)	Domestic
E. Consultan-cy: Strategic, organizational, management etc., accountan-cy	Knowledge intensive business service	400 (The international company: 45,000)	Partner owned	International
F. Consultancy: Strategic, orga-nizational, ma-nagement etc.	Knowledge intensive business service	200 (The international company: 2,000)	Partner owned	International

G. Consultan-cy: Training, organizational, political (lob-bying) etc.	Knowledge intensive business service	6	Personal owned	Domestic
H. Consultan-cy: Analytical-economical projects	Knowledge intensive business service	20	Co-operative	Domestic
I. Bank	Financial services	300	Limited company	Domestic
J. Insurance company; has included bank activities, travel company etc.	Financial services	3,000	Limited company	Domestic (has been international)
K. Payment and credit card company	Financial services	1,000	Owned by the Danish banks	Domestic (with export)
L. Investment advice	Financial services	3	Personal owned	Domestic
M. Telephone and other tele communica-tion	Tele services	17,000	Limited company (the Danish state has majority)	Domestic/is becoming international
N. Household service: Clea-ning, garde-ning etc.	Manual house-hold service	1,000	Personal owned	Domestic
O. Household service: Clea-ning, garde-ning etc.	Manual house-hold service	100 (international parent com-pany: 130,000)	Personal owned (fran-chising system)	Domestic/ International

3.2. Form and nature of innovation and research

3.2.1. Awareness

The service firms are generally not so aware of innovation as a natural activity as manufacturing firms are. The service firms innovate, but often they term it otherwise - development of service, improving quality etc. The assessment is that whatever the terms, the innovation awareness is lower in services than in manufacturing. However, the awareness is increasing.

One explanation of the relatively low awareness is that the academic world (universities, business schools etc.) nor has been aware of innovation in services. There has not wrtiten books on that topic as it is not included in education. There is very little literature that could make the service firms aware of innovation as a way to develop the firm and get it growing and there is no models or methods for how to organize the innovation activities. The case firms had only very rarely involved external experts in their discussion of innovation activities.

3.2.3. Service trajectories versus technology: R&D or other development logics of the service innovations?

None of the service firms had an R&D department such as we know them from manufacturing where researchers are sitting in a kind of laboratory experimenting with new products. The new services are not science based. The service innovations are very often non-technological as demonstrated for the financial services industry in table 1. Only process innovations were mostly technological. This may be assessed to be a general picture of the service industries except within the data-service and telecommunication industries (case firm J and M) and transportation where the boarder between hardware, software and services is fluent. Innovations within these industries are more R&D based.

Thus, the service innovations are not developed along technological trajectories as many manufacturing innovations are (cf. Dosi 1982). They are developed along service-professional trajectories. That means that for example the insurers knowledge about how to create a new insurance has been the basis for a new insurance. Only after the new insurance concept has been formulated as an idea, does the technology come in as a possibility.

Some innovations are scientifically based, e.g. on insurance science, law, organizational sociology (for organizational innovations) etc. However, the relationship between the service firms and universities and other research institutions is generally weak. Most service innovations are based on quick practical ideas. There is often no systematic organization of the innovation activities, which are then organized ad hoc.

The firms that comes nearest to a systematic innovation organization like the industrial R&D is the payment (J) and tele (M) companies. They are the case firms that are most dominated by engineers, data scientists etc. The more emphasis on innovation organization may not only be explained from the fact that the production is more hardware-oriented, but also by a cultural factor. The engineers and data scientist are generally more oriented towards innovation processes and a systematic organization of it.

The most important technology for the services in the future (maybe with transportation as an exception) is IT. The IT development can be described in three phases:

1. Mainframes dominating	1960-80
2. Decentralized IT (e.g. PCs) dominating	1980-95
3. Networks dominating	1995-

The start of each of these phases implies more emphasis on technological innovation because the new technological movement creates new possibilities. This has been told in the financial services case studies. The first IT phase led to process innovations (mechanization of administrative work

with accounts etc.), the second to organizational and product innovations. Each employee got a PC with decision programmes and could work more independently. New self service products were developed such as ATMs. The insurance company (K) also discussed self service as selling insurances via machines like ATMs, but abandoned the idea. There were some experiments with home banking in the late 1980s, but they were not successful. The third phase is supposed by the case firms to emphasize product innovations within knowledge and information services. The consultants discuss creating a relationship to their customers through the network. The customers can get information and advice through the network. The financial services companies plan new versions of home banking and portable bank concepts. The latter means for example a coin-card that can be refilled in ATMs or terminals in one's home or bank accounts stored in smart cards with a chip. Naturally, the tele company (M) suppose the third phase to be extremely innovative.

This may lead to service innovations becomes more technological. However, it does not necessarily means that technological trajectories take over in the way that the technological possibilities determine which innovations should be developed and how they should be designed. It may still be the service professional trajectories that are leading. An indication of the latter is the fact that the EDP (or IT) departments in the case firms obtained a strong internal power position in the 1960s and 70s. In the 1980s they have lost power. Instead the staff functions and particularly the market departments have obtained power. There is no sign that the IT-departments will get more power and be more leading in the innovation process by the entrance to the third technological phase. On the other hand is this phase only in its beginning, so it is impossible to conclude anything valid about this issue. Technological trajectories might take over in the future.

From the case studies in the financial services industry it can be concluded that innovation activities are not very technological push determined. The market pull factor and market strategy can be assessed to be more important in the case firms than in manufacturing. An example of this is that the banks did not fully use the technological possibilities of the second technological phase. Not because of non-profitability, but because it blurred the market competition. IT made the services from different banks more similar (one credit card or ATM looks like the other). Thus, the banks wanted to keep the manned branches for competition reasons, even though it was more costly than switching to the IT based self service system.

3.2.4. Service innovations integrated

The case firms mention all types of innovations (product, process, organizational, market). Sometimes an innovation can be identified clearly as one of these types, but often it is a combination, e.g. both a new service product and a new production and delivery system. The production, delivery process and the service product are so related in services that the product and the process often cannot be separated. This makes the innovation process in services different from that in manufacturing. Many innovations in the service firms have been large projects where many employees have been involved. For example has the bank (I) in 1996 started a project called The Learning Organization. It includes organizational development, competence development, involvement of the employees in a strategy formulating process. Further, innovations are supposed to be the outcome, but the management does not know which and how many.

The closeness of product-process/organization in services has led to many employees are involved in the first phase of the innovation process - the idea phase - and in the last implementing phase. For example has firm A and J had such comprehensive innovation activities.

3.2.5. Determinants, conditions and organization of innovation

The case firms can generally be divided into five categories concerning the organization and process of innovation. Each category has different determinants and conditions.

1. Large top-strategical organizations (firm A, B, I, J, K, M)

In these firms the innovations are determined by the strategy. The top management ensures that the strategy is followed by the organization. The strategy functions as a framework for innovation. It is very difficult to have an innovation which does not fit into the strategy accepted. The strategy to a certain degree also functions as an inspiration to innovation. At the same time the innovation process involve large parts of the organization. Some innovations come from below. There is a corporate entrepreneurship where employees and managers get new ideas and struggle for having them accepted. Others come from above as development projects initiated by the top management. They are initiated because the management think there is an unexploited market possibility (typically product and market innovations) or there are some problems in the organization (typically process and organizational innovations).

The innovation process can be described in phases from the first idea phase to the development and implementation phases. Free corporate entrepreneurship is manifesting itself mostly in the first idea phase. The top management or a department to which it has delegated the decision competence makes decisions after each phase whether to go on with the innovation or not. The longer the process goes into new phases, the more the process is institutionalized. That means that it is organized, typically by letting cross-departmental project groups take over from individual corporate entrepreneurs. Generally, the firms let the top management, a staff function or the marketing department be the leading actor.

Still the firms are dependent on ideas coming from below and the managements attempt to induce entrepreneurship in the organization, but also to restrict it because it can waste too many resources. Company K nearly lost its net capital in the early 1980s because of too much corporate entrepreneurship.

Although the companies do not have R&D departments, some of them have an innovation department. These are communication departments that has the task of inducing ideas from below in the organization and collect these idea, but also to sort the ideas into those that should be developed further - after having been presented to the top management for decision - and those that should be abandoned. The criteria for the decision is the firm's strategy. The innovation departments are as much strategic as innovation departments. They do not develop the innovations, but often participate in the development project groups. The tele company (M) has a development department which comes close to an R&D department. However, it is not a laboratory and it is closely related to the marketing department.

Generally the tendency has been towards spread innovation activities into a larger part of the organization. In 1990, survey of financial services firms concerning characteristics of the innovation activities demonstrated this clearly as shown in table 6.

Table 6 Characteristics of the innovation organization within financial service firms

	Percentage	
Characteristic	10 years ago	Today
Special department for product development	36	29
Innovations made by single persons	64	14
Innovations developed in different departments	46	21

Decision by top-management	27	36
Whole corporation prepared for product innovation	0	86
N	11	14

(Source: Sundbo 1992a)

2. Collective professional organizations (firm F, E, H)

These firms are characterized by all the employed professionals participating in the innovation activities. The professionals considered it as a professional duty and it has been internalised as a cultural factor in the education. This also means that the innovations are developed within the framework of professional standards and methods. It is disciplined collective entrepreneurship.

The innovations have often been developed to solve one problem only. Sometimes the solution has been repeated, but far from always. There is a tendency towards more standardization and modulization and a strategical guidance of the innovation activities as in the top-strategical large organizations. Not always in form of standardization of products, but in form of standardization of methods, and not as far going as in the top-strategical organizations. This is caused by a market development where customers emphasize the price and no longer appreciate the individual solution to their problems. They increasingly demand quality securement and references to former projects, which press the development towards standardization/modulization.

3. Entrepreneurial professional enterprises (firm G. L)

These are classic entrepreneurial firms established by one or a few persons on the basis of an innovation. Firm L was based on a new product, an investment advisory system. Firm G was established by three individuals that just wanted to be independent. After the establishment they have been looking for innovations to develop the firm.

These firms follow the classical entrepreneurial pattern: The entrepreneur innovates himself, often unsystematically and by intuition, and it is extremely difficult for employees in these firms to present new ideas not to speak about developing these ideas.

However, the entrepreneurial firms are developing towards the collective professional firms, and in the long run then towards the top-strategical type. Firm G has already to a certain degree institutionalized and collectivized the innovation process because the entrepreneurs can not manage a systematic development process themselves because of lack of time.

4. Innovative network organizations (firm C, D)

The two firms within tourism are of a certain type. They are co-operative firms established by the local tourist firms in a region. They have two purposes: 1. Marketing the destination; that means coordinating the marketing of all the member firms. 2. Innovation. They should develop new tourist products, either themselves or in collaboration with member firms. These organizations thus have innovation as their main task. The idea is to find an entrepreneurial type to manage the network firm. He or she should develop the tourist sector within the destination by their entrepreneurship. The reason is that the small tourist firms are conservative and not development oriented. The Danish government had established a programme for financial supporting such networks.

The network firms do not function according to the intentions. They have not been innovative. The managers have shifted regularly. They have either not been entrepreneurial types and have concentrated on traditional marketing, or - if they have been entrepreneurs - the local tourist firms

have been opponents. The reason is conservatism and cultural barriers (the hired managers often came from outside the region which made many of the local firms sceptical towards them).

5. Traditional owner-managed service firms (firm N, O)
This type of service firm is the traditional one, for example, within personal services, household services etc. The two case companies are within household service. They exists only due to the Home Service system (cf. section modul 1 section 2c). Each of them is owned and managed by one person who decides everything. Company O is a franchised division of a very large American manual service company, but the franchiser in Denmark has great freedom. The company has only a few divisions in Europe. Both firm N and O provide traditional household services like cleaning, gardening etc. The owner of company N is a firm establishing type and a good organizer, but is not particularly concerned with innovation. Thus, the firm is not innovative. The owner (franchiser) of firm O is interested in innovations. The firm may be considered as an experiment by the American company which wants experiences of how to establish in Europe. However, the production is not as complicated and demands as much professional knowledge as the knowledge intensive business service firms. This makes it both easier and more difficult to innovate. The largest impediment to firm O's innovation is the Danish Home Service system. The firm could not exist without the financial support from this system, and the system is very restrictive concerning which services can get support. The owner of firm O attempts to develop new household services that can be sold under pure market conditions.

3.2.6. External relations in the innovation process

In manufacturing it has been demonstrated that external relations, particularly to customers and technology providers, is a success factor in innovation processes. In the service firms external relations are of limited importance to the innovation process. Technology providers have practically been of no importance. Knowledge institutions such as research centres are of very little importance as mentioned. Consultants have been involved in some innovation processes, but this is not normal. (Sundbo 1994b). According to the service management and marketing theory (e.g. Eiglier and Langeard 1988, Normann 1991) the customer relationship should be extremely important and central in service production. Nevertheless are the service firms are not as good as one could have expected in involving the customers in the innovation process. Ideas are mostly coming from internal sources in the service firms. Interaction with customers have been an inspiration to the internal corporate entrepreneurs, but rarely have the customers themselves presented a full idea. Customers are often involved in the late development and implementation process in form of testing of prototypes on a customer group, but they act is more as passive reacting objects. A very few examples of common development projects, officially formed and agreed in a contract, between the service firm and a customer firm were found in firm A. One may say that the consultancy firms always need, to some degree, to involve customer firms in the innovation process, but it is rarely systematically and set up in a contract.

The sources of new ideas mentioned most in the interviews are newspapers and magazines and other firms, normally within the same industry. The firms interviewed typically get ideas from other firms at conferences where these firms present their new products or organizational ideas.

3.3. Resources allocated to innovation activities

This issue is difficult to answer for the service firms since it can not just be answered by counting R&D investments. None of the case firms have been able to give any exact data.

A most of the resources used for innovation activities are used in form of corporate entrepreneurial activities. In two of the case firms in the financial services industry, J and K, a survey of the employees and managers has been made. Among other questions they have been asked how

much time they spent on entrepreneurship, operationalized as getting ideas for new products, change of work processes, marketing etc., participate in development projects or discuss and struggle for their own new ideas. In table 7 the results are presented as percentage of the working time.

Table 7 Per cent of working time dedicated to entrepreneurial activities

	Managers	Employees	Total
Payment/cre-dit card company (J)	29	18	20
Insurance company (K)	32	12	13

Source: Sundbo 1992b

20 and 13 per cent of the working time dedicated to entrepreneurial activities seems to be quite much. The payment and credit card company is among the most innovative case firms and the insurance company among the moderate innovative. The managers use more time than the employees for innovation activities.

In the analysis (Sundbo 1992b) it was demonstrated that the insurance agents who sold insurances in the regions had an un-utilized entrepreneurial potential. They had ideas from their customer contact that the insurance company did not use, probably because these people are sitting far away from the head office.

3.4. Goals and consequences of innovation and firm strategy

As mentioned innovations are greatly determined and limited by the strategy. Thus, innovation is an activity that should support the strategy in most of the firms. The strategies of the firms are different and innovation is central to the strategy in varied degree. Free entrepreneurship is also a determinant of some innovations. It can lead to development and growth of the firm, but it can also lead to a waste of resources as mentioned.

The consequences to the firms of the successful innovations can not be measured exactly as stated earlier. The consequences have sometimes been conspicuous. The payment and credit card company J is established on the basis of an innovation, a common payment card for all financial institutions in Denmark. The insurance company K made an organizational and marketing innovation which meant that they established themselves abroad. One conclusion is that an immediately success is no guarantee for a longer success of an innovation. For example, in a few years the foreign establishment of company K run with losses. There are other examples of insurance companies of over-emphasizing innovation and entrepreneurial activities that had led to almost bankruptcies.

3.5. Internationalization

The international consultancy firms (E, F) have established international innovation organizations. Ideas are collected from the departments in all countries, international project groups are set up under the head quarter to develop the ideas into innovations that can be marketed. Firm E uses IT-network in their innovation process. They have common databases with all new solutions of problems. The employees all over the world can use them for looking for solutions if they have a project with specific problems. This reinforces the tendency towards modulization which increases the reproducibility of the innovations and thus the economic return of the innovation investments. This has improved innovation activities. The problems are cultural barriers which means that a solution

from one country not always can be used in another country, and the many data-bases that appears, which makes it difficult to get an overview.

The parent company of firm A has also established a central international innovation unit. It has development of quality as its task, but that implies also innovation activities. The unit cannot force any department to implement an innovation, but can motivate them to implement it. This contributes to transmitting innovations across the boarders. The unit was abolished in 1996. It was argued that this was due to the economic situation of the firm, which had become worse in 1996 because of large losses in USA. However, whether it is smart to abolish this cross-national innovation unit is an open-ended question. However, it is in accordance with the new strategy of the company, namely to decentralize the responsibility for all business activities more to the national companies. That may be a smart strategy from an economi point of view, but not necessary from an innovation point of view.

3.6. Impediments

Besides the mentioned need for an efficient international IT-network and deregulation, particularly in the financial services sector, no absolute impediments to innovation that cannot be overcome by the firms themselves can be found. The impediments are firm-internal and market-based: Lack of innovation awareness within the service firms, lack of instruments to guide and manage the innovation process, weak external networks and inertness and cultural barriers in the market. This is also demonstrated by the conclusion of the commission for knowledge intensive business services, as described in modul 1 section 5c.

3.7. Diffusion of innovation and knowledge - The problem of innovation protection

Many of the innovations have been diffused to other firms within the same industry, nationally and internationally. The diffusion rate might be assessed to be high between service firms. However, the situation is complicated. On one hand traditional service innovations are simple, which means that they are easy to imitate. That leads to each service firm attempting to protect knowledge of their own innovations. This is also an explanation of why the service firms do not participate much in external networks. Many of them are afraid of competitors should steal their good ideas. They become extremely closed, particularly within the financial services industry. The consultancy firms also have problems of employees often shift to a job in another consultancy firms, taking knowledge and ideas with them. On the other hand the service firms get most ideas from competitors, often in other countries (so they are not directly competitors). They buy the new products or go to conferences where other firms tell about their new products or organizational changes.

Protection of new ideas and innovations thus is a factor that is an impediment to diffusion of innovations. For society this is an important issue because it hinders the full economic benefit of the innovation process. It could be a task for political systems, e.g. EU, to create an international protection system for service innovations. The attitude of the service firms is that the patent system as we know it from manufacturing may not be the best way to protecting innovations. In fact, we need an organizational innovation in the political regulation system here. Another issue is the problem of the consultants shifting job from one firm to another. The firms have tried to solve the protection problem by setting up restrictions in the employment contracts defining what the employees can and cannot do if they leave the firm. However, this creates problems of the integrity of the employee as a wage earners and it is difficult to control the contractual restrictions.

Some of the firms within the financial services industry mention that their solution is to put the new services on a technological form, e.g. as self service. If a new service is developed so it is produced and delivered by an IT-system, it takes longer time for competitors to break the code so to say. Then it takes longer time to imitate the innovation. This demonstrates that firms often look more for functional smart solutions of the protection problem than for political regulation solutions.

Other case firms mention the professional knowledge and experiences as the best protection. Even if a competitor steals a new idea, he will not be able to sell it within his commercial framework. The latter includes image, reputation from former projects etc.

3.8. Systems of innovation: Organized strategic innovation or anarchic entrepreneur-ship ?

It is an open-ended question whether one can say that a system of innovation exists within the service sector. To a certain degree the concept of system of innovation is a theoretical construction, developed from manufacturing studies, which might not be very adequate for explaining the innovation activities in the service firms and industries. As demonstrated here, the external networks are weak in the service industries, partly because of lack of research and knowledge institutions dealing with the service firm's problems, partly because of the easiness of imitating service innovations.

For the service industries and political authorities a core issue for the future is whether the innovation development will, or should, go towards the strategic, well-organized, modulization side, or it will, or should, go towards the more anarchic, entrepreneurial side.

The former means that the innovation process will be more organized and strictly managed. This situation could profit from a well developed research system that produces knowledge about the service firms' customers and managerial problems of the specific service firm. That would emphasize sciences such as business administration, sociology, software science etc. as a counterpart to natural sciences as foundation of manufacturing innovations. Also development of IT should be emphasized. It is a task for the political system to create such a knowledge system, which presently exists in a preliminary or fragmented form.

The latter means that service innovations cannot be systematized and scientized. It will still be quick ideas developed by practitioners. Entrepreneurship - within or outside existing firms - as an anarchic activity will still be the core activity. The issue will be to develop, and optimally restrict, entrepreneurship. This means to give empowerment to employees, but to balance that with a management of the innovation process. IT may be an instrument for some services, but not for others. Entrepreneurship could be connected to development of IT-based services. Relevant political initiatives would be to create research and practical programmes which support development of organization and competencies of the individual employee. This has been done in Denmark by two programmes supporting development of the human resources, one research programme and one that financially supports development in firms. The programmes are not directed towards the service sector only.

The results of the Danish case study points to the former - the strategic, modulized system - as the development trend. However, several persons interviewed have pointed to the latter as the right way of developing service innovations. The current situation is a combination of the two systems. That may very well also be the situation for the future. The core issue for firms and political authorities then is: Which combination - how much of each? It means that the political support systems should have many facets, for example implementing all the initiatives mentioned here and more.

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Key-interviews

Chairman of Danish Consultancy Firms' Association
Manager in an IT based data-service firm
Manager in IT hardware/software firm
2 heads of office in the Ministry of Business and Industry
Consultant in the Danish Bank Employee's association
Manager in Building Society (formerly in a bank and an insurance company)
Manager of the Tourist Industry Council
2 tourism researchers
Chairman of the Danish Home Service firms' Association
Participation in Commission on Knowledge Intensive Business Service in the Ministry of Business and Industry
Participation in work seminar on development of new concepts within the cleaning industry