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Market for electronic information services for professional purposes in Finland in 1994

MSSTUDY Finland

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ABSTRACT

During 1995, a multinational study, initiated under the The European Commission's IMPACT 2 -programme, was done to assess the markets for electronic information services (EIS) for professional purposes in 1994 in the countries of the European Economic Area (EEA). The participating 17 countries covered the supply and demand sides of the EIS market, as well as various infrastructure sections related to these markets.

Finland covered the supply and demand sides of the markets for electronic information services by quantitative means. The supply questionnaire was sent to 147 recipients, a) Finnish database producers and hosts of online information systems, including representatives of foreign hosts, b) suppliers of telematic services and c) audiotex services, d) electronic mail services and Internet connections, and to e) producers or distributors of offline information products, mostly of CD-ROMs. The demand questionnaire was sent to 108 recipients in four target groups, a) information brokers and external information intermediaries and to b) the main scientific and research libraries, acting as information brokers in their special fields; also to c) the main public libraries and d) an industrial group, i.e. intermediaries in the chemical and pharmaceutical industry in Finland. The quantitative surveys were supplemented by qualitative information gathered from various printed sources and in discussions with experts of the branches concerned. - The overall response rate of the supply side was 29%, that of the demand side 36%.

In addition, Finland covered the following infrastructure sections related to the markets for electronic information services: library services, printed media infrastructure, professional associations, education and training, research and development, tele-communications infrastructure, computer infrastructure, economic and political infrastructure, national information policy, legal and regulatory issues. The sections were covered up to a varying scope and by means of printed sources and expert opinions. A chapter about future visions of communications is also included. - The present report about Finland is a modification of the one delivered to CEC in November, 1995.

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TIIVISTELMÄ

EU:n komission IMPACT 2 -ohjelman aloitteesta tehtiin 1995 kansainvälinen selvitys sähköisten tietopalvelujen markkinoista ammatillisiin tarkoituksiin vuonna 1994. Selvitykseen osallistui 17 maata Euroopan talousalueelta (ETA). Osallistujat analysoivat sähköisten tietopalvelujen tarjontaa ja kysyntää sekä alaan liittyvää infrastruktuuria omassa maassaan.

Suomi selvitti tarjontaa ja kysyntää kvantitatiivisin menetelmin. Tarjontaa kartoittava kyselylomake lähetettiin 147 organisaatiolle: a) kotimaisille tietokantojen tuottajille ja tiedonhakujärjestelmien ylläpitäjille, myös ulkomaisten järjestelmien edustajille, b) telemaattisten palvelujen tarjoajille, c) audiotex-palvelujen tarjoajille, d) sähköposti- ja Internet-yhteyksiä tarjoaville organisaatioille ja e) muilla välineillä kuin suorakäyttöisesti tarjottavien tietopalvelujen tuottajille tai jakeluorganisaatioille. Kysyntää kartoittava lomake lähetettiin 108 vastaanottajalle neljässä eri kohderyhmässä: a) tietokonsulteille ja välittäjille (information brokers, external information intermediaries), b) tieteellisten kirjastojen yhteistilastoon osallistuville kirjastoille, c) yleisille kirjastoille (maakunta-kirjastot ja muutamat muut) sekä elinkeinoelämän kohderyhmälle, kemian ja farmasian alan teollisuuden informaatiopalveluille. Kvantitatiivisia menetelmiä täydennettiin keräämällä tietoja painetuista lähteistä ja asiantuntijoita haastattelemalla. - Tarjonta-kyselyn vastausprosentti oli noin 29% ja kysyntäryhmien 36%.

Suomi selvitti lisäksi seuraavia infrastruktuurin aloja: kirjastot, painettu media, alan järjestöt, koulutus, tutkimus, tietoliikenne, tietojenkäsittely, taloudellinen ja poliittinen infrastruktuuri, kansallinen informaatiopolitiikka ja lainsäädännölliset kysymykset sekä viestinnän tulevaisuudennäkymät. - Tämä VTT Tiedotteita on muokattu EU:n komis-siolle marraskuussa 1995 toimitetusta raportista.

PREFACE

During 1995, VTT Information Service carried out the Finnish study about the situation of the markets for electronic information services for professional purposes in 1994. It was part of a multinational study initiated under the European Commission's IMPACT 2 -programme and carried out in 17 member states of the European Economic Area to get an overall picture about the national as well as the pan-European market for electronic information services.

Representatives of the Finnish sponsors of the study formed the leading group which comprised of Mr. Juhani Hakkarainen from the Ministry of Education, Mr. Ilmari Pietarinen from the Ministry of Finance, Mr. Henry Haglund from TELMO (the Finnish Association for Network Services) and Mr. Sauli Laitinen from VTT Information Service. The project leader wishes to thank the leading group for their valuable support. The author expresses her sincerest thanks to the internal support group at VTT Information Service, Ms. Elisabet Mickos and Dr. Pirkko Eskola, for their valuable advice. A warm thank-you also belongs to all the colleagues and experts who contributed to the MSSTUDY work, both at VTT and elsewhere, too numerous to be mentioned here. The author herself is, however, solely responsible for the result of the work, presented here as the report about Finland, as well as any conclusions made.

Espoo, April 1996

Merja Lehti

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1 INTRODUCTION

1.1 THE AIM, OBJECTIVES AND SCOPE OF THE MEMBER STATES STUDY

MSSTUDY Finland is part of a multinational study for assessing the situation of the markets for electronic information services (EIS) for professional purposes in the member states of the European Economic Area, covering 17 European countries and initiated under the European Commission's IMPACT 2 -programme. The participating countries were Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom.

The main aim and objective of the multinational MSSTUDY was to make it possible to assess the competitive strengths and weaknesses of the European market of electronic information services, compared to the corresponding markets in North America and Japan. For this purpose, the national studies have been coordinated and the results aggregated at the European level to enable comparisons nationally and internationally and to enable the players in the markets to draw strategic conclusions. During the study the participating countries got an overall picture of the national market and were also able to make international comparisons.

The participating countries, including Finland, covered the supply side of the markets for electronic information services for professional purposes and, according to the scope of their contract, the demand side. The participating countries also covered various sectors of infrastructure relating to the EIS markets, according to their own choice.

1.2 METHODOLOGY OF THE STUDY AND STRUCTURE OF THE REPORT

Finland covered the supply side of the markets for electronic information services by quantitative means. A questionnaire was sent to Finnish database producers and hosts of online information systems (including representatives of foreign hosts), suppliers of telematic services and audiotex services, electronic mail services and Internet

connections, and to producers or distributors of offline information products, mostly CD-ROMs.

In addition to her original MSSTUDY contract, Finland also covered the demand side of the markets by quantitative means, by a questionnaire sent to four different target groups. The demand questionnaire was sent to a) information brokers and external information intermediaries and to b) the main scientific and research libraries, acting as information brokers in their special fields. The other target groups were c) the main public libraries and d) and industrial group, i.e. intermediaries in the chemical and pharmaceutical industry in Finland.

The quantitative surveys had to be supplemented by qualitative information gathered from various printed sources and in discussion with experts of the branches concerned.

Finland covered the following infrastructure sections related to the markets of electronic information services: library services, printed media infrastructure, professional associations, education and training, research and development, telecommunications infrastructure, computer infrastructure, economic and political infrastructure, national information policy, legal and regulatory issues. Qualitative assessments on certain branches and issues were also studied. The sections were covered up to a varying scope and by means of printed sources and expert opinions.

The Finnish national report entitled "MSSTUDY Finland" was delivered to CEC in November, 1995. It was divided into the following main sections: supply side survey, demand side surveys, infrastructure sections and statistical annexes. A section of future issues in some fields and other qualitative assessments as well as conclusions and a list of sources are included. There is also a section about the markets for printed information. The exchange rate used in the study for FIM/ECU is 6,19 (6,19077). The present report is a modification of the one delivered to CEC.

2 SUPPLY SIDE SURVEY

Publicly available databases, containing professional information, are produced by approximately 140 databases producers in Finland. The number of databases is currently about 240. They are available either online or on CD-ROM, diskettes or tapes (or on two different media), according to 1995 update of Nordguide, the database of Nordic databases. The Nordguide database is a survey of databases and hosts in the Nordic countries. It was last updated in the spring of 1995. The number of Finnish hosts is about 70. Some of the organizations engaged in electronic information services are both a host, a database producer and an information broker. They received both the supply and the demand questionnaire.

In MSSTUDY Finland, 147 supply questionnaires were distributed: 107 copies to Finnish hosts and database producers and agencies for foreign hosts, 13 to suppliers of electronic mail and Internet services, 22 to producers and distributors of CD-ROM products and 5 to suppliers of telematic open information network services (value-added or kiosk services) or videotex services. An organization that is engaged in various activities and belongs to two groups has, nevertheless, been counted only once. This concerns e.g. database producers being hosts, as well as CD-ROM distributors or producers or electronic mail or videotex suppliers having other kinds of supplier activities.

Almost 40 database producers also act as hosts (or vice versa), many online database producers also sell or produce CD-ROM diskettes. Some videotex suppliers also act as suppliers of electronic mail or Internet connections. Companies working in the production or sales of CD-ROM diskettes (original count 27), are usually very small and some only survive for a year or two. Many of the suppliers of electronic mail or Internet connections are voluntary organizations, various microcomputer user groups or associations with actually no revenue at all. Most of them did not answer the supply questionnaire.

In the supply questionnaire, the following categories of the supplier organizations were used: private companies, public companies, public institutions (government or municipal administration, universities etc.) and semi-public organizations (e.g. associations, chambers of commerce).

2.1 RESPONSE RATES

The response rate was 29% as a whole, i.e. 42 respondents returned the questionnaire. Based on the address lists used, 33 respondents of hosts and database producers (30%) answered the questionnaire. Five of the suppliers of electronic mail and Internet connections (38%) answered, and so did almost 14% of CD-ROM producers or distributors. Among the suppliers of videotex or similar services, 40% answered.

One respondent had ceased to produce a database, and two returned a blank questionnaire saying they consider the information a trade secret. Two organizations sent two kinds of answers which were then combined into the same questionnaire. Seven representatives of foreign hosts received the supply questionnaire. Almost all of them informed that they do not answer the questions for Finland alone and referred to the international parent company for further information.

There are about 70 national hosts in Finland, a dozen of them the major hosts. Despite our efforts, some of the major national hosts in Finland declined to answer the supplier questionnaire. Many a supplier of electronic mail or Internet connections is a voluntary organization, a pc user group or an association, only starting such activities or with actually no revenue at all. Most of them did not answer the questionnaire.

The above response rates correspond to the original address lists used. In the supplier questionnaire (Annex No. 1) the respondents were asked to tick as many boxes of types of activity as apply (question No. 2.1). Based on later instructions, a main type of activity had to be chosen, which necessitated another round of telephone calls. The above response rates of the various supplier groups do not, therefore, necessarily in every case correspond to the main categories of activity that the respondents later indicated.

In addition to the questionnaires, information has been gathered from other sources about some suppliers.

2.2 CHARACTERISATION OF RESPONDENTS

Legal status

The respondents' organizations were listed into four alternative legal status categories. Most of them, 19 respondents, (over 45%) were public institutions. The next biggest

group was that of private companies, 15 (almost 36%) of the respondents. There were four respondents (9,5%) each from public companies or semi-public institutions.

Main activity

Many a respondent is engaged in various activities in the electronic information services field. It was not easy in every case to determine the one and only main activity, since some of the respondents had even percentages in two or more activities. More than half of the respondents, 24 organizations (57%), were database producers (cf. table 1). The second biggest group was that of retrospective online information services, with 5 respondents (12%). Three organizations were grouped into hosts of real-time financial information services and another three into electronic mail service suppliers. The rest was evenly distributed into five different categories, one or two in each of them.

Table 1. Supply survey: main activity of the respondents.

	Number	*%*
Database producers	24	57
Retrospective online database services	5	12
Real-time information services, hosts: financial	3	7,1
Real-time information services, hosts: news	1	2,4
Audiotex services	1	2,4
Electronic mail services	3	7,1
Services delivered via Internet	2	4,8
CD-ROM distributors	1	2,4
Distributors of other offline services	2	4,8
Total:	42	100

Staff

Almost all of the respondents answered the question about full-time staff. Altogether, 38 respondents employed 11 356 employees. The mean value (average) of the total staff was 298. The average number of staff in the departments related to electronic information services (37 respondents) was 17 employees.

Nearly two thirds of the respondents (27 out of 42) indicated the breakdown of their staff in electronic information services into the functions mentioned in question No. 3.3 (Annex No. 1). Sales and marketing, data gathering and editorial, and technical

functions all had shares of 20 through 29% of the total. Data gathering and editorial functions form the most important category. Management and administration together with other functions are less important in percentages (cf. table 2).

Table 2. Supply survey: respondents' staff in electronic information services by functions.

Function	*Mean value, %*
Management, administration	16
Sales, marketing	20
Data gathering, editorial	29
Technical	24
Other staff function	12

2.3 TURNOVER

2.3.1 Overall figures

Nearly all of the respondents (38 out of 42) gave figures for their total turnover in 1994. Some of the respondents were big organizations with most of their activity other than supplying electronic information services or products in the sense meant in the MSSTUDY. No conclusions can be drawn from these figures, since there is a huge variety and the figures include all activities of the responding organizations. They are by no means purely market revenue figures, because quite many suppliers (database producers or online hosts) in Finland are public institutions financed mostly by public subsidies.

Percentages of the break-down of the turnover into categories of market income, public subsidies and other income were given by 35 respondents (83% of the total population). Comparing the percentages for the total population does not either make sense since there are great differences depending on the type of supplier in question.

Growth rates, positive or negative, of the suppliers' income showed great differences, too, but an average growth rate from 1993 to 1994 was about 24% (only 24 responses).

2.3.2 Analysis of turnover by different service or product categories

Overall percentages

About three out of four respondents indicated the break-down of their total turnover by types of services or products. Besides the given categories of electronic information services and printed products, we added a third category (other) for other kinds of services, because some of the responding suppliers earned the major part of their income from other activities. This means that the supply of electronic information services is the principal activity of the organization in only very few cases. Those few suppliers who get the majority of their turnover from electronic information services, however, are among the big suppliers in the branch in Finland.

If we mark the value of the suppliers' other activities by 94, the next most important share of turnover comes from printed products, and is only 18% of the prime activity. Electronic information services, for their part, form only a minor percentage of the total turnover, with about 5% of the prime value. This percentage is confirmed by counting the money values of the various services/products. Based on the percentages given in question No. 6.1 (Income by types of services and products, cf. Annex No. 1) for electronic information services, the money value was indeed counted from the responding organizations' total turnover figures. This gives an average turnover (mean value) of 11,9 million FIM (1,9 million ECU) for supplying electronic information services and an average turnover of 44 million FIM (7,1 million ECU) for printed products.

Break-down of electronic information services

There were 30 respondents (71%) who indicated the further break-down of the percentage of electronic information services into various activities. The given percentages were weighted with the turnover and averaged. Hosting retrospective online information services was the prime activity, the weighted mean value was 18%. The next most important activity was supplying magnetic information media (discs, tapes etc.), 53% of the prime activity. Database production came right after that, representing about 48% of the volume of the prime activity (weigth factor 8). Next in line were CD-ROMs, electronic mail services and real-time information services (financial as well as news). The importance of the activities is summed up in table 3.

Only five respondents gave percentages of their turnover for multimedia products. The weighted mean here was only 0,6%. This portion of turnover was almost totally (97%)

due to multimedia type 1 (text with graphs, tables and pictures), only 2% was due to multimedia type 2 (text with audio).

Table 3. Supply survey: breakdown of electronic information services of the respondents.

	Weighted mean value, %
Hosting retrospective database services	18
Magnetic information media	9,6
Database production	8,8
CD-ROMs	6,3
Electronic mail services	4,3
Real-time information services	3,0
Further online services	2,0

2.3.3 Analysis geographically and by subject area

Question No. 5 (Income by geographic distribution in 1994) was answered by 40 respondents (about 95% of the total). Amost all of them got the largest part of their income from the domestic market (mean value 98). The remaining income comes largely from EEA countries (other EU and EFTA countries). Their mean value was 1.6. Practically only two to three of the respondents get any considerable share of their income from countries outside Finland. All of them are real-time information service hosts. One is a supplier of real-time tailor-made business news, with subsidiaries in Europe and elsewhere in the world.

More than half of the respondents (24 out of 42) indicated the break-down of their income in various categories (cf. table 4). Scientific, technical and medical information (STM) was the most important category (weigth factor 57). No other categories came even near such percentages in the answers.

Table 4. Supply survey: breakdown of income of the supplier respondents by subject area.

	Weighted mean, %
Scientific, technical, medical information	57
Other information	13
Finance, stock exchange, banking	9
Further business and economic information	8
Company profiles, credit ratings	3
Legal information	3
Government information, political news	3

2.4 COST ANALYSIS

Profitability

The suppliers were asked two questions about profitability. One of them was about the profitability of the electronic information services sector in their organizations and the other about covering these activities. Out of a total of 28 answers, 16 (about 57%) stated that their activities in the electronic information services sector were profitable in terms of operating costs only, in 12 cases they were not. Nearly two out of three respondents stated that the corresponding activities were not profitable at all in terms of full costs (20 respondents out of 31).

The majority (9 respondents, i.e. 60%) of the 15 respondents who answered the other question said they expect to cover their operating costs of electronic information services activities only at a later date or never. Only six respondents of 15 (40%) expected to have their full costs covered either in 1996 or 1997, while a great majority (16 out of 19) did not expect ever to cover the full costs.

Costs

Fewer respondents (19 out of 42, i.e. 45%) stated their total costs in the corresponding question. The sum total of their total costs in 1994 amounted to 269,2 million FIM (43,5 million ECU). The mean value then was almost 14,17 million FIM (2,28 million ECU). Staff costs accounted for the greatest part (61%) of all the respondents' costs, based on answers from 23 respondents. Investment expenditure had a share of 6% and other costs 33%.

Costs of gathering, processing and editing data played the major part in the break-down of the respondents' costs, an average of 41%. User service and training accounted for about 30% of the costs, technical operation for 17%.

2.5 OUTSOURCING ACTIVITIES

About 76% of all the 42 respondents (32 organizations) indicated their outsourcing activities. About half of them carried out their data gathering, processing and editorial activities internally (15 respondents), as well as their technical operations (16 respondents). The majority of PR activities was handled internally, and so was also marketing.

In software development and maintenance 45% of the respondents relied on external expertise, and 29% carried out these activities both internally and externally. Data gathering, processing and editorial activities were also carried out both ways by 40% of the respondents. Further activities not listed in the questionnaire were indicated by seven respondents, and mostly carried out by the responding organizations themselves.

2.6 FURTHER INFORMATION ABOUT THE SUPPLY SIDE

It was not possible to draw conclusions from the responses to the supply questionnaires about the total market of the supply side of electronic information services in Finland in terms of money. Among 70 Finnish hosts, there are about a dozen major ones in the supply market. One of the national hosts, VTKK Information Service Ltd. (nowadays TT-Information Service Ltd.), as host of the retrospective online information system MINTTU, is the leader in the market since the 1980's in supplying retrospective scientific, technical and legal information, together with business news. They host about 80 databases. Several university libraries in Finland are producers, and some of them also hosts of retrospective databases in science, technology, medicine, economy and business.

The major international online hosts used in Finland are likely to be Knight-Ridder with Dialog and Data-Star, STN International, ESA-IRS, FT Profile and Questel/Orbit. Reuters is the leader in the real-time supply side, competing with a major Finnish and some other international hosts. Almost all the representatives of foreign hosts declined to answer the questionnaire and, instead, referred to the parent company. Since they

play an important part in the market in Finland, it wasn't either possible to come to any reasonable figures in terms of money.

Information was gathered from printed sources and from experts about the markets for real-time and audiotex services as well as the advanced supply and use of telematic information services in Finland. The following chapters deal with both supply and demand.

2.6.1 Supply of real-time financial and news information

A summary publication entitled "Joukkoviestinnän talous 1993. English summary: The Finnish Mass Media Economy" was given out by Statistics Finland in 1994. According to this publication the turnover for electronic media total in 1993 was 2 987 million FIM, representing 20,1% of the mass media total of 14 838 million FIM (cf. chapter 4.2.1).

Electronic media in this statistics consists of nationwide television and radio, local radio, cable television and electronic data services. The share of electronic data services accounted for 1,6% of the mass media total in 1993, remaining at about the same level as in the previous year. The estimated turnover of electronic data services was 235 million FIM (205 million FIM in 1992).

Hosts of real-time financial and news services accounted for most of the 235 million FIM (38 million ECU) mentioned in the statistics. There are both national and international suppliers on this market in Finland. One of them is likely to cover about half of the total turnover. Based on information about the turnover of the major suppliers, and even if we consider that they represent at least 80% of the market, the turnover of 235 million FIM seems to be too high. The sum includes other kinds of hosts, too, and so does not comply with the categories of MSSTUDY. Based on other sources (database references, annual reports etc.) we would estimate that the turnover of the major hosts, international as well as national, for real-time financial and news services supplied in Finland amounts to something around 200 - 220 million FIM (32 - 35 million ECU).

2.6.2 Audiotex services

Audiotex services here denote automatic value-added telephone services, based either on speech or voice transmission. They may be dial-and-listen services or interactive services and either subject to charge or free-of-charge to the caller. They may be grouped to a) those giving some kind of information on a particular subject and b) other services.

Audiotex services that are subject to charge, so called premium rate services, and are usually grouped into services giving information (telephone numbers in Finland usually beginning with 9600 or 0600) and other kinds of premium rate services (numbers beginning with 9700 or 0700). Services free-of-charge to the caller (in Finland beginning with 9800 or 0800) are paid for by the one receiving the call. Some examples of audiotex services are time and date information, news and weather, tax and medical information, traffic and road information, telephone numbers, wake-up service, bonds and securities information and poetry telephone.

In spring 1994 there were approximately 6300 audiotex telephone numbers, of which 2800 subject to charge and 3500 free-of-charge to the caller. Table 5 and 6 give an overview of the use of premium-rate audiotex services in Finland.

Table 5. Use of premium-rate audiotex services in Finland (Televiestintätilasto 1995, p. 55).

	Year 1993	*Year 1994*
Number of telephone calls	20 million	23 million
Number of minutes	48 million	52 million

Two groups of operators supply audiotex services, Telecom Finland and the Finnet group of regional telecommunications companies. Telecom Finland provides for about 70% of the audiotex service numbers in Finland. The number of users of audiotex services is about tenfold that of videotex services.

In Finland it is not the operators who determine the prices of audiotex services that the caller pays, but the producers of audiotex information. The producers then pay the operators their share of the price. This kind of situation is contrary to general practice elsewhere in Europe. Therefore, the turnover of the telecom operators does not give a

good overall picture about the audiotex market in Finland. One should rather talk about the money that consumers spend for audiotex services. According to expert estimates, the market for audiotex services in Finland in 1994 amounted roughly to 375 million FIM, i.e. about 60 million ECU (there are estimates from 300 to 375 million FIM). According to an estimate, entertainment services account for about 180 million FIM (29 million ECU). The remaining 195 million FIM (31,5 million ECU) would then account for other kinds of services, more or less for professional purposes.

Table 6. Use of Telecom Finland's premium-rate audiotex services in 1994 (Televies-tintätilasto 1995, p. 55).

Service	*Percentage, %*
Customer services	10
Subscription services	5
Banking services	9
Expert services	21
Media services	10
Voting services	1
Contact and other entertainment services	44
Total:	100

Controlling the use of audiotex services has become a major topic in the branch in Finland. Members of the working group set up by the Ministry of Communications have proposed that audiotex services be divided into four groups. These would be 1) services of general usefulness, 2) those for transacting business, 3) those for pastime and 4) contact services. The user could tell his teleoperator, if he wishes to have access barred to some of the groups from his telephone, from 1996 onwards.

2.6.3 Internet

Internet services are provided in four major nationwide networks, those of Telecom Finland, the Finnet Group of regional telecommunications companies, Helsinki Telephone Company and Eunet Finland. FUNET, the academic network of Finnish universities, financed in cooperation by the Ministry of Education and universities, handles a significant part of the operations. Besides, two dozen smaller suppliers, including commercial companies and various user associations, buy their lines from the bigger operators.

In July, 1995 (acc. to information from TELMO, the Finnish Association for Network Services, originally from Network Wizards) there were about 111 000 Internet servers in Finland. Growth from July, 1994 to July, 1995 has been tremendous, about 125%. In Sweden the growth rate in the corresponding period was about 100%. As to the number of Internet hosts (servers) per 1000 inhabitants, Finland is No. Two in the world (see table 7). There is an estimate about the percentages of the number of registered hosts within the .fi domain. According to this estimate EUnet Finland would have a 54% share of the number of such .fi hosts. The next biggest share would be taken by Telecom Finland. There are also other estimates with different percentages.

Internet users may be estimated to number about 200 000, about 5% of the population of Finland. Half of the usage of Internet is commercial usage. Some 50 000 people user Internet daily in Finland. FUNET has about 50% share of the microcomputers connected to Internet. EUNET Finland about 35%. The rest of the microcomputers are connected to Internet via Telecom Finland, the Kolumbus network of Finnet Group or a company called Clinet Oy.

The networks are alive with versatile activities: municipalities, schools and other educational institutions build their own local area networks. These LANs will be connected to commercial networks, and there are plans for connections from e.g. schools
to municipal libraries.

Telecom Finland

Telecom Finland supplies interfaces in Datanet. New Internet services for SMEs have been launched in 1995. They are the iNET service directory, Internet user package, new connections via Internet kiosk and the value-added public network service Telesampo, as well as various electronic mail and News services. Information providers can market their services to Finnish Internet users in the new iNET directory. Access to Internet is also available as a kiosk service without a user ID.

EUnet Finland

Enterprises account for the major part of EUnet Finland's turnover. Some 300 to 350 enterprises among EUnet's customers have a leased line. About 2500 customers have private lines, even some companies have a separate modem line. With companies going over to multiservice networks, EUnet Finland estimates that Internet becomes one service among many.

Regional telecommunications companies

The regional telecommunications companies have lately been grouped into Finnet Group. Kolumbus is the brand name of the national network service (LanLink) of regional telecommunications companies. It is marketed by the bigger regional telecom companies. The package consists of Helsinki Telephone Company's router network which includes electronic mail service Elisa, public information network Infotel (kiosk service) and Internet connections.

FUNET

All Finnish universtities and most polytechnic institutes are members of FUNET, together with over 30 other public and industrial research institutes. - FUNET's future plans include a new server. The trunk-line network will be updated into an ATM network, with the speed multiplying from the present. It will then be possible to include new applications in the network, e.g. those for distance learning and medical purposes.

Freenet, Internet and schools

Freenet is an educational network project that started in 1993. Freenet provides electronic mail and bulletin board services and Internet connections for pupils, students and teachers in primary, secondary and vocational schools. By the end of 1994, there were 27000 Freenet user IDs, in May 1995 as much as 32000, of which boys account for about 60%. Freenet has been developed with the aim of providing future citizens with basic skills in electronic communications and new technologies as early as possible.

The national information strategy for education and research was launched in January, 1995. All the pupils at comprehensive schools will be taught the basic skills in word processing, sending electronic mail messages and looking for information in Internet and other networks. The Ministry of Education regards libraries as important knots in the network of the Information Society.

The Ministry of Education has plans to connect schools and other educational institutions to international information network by the year 2000. The Government aims at proving 20 000 new microcomputers to schools, the first in 1996. The cost of the four-year-project will be 720 million FIM (116 million ECU), with all the equipment, network connections, educational material and training of teachers.

Table 7. Number of Internet servers in relation to population in July, 1995 (Internet statistics from TIEKE, Information Technology Development Centre, Aug. 14, 1995; based on Statistical Yearbook of Finland 1995 and on information by Network Wizards).

	Servers/hosts per 1000 inhabitants
Iceland	26,15
Finland	22,19
USA	16,74
Norway	15,54
New Zealand	12,85
Sweden	12,30
Denmark	7,15
Great Britain	5,03

The figure for USA includes "country codes" edu, com, gov, mil, org, net, us and int; some of these are in international use. The corresponding codes are not included in the target country's figures.

2.6.4 Telematic information networks

Finland is highly advanced in supplying interactive open information networks for public use. Two major suppliers of such value-added telematic information networks share the market in Finland, Telecom Finland with its Telesampo network and the group of regional telecommunications companies with the Infotel network. Infotel is divided into two services, one for private ditizens and Business Infotel for enterprises. Access to Telesampo or Infotel is available to a microcomputer user either with a user ID or as a kiosk service, where the costs will be charged in the user's telephone bill. Both Telesampo and Infotel are menu-based service networks where the users from their computers can access online databases, videotex services and messaging services.

Truly telematic

Telesampo started as early as 1987, at that time by videotex technology. At present, videotex technology is hardly used at all any more in Finland. Nowadays over 90% of Telesampo services are in ASCII form, including banking services. Telematic services in Finland are thus truly "telematic" also by technology, combining the data transmission capacity of telecommunications networks with the intelligence of computers. There are

only a couple of suppliers left in Finland who offer services based on videotex technology which has slowly but surely been replaced by more advanced telematic technologies.

These telematic networks provide a variety of information to private citizens and enterprises in Finland. The choice ranges from marketing channels and public forums of discussion to supplying news and weather forecasts, telephone catalogues, electronic mail and banking facilities as well as entertainment. They also give information about timetables and travelling, business and companies, health and social security, adp services, agriculture, municipalities and parishes, government institutions and other organizations, and provide gateways to national and international online and videotex information services.

TELMO, the Finnish Association for Network Services, annually gathers information about and estimates the usage of publicly available telematic value-added networks. According to TELMO, 215 000 Finns used the service networks in 1994, i.e. more than 4% of the population. It may be estimated that the total turnover of telematic services in Finland, of Telesampo and Infotel, amounts to something between 45 and 55 million FIM (from 7,27 million to 8,88 million ECU).

Altogether, the Finns spent about 715 000 hours in using telematic information networks in 1993 and 985 000 hours in 1994, a growth rate of about 38%. It is estimated that about 80% of the use of telematic services comes via kiosk services. Usage of kiosk services has also shown the most rapid growth rate in the past few years. Telematic services were mostly used for banking, for over 42% of the minutes spent in the services. Tables 8 and 9 show the number of users, user groups and use by services.

Table 8. Users of telematic information networks in Finland, 1993 and 1994 (Televies-tintätilasto 1994, p. 52 and Televiestintätilasto 1995, p. 54).

	1993	*%*	*1994*	*%*
Number of users	175 000	100	215 000	100
User groups:				
- large companies	52 000	29,7	56 000	26,1
- SMEs	28 000	16	32 500	15,1
- public administration	27 000	15,4	31 000	14,4
- organizations, associations	6 000	3,4	6 500	3
- households	62 000	35,5	89 000	41,4

Table 9. Use of telematic information networks in Finland, 1993 and 1994, in % (Televiestintätilasto 1995, p. 54).

	1993	*1994*
Use by services:		
- tourism, travel information	0,4	0,5
- banking	48,3	42,5
- telephone catalogues	3,9	4,2
- economy	5,4	4,3
- subsribing services and electronic markets	12,5	12,7
- news and weather	3,1	4,8
- messages, electronic mail	11,4	15,8
- entertainment	11,2	10,3
- other	3,8	4,9
Total:	100	100

2.6.5 Electronic mail suppliers

There are many kinds of players in the electronic mail services market in Finland. They include both public and private companies, as well as many voluntary organizations, pc user groups or associations. The user groups or associations do not work on a commercial basis so they don't usually have any revenue.

Major commercial electronic mail services are provided by big telecommunications operators and computing centres, big public companies and also by hardware and software suppliers. Based on the supply survey and some other information, a rough estimate may be made that turnover of the major four to five electronic mail suppliers amounts to approx. 45 to 50 million FIM (7 to 8 million ECU). These figures do not, however, include e.g. all the computing service companies which offer electronic mail services as part of their activity.

It is estimated that about 350 000 Finns use electronic mail services. Besides the services on a commercial basis, there are dozens of services that are not commercial. FUNET, the Finnish universities' network, provides electronic mail services and Internet connections. Tens of thousands of pupils and teachers in schools use Internet and

electronic mail services via the Freenet network, tens of thousands of university students also have access to electronic mail and Internet services.

3 DEMAND SIDE SURVEY

3.1 ALL DEMAND SIDE TARGET GROUPS

In the demand side survey Finland chose to survey the compulsory group of a) *information brokers* and three other target groups. These were b) the *main scientific, research and special libraries,* c) the *main public libraries* and d) *companies in the chemical or pharmaceutical industry* with their own information service units. Altogether, 108 demand questionnaires (Annex No. 2) were sent out in Finland in May, 1995, about the use of electronic information services for professional purposes. The target groups consisted of 33 information brokers or external information intermediaries, 10 enterprises in the chemical and pharmaceutical industry, 41 scientific, research or special libraries and 24 main public libraries.

Chapter 3.1 gives a general overview of all the demand side groups that were covered by quantitative means. Chapters 3.2 through 3.5 characterize each target group separately.

No overall conclusions about the demand for electronic information services in Finland in 1994 can be made, based on the responses alone. Figures given below refer only to the corresponding group and are based on the number of answers to that specific question.

Information brokers

There is only a minor number of private information brokering firms in Finland, and their revenues, if any, are of no significance. Most of the brokers are public organizations, big scientific, research or special libraries with information service units. Some branch organizations or industry federations also act as information brokers and intermediaries for their members, e.g. in the pulp and paper and food industry. The number of questionnaires sent out totalled 33, including 13 scientific or research libraries which participate in the Union statistics of research libraries in Finland and can also be regarded as brokers. In counting and analyzing the responses they are part of the brokers' group.

Information intermediaries in the industrial target group

For the demand survey, Finland chose one target group in industry which represents users and information intermediaries traditionally active. Enterprises in the chemical and

pharmaceutical industry have been, and still are, pioneers and some of the most active users of online information in our country. The major companies in the branch have long established information service units or departments of their own. Based on the member register of the Finnish Society for Information Services and personal knowledge about the branch, 10 participants were chosen for the survey, nine major companies with their own information intermediaries and the branch federation. The main information service unit of the company was to include in the response also any subsidiaries with information service units.

Scientific and research libraries

Finland has a very well organized network of libraries, both public and scientific. The major scientific, research and special libraries also act as information brokers so they were a natural choice for the demand side survey. The Guidebook to scientific libraries in Finland 1993 (Suomen tieteellisten kirjastojen opas 1993) lists as many as 784 scientific, research or special libraries. Since this was too large an amount to be covered, a decision was made to send the demand questionnaire to the libraries that participate in the annual research library statistics (Tieteellisten kirjastojen yhteistilasto, Union statistics of research libraries) for the Ministry of Education. They numbered 47 in the year 1993, 20 academic (university) libraries and 27 other kinds of research or special libraries. In 1993 the total number of library units participating in the annual statistics was 514.

It is in most cases the main library of the academic institution that acts as an information broker or intermediary, offering services to external customers, too. For the demand survey the main libraries were asked to gather relevant information from the libraries of the institutes or other units concerned. In most cases, though, the main libraries only answered for themselves.

Public libraries

The term 'district library' is used for the Finnish term 'maakuntakirjasto'. A district library is a central library for a province or other larger area, and it coordinates certain library functions within that area, e.g. interlibrary loans, and is responsible for holdings of literature concerning that specific area. There are 18 district libraries in Finland.

Among public libraries, the district libraries, greater in size and importance and corresponding to the central libraries elsewhere, were chosen for the demand side survey. The questionnaire was also sent to Helsinki City Library (National Central Library of the public libraries) and a few other major municipal libraries, together with

those public libraries that until March, 1995 had published their own World-Wide Web pages.

The number of public libraries participating in the survey totalled 40. Some of the libraries with WWW pages were, however, the same as the district and other major municipal libraries so that the final number of participating libraries was 24.

3.1.1 Response rates and characterisation of respondents

The overall response rate was about 36% (cf. table 10), out of the 108 questionnaires sent, 39 were returned. Response rates in the four target groups varied, and not all of the respondents answered all the questions.

Table 10. The response rates of the demand survey.

	Number of questionnaires sent	*Response rate %*
Information brokers	33	36
Scientific libraries	41	27
Public libraries	24	46
Industrial intermediaries	10	50
Total:	108	36

Legal status and staff

The respondents were given four alternatives in stating the legal status of their organization: a) private company, b) public company (the majority of the shares owned by the State, a special feature in Finland), c) public institution and d) semi-public institution (e.g. chamber of commerce, branch organization). Five respondents were from private companies, two from public companies. Among information brokers and external intermediaries in Finland, 29 respondents were from public institutions. In addition, three answers came from respondents in semi-public institutions. The average number of full-time staff employed in the respondent's organization, based on 34 answers, was 508. The respondent' s department employed an average of 11 persons (34 answers).

Information intermediary activities, services offered

The respondents were asked to tick "yes" or "no" to a list of information intermediary activities offered (demand survey questionnaire, question No. 2.1). Since all of them do not carry out all kinds of activities, the number of "yes" responses to each alternative naturally varied. Table No. 11 shows the variety of services offered.

Table 11. Demand survey: information intermediary activities in 1994 - services offered.

	Valid cases	*Yes (service offered)*
Service:		
Online electronic information services	39	37
Offline electronic information services	36	32
Offline library services, archival services	36	31
Training courses, further education	33	19
Consulting	33	23
Database production, input in databases	35	29
Software programmes, packages	28	4
Other information services	7	7

The alternatives of training and consulting were both answered by 33 respondents, 19 of whom included training and further education in their services and 23 consulting activities. Only four out of 28 respondents distributed software programmes or packages, 24 did not have this activity.

Sources used

All the respondents indicated which sources they used and how frequently (question No. 2.2). Printed media was used in 10 - 50% of the requests by 15 respondents, and in more than 50% of the requests by 16 respondents. The most frequently used sources (in more than 50% of the requests) included also internal online electronic information sources and external online electronic information sources. Table No. 12 lists sources used in more than 50% or in 10 to 50% of the requests (number of responses).

Table 12. Demand survey: information sources used in preparing and answering requests.

	Valid cases	*Frequency:*		
		More than 50 % of requests	*10 to 50 %*	*Less than 10 %*
Source used:				
Printed media	38	13	15	9
Personal contacts	37		16	20
Internal online EIS	38	22	8	6
External online EIS	38	15	19	4
External offline EIS	38	10	14	12
Other media	1			1

EIS = electronic information services

3.1.2 Revenues

Overall figures

Only 19 out of 39 respondents gave their total turnover (revenue) figures for electronic information services in 1994. The revenue figures given showed a huge variety. The average turnover amounted to 703 400 FIM (113 600 ECU) in 1994, and the median value to 225 000 FIM (about 36 300 ECU).

About half of all the respondents (20 out of 39) indicated the allocation of their total turnover (revenue) to information services offered. Because of the customers' varying needs for information, various services are used and money allocated in various shares. Groups used in the questionnaire to indicate money allocation were the following: less than 10%, 11 to 30%, 31 to 50%, 51 to 75% and 76 to 100%. Retrieval in online electronic information services was allocated more than 50% of the total in five organizations, retrieval in offline library services in four organizations. Five other respondents allocated a share of 11 - 50% to retrieval in online electronic information services, four to retrieval in offline electronic information services and three to retrieval in offline library services. Most of the services were, however, allocated less than 10% of the total revenue in most cases. Table 13 lists the allocation of total revenue to information services offered.

Table 13. Demand survey: allocation of total revenue to information services offered (rough estimates).

	Valid cases	*Less than 10 %*	*11 - 30 %*	*31 - 50 %*	*51 - 75 %*	*76 - 100 %*
Service:						
Retrieval in online EIS	18	8	3	2	1	4
Retrieval in offline EIS	14	9	2	2	1	
Retrieval in offline library services	15	8	2	1	2	2
Consulting	11	11				
Database production/input	7	5	1	1		
Software programmes/packages	5	5				
Other information services	5	1	2	2		

EIS = electronic information services

3.1.3 Analysis by type of customer

About 90% of the respondents (35 out of 39) answered the question about groups of customers. Internal customers had an average share of 45% and external an average share of almost 53% of the total number of the respondents' customers. Most of the respondents said that their revenue from both internal and external customers increased in 1994 compared to 1993. Less than 20% reported a decrease, and for a couple of the respondents the figures had remained the same.

The respondents were asked to indicate the most important sectors from which their external customers came. The sectors given were a) manufacturing industries, b) service industries, c) public sector and d) others. The response rate for this question was about 90%. Percentages given for the answer were as follows: less than 10%, 11 to 50%, 51 to 75% and 76 to 100%. External customers from the public sector were quite evenly distributed in all the percentage categories, with a slight majority in the category of 11 to 50%.

External customers from service industries had a share of less than 10% in most of the responding organizations. A total of 33 respondents indicated they had external

customers from the manufacturing industries sector. This sector accounted for less than 10% of the external customers of 10 respondents, and 11 - 50% by 5 respondents, but 9 respondents had more than 50% of their external customers from the manufacturing industries.

3.1.4 Analysis of budgets or expenditures

Total budget according to functions

About 82% of the respondents indicated percentages of their total budget according to functions listed in the questionnaire. Nearly all the functions were allocated less than 10% of the total budget, with only a few exceptions. The two most important exceptions were internal database production and maintenance (11 - 75% of the budget by 15 respondents) and printed media (11 - 75% of the budget by 20 respondents); see table 14.

Total budget and expenditure for electronic information services

Most of the respondents (32 out of 39) indicated their total budget. An average budget in 1994 amounted to about 7 227 000 FIM (1 167 000 ECU), but the differences were very great (standard deviation 11 million FIM). The median value of the total budget was 2 350 000 FIM (about 379 600 ECU).

Total expenditure for electronic information services was given by 29 respondents. The average expenditure in 1994 was 305 320 FIM (about 49 319 ECU), the median 150 000 FIM (24 200 ECU). Variations here were very great, too, see table 14.

Analysis of expenditure by type of product and subject area

Most of the respondents indicated percentages of their use of electronic information services by type of product (32 respondents out of 39, i.e. 82%) and by subject area (31 respondents out of 39, i.e. 79%).

As to *type of product or service*, more than 51% of the total expenditure was used for retrospective online information services by 15 respondents out of the 29 who gave percentages to this alternative. Most of the respondents, however, indicated that less than 10% was used for most of the product types. The respondents' total expenditure for the use of CD-ROMs ranged from less than 10% (11 responses) to 11 - 50% (nine responses).

Table 14. Demand survey: total budget allocated to different functions (rough estimates).

	Valid cases	*Less than 10 %*	*11 to 50 %*	*51 to 75 %*	*76 to 100 %*
Function:					
Online EIS	30	21	7		2
Internal DPM	28	13	14	1	
External DPM	21	20	1		
Offline EIS	24	20	4		
Printed media	29	7	16	4	2
Management, administration	25	17	5	3	
Outsourcing	19	17	2		
Administration of archives	19	17	2		
Further education and training	26	25	1		

EIS = electronic information services, DPM = database production and maintenance

Considering the *subject areas* and expenditure categories which were listed in the corresponding question (No. 3.3.3 in the demand survey), scientific, technical or medical information was mostly ticked in the category of over 50% (14 respondents). The expenditure for almost all other subject areas was less than 10% (responses ranging from 14 to 16 in each category). Table 15 shows the expenditure for the use of EIS by type of product or service, table 16 by subject area in 1994.

Table 15. Demand survey: expenditure for the use of electronic information services by type of product or service in 1994.

	Valid cases	*Less than 10 %*	*11 - 50 %*	*51 - 75 %*	*76 - 100 %*
Product:					
Retrospective online database serv.	29	10	4	8	7
Real-time information serv.	20	12	5	2	1
Videotex serv.	11	11			
Audiotex serv.	13	13			
E-mail services	18	15	3		
Other online serv.	2	2			
CD-ROMs	24	11	9	4	
Other offline EIS	7	5	1	1	
Other optical media	4	4			
Magnetic inform. media	6	6			

EIS = electronic information services

Table 16. Demand survey: expenditure for electronic information services by subject area in 1994 (see notes on p. 38).

	Valid cases	*Less than 10 %*	*11 - 50 %*	*51 - 75 %*	*76 - 100 %*
Subject area:					
Finance	15	14	1		
Company	17	14	3		
Further business	20	13	7		
Legal inform.	21	16	4		1
Patent inform.	22	18	2		2
STM inform.	29	7	8	3	11
Government	18	16	2		
Travel	13	12	1		
Other subjects	7	3		1	3

Notes to table No. 16:

Finance = finance/stock exchange/banking; Company = company profiles and credit ratings; Further business = further business and economic information; STM = scientific/technical/medical information; Government = government information/political news.

3.1.5 Barriers of using electronic information services

Over 89% (35 respondents out of 39) answered the question about barriers hindering their customers from using electronic information services by themselves. Combining the two most important barriers (ratings 4 and 5) and the two least important barriers (ratings 1 and 2) we come to the figures in table No. 17.

The most significant reasons for not using electronic information services were lack of awareness from the user's point of view, technical barriers, lack of user-friendliness and too high prices of host services. Language, resistance from management, staff costs or lack of experienced staff were not considered barriers by the respondents. The following could be barriers in some cases, and no barriers in some others: lack of awareness, lack of experienced staff, lack of user-friendliness, technical problems and cost-benefit relations as well as the fact that information required is not available.

Respondents in the different target groups listed the barriers slightly differently. More than 80% of the brokers answered this question. They did not usually consider technical problems or network deficiencies a problem. There is a well-functioning packet-switched data communications network in Finland, and a high standard of information technology. Staff costs were not either any barrier. Information brokers regarded lack of user-friendliness of electronic information services and lack of awareness from the user's point of view as the most important barriers. Information intermediaries in the industrial target group (chemical/pharmaceutical industry) found lack of experienced staff and the user's lack of awareness important barriers. Technical problems were also mentioned. Language was not a problem, nor was the price of services. Staff costs, resistance from management, network deficiencies or budgetary reasons were not regarded as very important barriers.

Table 17. Barriers of using electronic information services (35 responses).

	Most important barrier	*Least important barrier*
Lack of awareness from the user's point of view	19 responses	3 responses
Lack of experienced staff	7	14
Technical barriers	15	8
Lack of user-friendliness	13	7
Information required is not available	6	15
Language problems	4	25
Cost-benefit relation	6	14
Prices too high	13	11
Staff costs	8	17
Resistance from management	1	19
Budget reasons	14	9
Network deficiencies	9	13
Other reasons	1	

All scientific and research libraries that sent their responses also listed the most and least important barriers. Lack of experienced staff, language problems, resistance from management or cost-benefit relations were not regarded as barriers. Instead, lack of awareness from the user's point of view, lack of user-friendliness, budget reasons and the high prices of host services were considered significant barriers. - Respondents in public libraries shared the opinion of the scientific libraries in that they considered lack of awareness from the user's point of viewhe most important barrier. The following were usually not considered significant barriers: too high staff costs, resistance from management, cost-benefit relations, language skills, lack of experienced staff or the fact that information required is not available.

3.2 INFORMATION BROKERS

3.2.1 Response rates and characterisation of respondents

The demand questionnaire was sent to 33 organizations which can be considered information brokers. Seven of them also are scientific libraries, but were in MSSTUDY listed and regarded as brokers in analyzing the answers. The response rate of the brokers was 36%.

Almost all information brokers in Finland are public institutions. There is only a minor number of private brokering enterprises in Finland, with hardly any significant revenues. In addition to the most important university and other scientific or research libraries, some branch organizations and industry federations also act as information brokers for their members.

The brokers' organizations employed an average of 152 persons. About nine persons were employed in the department as intermediaries or information professionals. - All the information brokers are members of either the Finnish Society for Information Services or the Finnish Research Library Association, or both.

Services offered

All the brokers who answered the questionnaire are engaged in retrieval in online electronic information services. Retrieval in offline electronic information services as well as retrieval in offline library services was offered by 77% of the respondents. Most of the respondents were also engaged in training, consulting or database production/input in databases..

Sources used

All the respondents indicated which sources they used in their intermediary activities. External online electronic information services were used in over 50% of the requests by the respondents (58%), in 10 - 50% of the requests by over 41% of the brokers. One third of the respondents used internal online electronic information services or external offline electronic information services in more than 50% of the requests received.

Printed media was used in 10 - 50% of the requests by almost 54% of the brokers, personal contacts nearly to the same frequency. Internal or external online or external offline electronic information sources were used in more than 10% but less than 50% of the request by about 40% of the respondents). Table 18 gives an overview of the sources used in requests.

Table 18. Demand survey: information sources used in requests by information brokers, according to frequency.

	More than 50 % of requests %	*10-50 % of requests %*	*Less than 10 % of requests %*
Printed media	54	31	
Personal contacts		46	46
Internal online electronic information sources	33	42	8
External online electronic information sources	58	42	
External offline electronic information sources	33	42	17

3.2.2 Revenues and customers

Among the brokers, nine respondents stated their total revenue from information services in 1994. The sum total was about 4 393 000 FIM (almost 709 800 ECU), an average revenue 488 200 FIM (78 900 ECU). Standard deviation here, however, was as much as 605 000 FIM (97 800 ECU).

Eight brokers gave the allocation of their total revenues. Retrieval in online electronic information services accounted for 76 - 100% of the revenues of three respondents, and less than 50% in the revenues of four respondents. Consulting accounted for less than 10% of the revenues of all the five brokers who mentioned it in their answers. So did retrieval in offline electronic information services; four respondents altogether ticked various alternatives for this alternative.

Analysis by type of customer

About 45% of the brokers' customers (by the number of customers) were internal, i.e.d from their own organizations, and 52% external customers.

All the brokers indicated the sectors from which their most important external customers come. The majority of them had external customers from the public sector. For half of

them, the public sector accounted for 11-50% of the external customers, for 16% less than 10% of their external customers. University staff is included in public sector customers.

Manufacturing industries accounted for the majority of external customers, more than 75% of all the external customers the information brokers had. One third of the respondents indicated that one of every three external customers came from the manufacturing industry. For half of the respondents, service industries only accounted for less than 10% of the external customers.

3.2.3 Analysis of budgets or expenditures

Total budget according to functions

Almost 85% of the brokers indicated percentages by functions of their total budget. Less than 10% of budget money was used for online electronic information services by about 66% of the respondents. Less than 10% was also used for external database production and maintenance, outsourcing and administration of archives. More than 80% of the respondents allocated less than 10% of budget money to offline electronic information services.

Only 11% of the respondents allocated more than 76% of budget money for online electronic information services. About 22% of the respondents allocated 11 - 75% for this purpose. About half of the respondents allocated the same percentage of their budget to printed media. About two out of three respondents allocated 11 to 75% of their budget money to internal database production and maintenance. External database production and maintenance, outsourcing, administration of archives and management and administration also had a share of 11 - 75% of the budget, as stated by about one third of the respondents.

Total budget and expenditure for electronic information services

The figures for the total budget were given by 85% of the respondents. There were great differences in the amounts given, but an average budget amounted to 5 665 000 FIM (915 000 ECU).

The total expenditure for using electronic information services, in running costs only, was indicated by about 70% of the respondents. This expenditure also varied a lot. An information broker used an average of 377 000 FIM (61 000 ECU) for electronic information services (running costs only) in 1994.

Analysis of expenditure by type of product and subject area

As to expenditure by products/services, more than 76% of the total expenditure was spent for retrospective online database services by half of the respondents. One third of the respondents used 51-75% for this purpose. All the respondents used less than 10% for audiotex services, and three quarters of them used less than 10% of their total expenditure to real-time information services, e-mail services or CD-ROMs.

Ten brokers gave percentages by subject areas. Scientific, technical or medical information was stated by 9 brokers. Six of them spent 76% or more of their total budget for these subject areas, mostly scientific or technical. Patent information was indicated by eight respondents, but the majority of them (5 out of 8) spent less than 10% of the total budget for this subject area. The other subject areas listed in the question were replied by one to three brokers each. It is, of course, natural that if a broker is specialized in a certain area, e.g. scientific and technical information or legal or patent information, the majority of the expenditure takes more than 75% of the total for this special area.

3.3 SCIENTIFIC AND RESEARCH LIBRARIES

3.3.1 Response rates and characterisation of respondents

The number of scientific and research libraries in the address list for the demand survey consisted of 54 libraries. Since 12 of them could also be regarded as information brokers and one of them also belonged to the industrial target group, the final amount of questionnaires sent to scientific or research libraries was 41. The response rate of this target group was 27%.

According to the Guidebook to scientific libraries in Finland 1993 (Suomen tieteellisten kirjastojen opas 1993) there are almost 800 scientific, research or other special libraries in Finland. The demand questionnaire was sent to the libraries that participate in the annual research library statistics (Tieteellisten kirjastojen yhteistilasto, Union statistics of research libraries) for the Ministry of Education (47 in the year 1993).

It is in most cases the main library of the academic institution that acts as an information broker or intermediary, offering services to external customers, too. For the demand survey the main libraries were asked to gather relevant information from the libraries of

the institutes or other units concerned. In most cases, though, the main libraries only answered for themselves.

One of the responding scientific or research libraries was a semi-public organization, all the other were public institutions. Since most of the respondents were libraries of big universities, the number of staff employed by the university was given as the number of staff employed by the company. The average figure was 620. Standard deviation here was very great. The department employed about 8 persons.

Services offered

All the respondents indicated the services they offered. Almost all of them are engaged in retrieval in both online and offline electronic information services and database production or input in databases. More than 80% of the respondents, naturally, offer retrieval in offline library services, as well as training and consulting.

Sources used

All the respondents mentioned the sources they used for requests, and the frequency of use. Printed media was used in 10 to 50% of the requests by most respondents. Internal online electronic information sources, the libraries' own online catalogues and registers, were used for more than 50% by half of the respondents. External online electronic information services were used for more than half of the requests by almost 42% of the cases. In 10 to 50% of the requests they were used by the same percentage of the respondents, too. Table 19 gives an overview of the sources used by scientific and research libraries, according to frequency.

Table 19. Demand survey: information sources used in requests from customers by scientific and research libraries, according to frequency.

	More than 50 % %	*10-50 % of requests %*	*Less than 10 % of requests %*
Printed media	8	58	33
Personal contacts		55	46
Internal online electronic information sources	50	17	33
External online electronic information sources	42	42	17
External offline electronic information sources	33	33	33

3.3.2 Revenues and customers

Two thirds of the respondents gave their revenues for 1994. The average figure was about 469 600 FIM (75 800 ECU). The standard deviation was as much as 594 800 FIM (96 000 ECU) which signifies great variations in the amounts.

Three quarters of the responding libraries estimated the allocation of their total turnover. Only two respondents indicated that more than 76% of the total was allocated to retrieval in offline library services. Consulting and distribution of software programmes both accounted for less than 10% in all the answers. Retrieval in online or offline electronic information services were both allocated less than 10% of the total turnover by most respondents, and from 11 to 50% in about equally many cases (3 to 4 respondents each).

Analysis by type of customer

All but one of the respondents indicated the percentages of their internal and external customers, counted from the number of customers. Almost 38% of the customers were external, and 62 internal. Public sector (including also universities etc. institutions) was

the most important external customer sector (over 51%). External customers from manufacturing or service industries, instead, accounted for less than 50% of the total number of customers.

3.3.3 Analysis of budgets or expenditures

Total budget according to functions

Most of the libraries indicated percentages by functions of the total budget. The different alternatives received in average 7 to 10 answers each. Less than 10% of budget money was used by the majority for online electronic information services, external database production and maintenance, and also for management, outsourcing or administration of archives. Printed media and internal database production and maintenance both were allocated 11 to 75% of budget money by more than 60% of the respondents. Further education was allocated less than 10% by most of the responding libraries.

Total budget and expenditure for electronic information services

Ten respondents gave the figures of their total budget. There were great differences in the amounts given, but an average total budget of a scientific/research library amounted to about 2 588 000 FIM (418 000 ECU). The median value was 1 431 000 FIM (231 000 ECU).

The total expenditure for using electronic information services, running costs only, was given by 75% of the respondents. Again, the amounts varied a lot. Among the respondents, an average scientific library used about 216 000 FIM (almost 35 000 ECU) for electronic information services in 1994.

Analysis of expenditure by type of product and subject area

As to expenditure by *type of product or service*, the majority (83%) of the respondents indicated percentages of their expenditure by type of product and by subject area. Less than 10% of the total expenditure was used by most of the respondents for restrospective online database services, real-time information services, videotex, audiotex or e-mail services, i.e.most of the products or services listed in the question. Percentages from 11 to 50 or more than 51% were only mentioned by one to two respondents each for retrospective online database services, e-mail services, CD-ROMs or other offline electronic services.

Among the central research libraries in Finland each is a specialist in a certain area of science or technology. Considering the total expenditure for electronic information services by *subject areas* we note, however, that acting as a central research library does not necessarily show in the percentages of expenditure. Over 80% of the responding libraries spent less than 10% for company profiles, business and economic information, patent or legal information. University libraries are not the places one turns to for finance or stock information or company profiles or political news so that these subject areas had almost nothing of the total expenditure for electronic information services. Shares of less than 10% or 11-50% of the total expenditure were spent for scientific, technical or medical information in about 22% of the cases each, whereas 44% of the respondents indicated an expenditure of more than 76% for scientific, technical or medical areas.

3.3.4 Use of electronic information services by scientific and research libraries

The following further information is based on the annual Union statistics of research libraries from 1993, the latest available at the time of collecting the information. The Union statistics of Finnish research libraries consists of 20 academic library organizations and 27 special libraries. The total number of library units participating in 1993 was 514.

Volume information is also gathered for the annual statistics about searches (counted as loggings-in) from external online databases. In 1993 the Finnish research libraries made a total of 28 286 searches (loggings-in) from external online databases. Academic libraries made 18 612 searches and special libraries 9 674 searches. No money values for this activity are, however, given, nor can they be estimated. Besides, all libraries do not charge their customers for online searches.

3.4 PUBLIC LIBRARIES

3.4.1 Response rates and characterisation of respondents

Public libraries in municipalities in Finland form an internationally excellent network of information providers, for private citizens and also for local business and industry. Among the network of 998 public libraries, there are 18 district libraries, greater in size and importance and corresponding to the central libraries elsewhere. They were chosen

for the demand side survey. The term 'district library' is used for the Finnish term 'maakuntakirjasto'. A district library is a central library for a province or other larger area, and it coordinates certain library functions within that area, e.g. interlibrary loans, and is responsible for holdings of literature concerning that specific area. The questionnaire was also sent to Helsinki City Library (National Central Library of the public libraries) and a few other major municipal libraries, together with those public libraries that until March, 1995 had published their own World-Wide Web pages.

The number of public libraries in the demand survey totalled 40. Some of the libraries with WWW pages were, however, the same as the district and other major municipal libraries so that the final number of participating libraries was 24. - The response rate in this group was almost 46%, with 11 respondents.

All the public libraries are, of course, public institutions. They are usually members of the Finnish Library Association, some also members of other associations. - Ten public libraries in this survey indicated the number of staff employed, an average of 112 persons. The total number of staff showed great variations since a big public library which also acts as a district library, may have more than 100 employees. The departments concerned employed an average of 20 persons.

Services offered

All the respondents indicated the services they offered. Retrieval in online electronic information services (mostly Finnish databases) was done by all, retrieval in offline electronic information services or offline library services also by practically all. Nine libraries were engaged in input in databases, but none in distribution of software programmes. Four libraries offered consulting services, five did not. The majority of the respondents did not give training courses.

Sources used

All the libraries also indicated which information sources they used, and how frequently. Printed media and internal online electronic information services were used most frequently, in more than 50% of the requests by 7 respondents out of 10 and by all 11 respondents. External online information services were relied upon in 10 - 50% by 9 respondents, and external offline electronic information services in 10 - 50% by 6 respondents. Personal contacts were used in less than 10% of the requests by the majority of libraries concerned.

3.4.2 Revenues and customers

Public libraries are mostly financed by public funding. Therefore no figures for revenue or turnover can be given, nor any allocation according to services offered. - Most of the public libraries' customers were external, of course. In only very few libraries, any customer sector had more than 10% of the customers. In three cases the service industry accounted for 11 - 50% of external customers.

3.4.3 Analysis of budgets or expenditures

Total budget according to functions

Over 72% of the responding public libraries indicated their budget allocations according to functions listed in the questionnaire. Printed media was allocated 11 - 75% in the budget of 75% of the libraries, and the same percentage was allocated to internal database production and maintenance in four libraries. Less than 10% was allocated to most other functions in public libraries in average, i.e. to online and offline electronic information services, external database production and maintenance, management, administration of archives, further education and training, and to outsourcing.

Total budget and expenditure for electronic information services

Among the respondents, almost 73% gave information about their total budget in 1994. The average budget was 17 607 500 FIM (2 844 000 ECU), while the median value was 9 million FIM (almost 1 454 000 ECU).

Seven respondents (almost 64%) indicated their total expenditure for using electronic information services, running costs only, in 1994. The average sum spent was about 524 000 FIM (almost 84 600 ECU), and the median 220 000 FIM (35 500 ECU). There were again great variations in the sums given.

Analysis of expenditure by type of product and subject area

The response rate for the question about the total expenditure for the use of electronic information services by type of product was almost 73%. The same response rate applies to the question about expenditure by subject area. By type of product, 11 - 50% of the expenditure was used for CD-ROMs by five respondents out of seven who indicated that they use this media. In almost all other types of products, the expenditure was less than 10% each.

By subject area, 8 respondents gave their estimates. The total expenditure for scientific, technical or medical information was 11 - 50% in the majority of the responses. All the other subject areas had less than 10% of the total expenditure for electronic information services by the respondents.

3.5 INFORMATION INTERMEDIARIES IN THE INDUSTRIAL TARGET GROUP

The sum of gross value of production in SIC classes (Standard Industrial Classification) 18, 19 and 21 (chemicals and chemical products manufacture, petroleum and coal products and nuclear fuel manufacture, rubber and plastics products manufacture) in 1993 amounted to 37 360 million FIM, according to the Statistical Yearbook of Finland 1995. Altogether, these industries in 1993 had 457 establishments and employed over 14 000 salary earners and over 18 000 wage earners (cf. table No. 20 on the following page).

There are 230 members in the Chemical Industry Federation of Finland, from small and medium-sized companies (SMEs) to large conglomerations working both in Finland and abroad. Their total turnover is a concept somewhat larger in scope than the gross value of production of the above SIC classes.

The total turnover of the organizations in the chemical and pharmaceutical branch which responded to the demand survey was about 40 762 million FIM (6 584 million ECU) in 1994.

3.5.1 Response rates and characterisation of respondents

Enterprises in the chemical and pharmaceutical industry are pioneers and traditionally some of the most active users on online information sources in Finland. The big companies in the branch have long established information service units or departments of their own. Therefore, inter-mediaries in 10 big companies in the chemical and pharmaceutical branches were chosen for the industrial target group of the demand survey, and 50% of them filled in the questionnaire.

There were great differences in the numbers of staff employed in the respondents' companies and in the departments concerned. The average number of staff employed in the company was 2 063 persons and in the respondent's department about 6 persons.

Services offered

More than half of the respondents offered retrieval in online electronic information services and offline library services, as well as training courses. More than half of them were, however, not engaged in retrieval in offline electronic information services, nor in database production.

Sources used

All the respondents indicated which sources they used for requests. In more than 50% of the requests, most of them relied on printed media and external online electronic information services. External offline electronic information services were used in less than 10% of the requests by the majority. Personal contacts were mostly used in 10 to 50% of the requests.

Table 20. Manufcturing, data by branch of industry, 1993 (Statistical Yearbook of Finland 1995, table 150, p. 166 - 169).

	Total industry	*Manu-facturing*	*SIC 18*	*SIC 19*	*SIC 21*
Establishments	6 240	5 596	187	20	250
Owners (working in the establishment)	1 443	1 424	4	-	45
Salary earners	122 020	110 613	9 286	2 259	3 045
Wage earners	245 871	231 318	8 773	1 478	8 506
Gross value of production (million FIM)	321 610	281 493	17 925	12 610	6 825

3.5.2 Revenues and customers

Three respondents indicated their turnover from information services in 1994. The average turnover was 2 300 000 FIM (371 500 ECU). There were great differences in the figures.

Three respondents also indicated the allocation of their revenue to information services offered. Retrieval in offline electronic information services and offline library services, as well as database production and distribution of software programmes were each allocated less than 10% by the majority of the respondents. The allocation in the retrieval in online electronic information services was evenly distributed in three categories, that of less than 10%, that of 11 to 50% and that of more than 76%.

Analysis by type of customer

Almost 75% of the customers of the intermediaries in the chemical and pharmaceutical companies were internal, from their own company. Some of the respondents had 11 to 50% of their external customers from the public sector.

3.5.3 Analysis of budgets or expenditures

Total budget according to functions

All the responding industrial intermediaries indicated the allocation of their budget according to functions mentioned in the questionnaire. Most of the functions were allocated less than 10% in most cases. Printed media was allocated 11 - 75% of the budget in most cases.

Total budget and expenditure for electronic information services

Individual total budgets of the respondents showed great variations; the standard deviation was as much as 2 516 000 FIM (406 000 ECU). An industrial intermediary in the chemical and pharmaceutical target group had an average budget of 1 900 000 FIM (309 000 ECU) in 1994. The median value, however, was only 120 000 FIM (19 000 ECU).

An industrial intermediary in the target group used electronic information services in 1994 to the average sum of 129 000 FIM (20 800 ECU). The sums again varied a great

deal, and the standard deviation was almost 124 000 FIM (20 000 ECU). The median value for using electronic information services in the target group was 100 000 FIM (about 16 000 ECU).

Analysis of expenditure by type of product and subject area

All five intermediaries in the industrial target group indicated percentages of their use of electronic information services by type of product and by subject area. Most of them (80%) used more than half of the expenditure for retrospective online information services. The rest of the various product types had a less than 10% share of the expenditure. Notably audiotex, videotex and e-mail services were hardly used at all for professional requests by the industrial intermediaries. This holds good for the other demand survey groups as well. Real-time information services had a share of 11 - 50% in three respondents' expenditure.

Requests vary a lot in industrial enterprises, and so do subject areas. The majority of the respondents indicated shares of less than 10% for all the subject areas listed in the demand side questionnaire. Only further business and economic information had a bigger than 10% share of the expenditure in 40% of the responses. Expenditure for electronic information services in the scientific, technical or medical area had varying shares of the respondents' budgets, with 40% in the lowest category of less than 10%, and with 20% evenly in all the other categories.

4 INFORMATION SERVICES INSTITUTIONAL INFRASTRUCTURE

4.1 LIBRARY SERVICES

4.1.1 General

Finland has a closely-knit library network. All the libraries and information service units with their holdings and services, open for public use, belong to this well-functioning library network (see figure 1). It consists of central research libraries, district libraries (regional central libraries for provinces or other large areas), other regional, central and research libraries, information service units in firms, archives and, to a certain extent, also of museums. Library holdings altogether consist of more than 54 million volumes of books and serials, and of an increasing amount of audiovisual and other non-book material and computer records.

All of the most important scientific and research libraries are open to the public, and act as information brokers in their special fields of knowledge. Helsinki University Library is the National library of Finland, and Helsinki City Library is the National central library for public libraries. There is an information system connecting about 800 scientific library units, and another system which serves public libraries. All local systems are interconntected, and national databases serve all users.

4.1.2 Scientific or research libraries

University libraries se up the main part of the almost 800 scientific, research and other special libraries of Finland. The principle of free access to sources of information holds good also here: all of the most important scientific and research libraries in Finland are open to the public.

The total number of library units participating in the 1993 library statistics of Finnish research libraries was 514. The Union statistics of Finnish research libraries consists of 20 academic library organizations and 27 special libraries.

Due to general economic depression in Finland, public funding of research libraries (the term refers to scientific, research and other special libraries) was largely reduced. Most

libraries had to take rationalizing measures and work with limited resources. Research library allowances were reduced by 3% from 1992 to1993. In 1993 the total expenditure was 335,9 mill. FIM (not including housing), of which 269,9 million FIM was allocated to research libraries. Staff salaries accounted for over 60% of the allowances, acquisitions about 28%. In 1993, research libraries employed about 1220 persons permanently full-time and 25 part-time.

In 1993 a total of 95,3 mill. FIM was used for acquisitions (compared to 107 mill. FIM in the previous year). Monograph acquisitions in most libraries decreased by 30% Altogether, 477 000 monograph volumes were acquired in 1993. The total stock of the Finnish research libraries remained constant and was 18 mill. volumes at the end of 1993, of which about 15,3 mill. volumes in university or other academic libraries.

The total number of loans increased by 600 000 in 1993 compared to the figures of 1992. In 1993, over 4,4 mill. loans were supplied. Interlibrary loans received and supplied amounted to 291 000 volumes. Interlibrary loans are chargeable, and thus the numbers decreased by 27%. Libraries supplied about 3,6 million photocopies. It is estimated that the number of photocopies taken by the customers themselves at the library was more than 10 million (all libraries do not gather statistics about these photocopies).

Research libraries do online searches for their internal and external customers. Based on the number of loggings-in to databases, the number amounted to 35 000 searches (loggings-in to a database) in 1993, with about 28 000 loggings-in to external databases. The rest of the searches is done using the libraries' own databases and online registers.

All research libraries do not specify their user groups. Nevertheless, more than 6,8 million people used the various resources of the research libraries in 1994, with the percentage of external users being 16,6. The share of external users in academic libraries was about 15% and in special libraries as much as 47%.

Summary statistics about scientific libraries is shown in table No. 21. Information about the activities of university libraries in relation to resources and student numbers is shown in table No. 22.

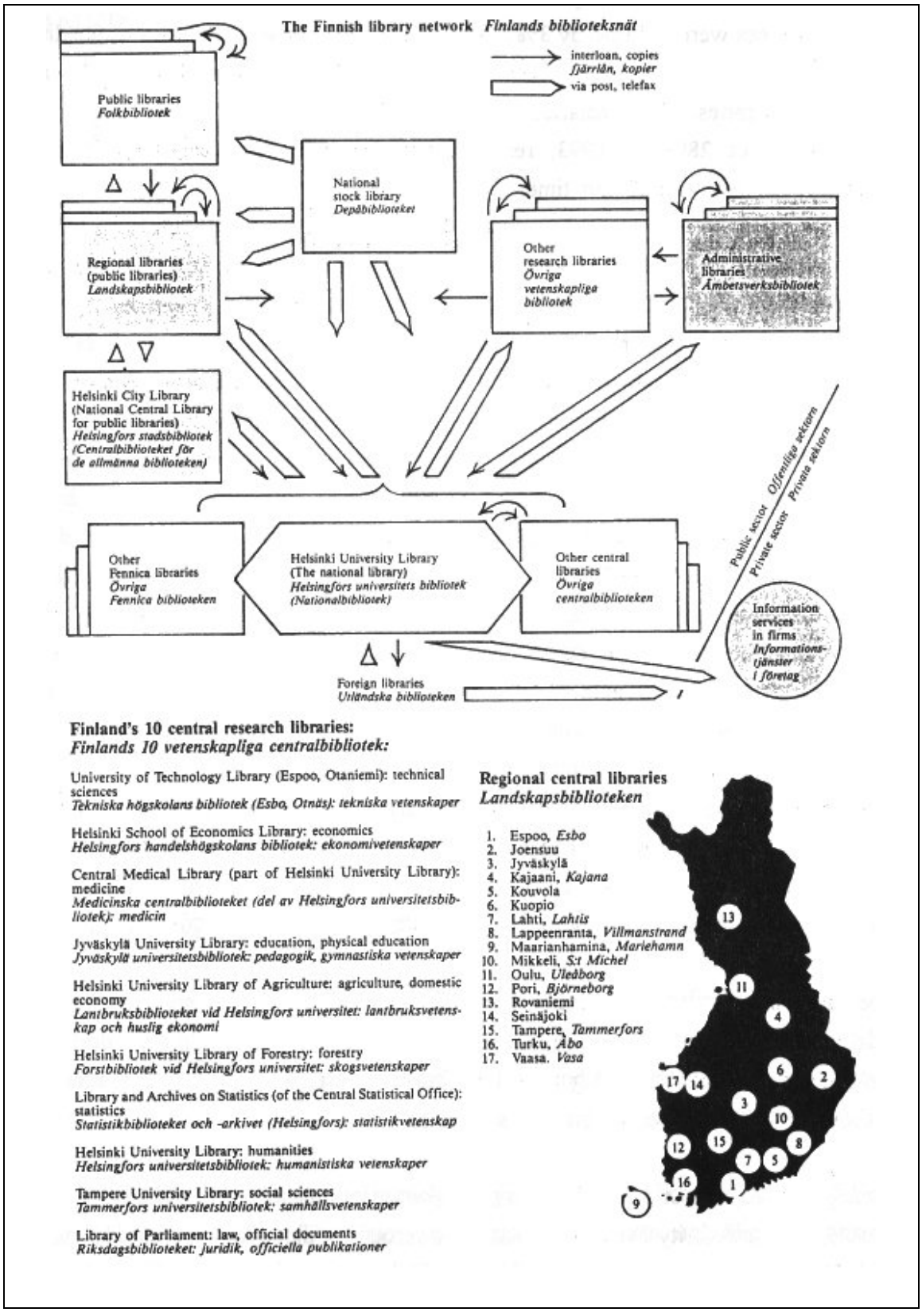

Figure 1. The Finnish library netwowrk in 1990 (Laaksovirta & Haavisto 1990, p. 16).

Table 21. Scientific and research libraries in Finland, summary statistics from 1993 (Kirjastot 1993, p. 58 - 63 and 75- 76).

Library units	514
Working years	1 575
Permanently employed, full-time	1 224 (+ part-time 25)
Loans supplied	4 437 000 volumes, of which:
	291 000 interlibrary loans received and supplied
Number of online searches altogether	35 000, of which:
from external databases	28 000 (loggings-in to a database)
References made to online	
bibliographic databases	375 000 to Finnish databases
	13 000 to foreign databases
Library holdings, total	18 178 000 volumes, of which
	15 231 000 volumes in academic libraries

Table 22. Activities of university libraries in relation to resources and student numbers in 1993 (Kirjastot 1993, p. 86).

Total expenditures	4,7 billion FIM (20 university libraries)
Number of students enrolled	125 900
Library staff	22 500
Number of students in relation to	
library staff positions	121,5
Loans per student	30,6
Acquisitions per student	0,8 (book volumes)
Library acquisitions in relation to	
the universities' total expenditure	1,7%
Library staff in relation to the universities' total staff	5,5%

4.1.3 Public libraries

In Finland, public libraries have been an information resource for all kinds of purposes, professional and other, for 200 years. They started as book clubs, the first of which was founded as early as 1794 by members of the Vaasa Court of Appeal "for their own amusement and recreation". The club members got books from all over Europe, circulated them and then met to discuss the contents.

Finland's first Library Act came into force in 1929, with revisions in 1962 and 1986. Members of the Parliament, at a debate in 1992, clearly voted in favour of continuing the free-of-charge principle: "Use in the library of the library's own collections, and loans therefrom, are free of charge". All libraries, both scientific, research and public, are in principle open to everyone.

Public libraries in municipalities in Finland form an internationally excellent network of information providers. They fulfill the cultural, recreational and information needs of citizens and also support studying and information provision of one's own. Many public libraries also are important sources of information to local business and industry. Helsinki City Library is the National central library of public libraries in Finland. There are another 17 district libraries in Finland. The term "district library" is used for the Finnish term "maakuntakirjasto". A district library is a central library of a province or other larger area, and it coordinates certain library functions within that area, e.g. interlibrary loans, and is responsible for holdings of literature concerning that specific area.

In 1994 Finland, with about 5 million inhabitants, housed 998 main and local municipal libraries in over 450 municipalities. In addition, there were about 860 other lending units and 200 mobile libraries (library buses) serving the readers, and 860 other units for lending books. The number of libraries has decreased in the past few years, due to economic recession; in 1993 there were 1025 public libraries, in 1989 the number was 1174.

4.1.3.1 Current statistics

Volumes in public libraries in 1994 totalled over 39 million issues, of which 36 million books. New acquisitions totalled 1,8 million, including books, records and other audio-visual material. (In 1993 new acquisitions totalled 1,9 million pieces and in 1989 they totalled 2,5 million pieces.) People locally made more than 101 million loans in 1994. Interlibrary loans received numbered 152 000, and interlibrary loans supplied amounted to 133 000 pieces.

Finland's public libraries are internationally well-known for their high standard and heavy use. The Finns and the Danes are the world's most active library users. Of the five million Finns, about two thirds use library services regularly and 49% have a library

card. In 1994 they made 63 million visits to a library - every inhabitant about 12 times. An average annual number of loans per inhabitant amounted to 20,2.

Operating expenditure of public libraries in 1994 was 1 016 million FIM, an average of 201 FIM per inhabitant. The top two libraries spent over 400 FIM per inhabitant, and those with the least resources only about 70 FIM per inhabitant. Cuts in subsidies have hit literature acquisitions the hardest in the past few years. Nevertheless, number of loans has been growing by over 15% and visits to a library by over 20%.

4.1.3.2 Library automation in municipal libraries in 1994

Library automation is doing well in Finland. There are 29 clusters of 131 municipalities engaged in the joint use of automated data processing for libraries. About 30% of the municipalities belong to a library adp area. About one third of the libraries in Finland belong to an adp cluster. In the spring of 1994, 68% of the municipalities had in use or were about to start using computerized library systems, and 280 of them used databases. Many municipalities have plans for the schools to access the public library catalogues with their terminals - and some 15 of them have already carried out this plan.

Helsinki City Library is the first public library in the world to have established a WWW server for a pilot project. The aim of the project is to promote equal access to electronic information. The project also functions as a network publisher, and the application is multilingual. There are also a few other pilot projects or consortiums of public libraries for pilot networks.

The Ministry of Education has a project with the Finnish Library Association, called Tiedon talo (House of Information), with allowances for libraries to give access to Internet to the citizens. The project has been granted 1,5 million FIM from the national budget in 1995. About fifty libraries already have access to or plan to have access to Internet.

4.1.4 Archives and museums

Archives

The system of archives in Finland mainly comprise the National Archives of Finland and seven provincial archives. In information provision for research purposes, the central archives of social movements and the biggest archives of public administration form the core of other important archives.

Since long, the resources of archives have remained at the same level, measured in real terms. Since 1992, there has been a decrease total expenditure. Compared to other Scandinavian countries, staff resources of Finnish archives, however, fare quite well. During the last years of the 1980's, demand for the central services of archives (research) remained at about the same level, but has since the beginning of 1990's shown a downward turn. Holdings of archives consist of 90 shelf kilometres of documents in paper, microfiche and electronic records. Public administration annually produces about 60 shelf kilometres of new documents.

The main problems and possibilities of archives arise from the development of computer technology. Information stored in electronic files pose a problem and, on the other hand, open new possibilities to handle and use information.

Museums

Altogether, there are over 900 museums in Finland. Statistics of the National Board of Antiquities list about 125 main museums with full-time personnel according to administrative units. In 1993, these 125 museums had a total expenditure of 362 million FIM, with 98 million FIM as government grants. Over 3,6 million people visited almost 1000 exhibitions arranged by these museums.

4.2 PRINTED MEDIA INFRASTRUCTURE

4.2.1 Finnish mass media market

Mass media total turnover in Finland in 1994 amounted to about FIM 16 billion. Print media total accounts for about FIM 12 billion. Mass media turnover in 1993 was about 14,8 million FIM, contributing by 3,1% to GNP. Print media had a 73% share of the total. Figures about several branches in table 23 are estimates. A comparison of the structure of mass media economy in Finland, Sweden and Europe as a whole can be seen in table 24.

Table 23. Summary of the mass media market in Finland in 1992 and 1993, million FIM (Joukkoviestinnän talous 1993. The Finnish Mass Media Economy 1993, p. 6).

	1992		*1993*	
		%		*%*
Mass media as % of GNP		3,2 %		3,1 %
	(mill. FIM)	*(%)*	*(mill. FIM)*	*(%)*
Mass media total	15 137	100	14 838	100
Print media total	11 110	73,4	10 870	73,3
- dailies (7 to 4 times a week) 26,8		4 090	27	3 980
- non-dailies	630	4,2	610	4,1
- free sheets	245	1,6	230	1,6
- magazines & periodicals	2 670	17,6	2 670	18
- books	2 025	13,4	1 930	13
- printed advertising material	1 450	9,6	1 450	9,8
Electronic media total	3 014	19,9	2 987	20,1
- nationwide TV & radio	2 283	15,1	2 267	15,3
- local radio	190	1,3	180	1,2
- cable TV	321	2,1	305	2,1
- electronic data services	220	1,5	235	1,6
Recorded media total	1 013	6,7	981	6,6
- phonograms	580	3,8	530	3,6
- videos	255	1,7	255	1,7
- cinemas	178	1,2	196	1,3

Table 24. Structure of mass media economy in Finland, Sweden and Europe, in % (Joukkoviestinnän talous 1993, p. 8).

	Finland in 1993	*Sweden in 1993*	*Europe in early 1990's*
Print media	73	69	73
TV and radio	19	23	15
Cinemas and videos	3	6	3
Electronic data services	2	..	4
Phonograms	4	4	4
Total:	100	100	100

Mass media's share of the work force has remained constant since the beginning of the 1980's, at about 2%. In 1992 it was 2,1%, as shown in table 25. Print media companies are the biggest employers in the branch. Posts and telecommunications as employers contribute to the national economy by a smaller share than mass media.

Table 25. Mass communication as employer in 1992, 1000 persons (Joukkoviestinnän talous 1993, p. 13).

Publishing	14,6
Printing	19,3
Radio & television	5,8
Films, videos & phonograms	1,5
Manufacture of entertainment electronics	1,1
Advertising, news agencies	3,9
Mass communication total	46,2
(Telecommunications total	40,6)
National economy	2174
Contribution of mass communication to national economy, %	2,1

Aamulehti Group and TS Group are big newspaper publishers with also electronic media. Alexpress of Aamulehti Group is a pioneer in many fields of new technology, especially in delivering electronic news service by GSM technology. A-lehdet and

Yhtyneet Kuvalehdet are two of the main magazine publishers in Finland. WSOY and Otava are both major book publishers. MTV is engaged in television broadcasting.

Sanoma Group

The activities of Sanoma Group, the major player in the media market in Finland, were reorganized in 1993 into Sanoma Oy (dailies) and Helsinki Media (electronic media and magazines). At present, the Sanoma Group consists of the dailies Helsingin Sanomat and Iltasanomat, together with the printing house. Electronic mass media (e.g. cable television PTV, Startel news agency with online activities, and the publishing of magazines) was reorganized into Helsinki Media company. In addition to magazines and periodicals, Helsinki Media also publishes children's books and fact books. The company employs about 1100 persons, and the turnover amounts to 957 million FIM. Book publishing has a staff of eight persons and a turnover of 73 million FIM, with about 100 titles. Table 26 gives figures for the turnover of the biggest mass media companies in Finland in 1993 and 1994.

Table 26. Turnover of the biggest mass media companies in Finland in 1993 and 1994 (Joukkoviestinnän talous 1993. The Finnish Mass Media Economy 1993, p. 16, about 1993, and Mr. Tuomo Sauri, Statistics Finland, about 1994).

	1993	*1994*	
	Million FIM		
Sanoma Group	1939		
Sanoma Oy		1647	
Helsinki Media		958	
Finnish Broadcasting Company YLE	1855	1897	
Aamulehti Group	1288	1329	
TS Group	681	922	(figures from 15 months)
MTV / MTV3 Finland	709	810	
A-lehdet	596	671	
WSOY	592	643	
Yhtyneet Kuvalehdet	451	440	
Otava	328	328	

4.2.2 Publishing of books, magazines and newspapers

4.2.2.1 Books

There were 66 members in the *Finnish Association of Publishers* (Suomen Kustannusyhdistys) in 1994 (60 members in 1992). The seven major publishers are WSOY, Otava, Weilin+Göös, Gummerus, Tammi, Kirjayhtymä and Karisto, altogether accounting for 70% of the total sales of the member companies (total sales in 1992: 1244 million FIM). In January, 1995, WSOY bought the publisher Weilin+Göös.

According to the statistics of the Finnish Assn. of Publishers, WSOY and Weilin+Göös together dominate the market with a 35% market share. Otava comes next, with a 15% market share in book publishing. Two major magazine publishers, Helsinki Media and Valitut Palat (the Finnish Reader's Digest) are also among the biggest book publishers in Finland. Helsinki Media has a 5% market share and Valitut Palat 10% of the markets. Both Helsinki Media and Valitut Palat are companies with diversified activities in all the areas of publishing.

Members of the Finnish Book Publishers' Assocation annually publish about half of the new titles in Finland. In 1992, as well as in 1994, one third of the titles was fiction (half of that children's and teenagers' books), one third schoolbooks and textbooks and one third factbooks and encyclopaedias. In 1994, a book cost about 121 FIM in average and had 187 pages (average price per page: 0,65 FIM). The average edition was about 3500 copies.

The seven biggest book publishers in 1994 published half of the new titles and about 77% of the new editions in Finland. Their average edition was about 4100 copies and had 211 pages. The average book cost 131 FIM (average price per page: 0,62 FIM). The seven major book publishers last year sold 14 389 000 copies, worth about 796 500 FIM. They had 13 239 000 books in stock. See table 27 on the following page.

Table 27. Sales by groups of literature in 1994 (Statistics from the Finnish Book Publishers' Association, rec. May 18, 1995).

	Sales, 1000 FIM	*Sales, copies*	*Stock, copies*
Fiction	185 509	3 829 032	3 473 648
Childrens' and teenagers' books	80 859	3 354 853	2 948 519
Encyclopaedias	149 089	639 900	946 400
Other factbooks	448 873	5 225 097	5 635 096
General literature, total:	864 330	13 048 882	13 002 663
Schoolbooks, textbooks	335 671	6 687 297	6 243 738
Other books		389 288	1 253 159
Total:	1 200 001	20 125 467	20 495 560

(Includes 65 members of the Finnish Book Publishers' Association.)

4.2.2.2 Sales channels

The number of retail bookshops in Finland is about 490, of wholesalers about 60. There are some 265 book antiquaries as well. The number of book clubs and mail-order companies engaged in selling books. Bookshops and book wholesalers have sold about half of the books in Finland during the first years of the 1990's. Compared to the 1980's, their share has declined by about 10%. Other sales channels consist of the newsstands and kiosks of Rautakirja (R-kioski, several hundreds all over the country) and book departments or book corners at the stationary department of the main central stores, very different in size. Bookshops have become a major outlet for electronic media such as CD-ROMs.

Book clubs

Book clubs are also an important feature in book-trade in Finland. They are mostly owned by the biggest book publishers. The major book club is Suuri Suomalainen Kirjakerho (owned by the publishers WSOY and Otava and a major magazine publisher Yhtyneet Kuvalehdet), with a turnover of 77,7 million FIM in 1992 and about 190 000

members (203 000 members in 1994). Book clubs are estimated to sell about a fifth of all general literature in Finland.

Suomalainen Kirjakauppa

Suomalainen Kirjakauppa, one of the major bookshop chains and an agency for FT Profile in Finland, also belongs to the Rautakirja Group. Rautakirja is engaged in many kinds of media. Europa Vision, the leader in the wholesale distribution of videos and, from 1994, the leading cinema company Finnkino also belong to Rautakirja Group. The main owners are WSOY, Otava and Sanoma Group. Rautakirja is the leader in retailsales of mass media products in Finland. It has several hundreds of R-kiosks which sell about 100% of newspapers and magazines in single copies all over Finland.

Akateeminen kirjakauppa

Akateeminen kirjakauppa, Academic Bookstore, the biggest bookstore in Finland, is part of the big department store company Oy Stockmann Ab. All the commercial units of Stockmann made profit in 1994. Stockmann's total turnover was 4 507 million FIM, growing by 23% from the year 1993. In 1994, Akateeminen kirjakauppa had a turnover of 342 million FIM (332 million FIM in 1993). Akateeminen kirjakauppa made a profit of 9,7 million FIM in 1994, more than double that of 1993.

4.2.2.3 Magazines and periodicals

Magazines and periodicals in 1993 accounted for 18% (2670 million FIM) of mass media total turnover. The major publishers are Yhtyneet Kuvalehdet, Sanoma Group (reorganized: Helsinki Media), Valitut Palat and A-lehdet Oy.

About 2500 different magazines and periodicals (regularly, at least four times a year) are published in Finland. Subscriptions and newsstand sales account for the major part of the revenues. There are three major publishers: Yhtyneet Kuvalehdet, Sanoma Group and A-lehdet Oy.

Valitut Palat is active in publishing magazines, books, music and videos. The company has a turnover of 210 million FIM and a staff of 95, including 9 persons in book publishing. The magazine itself, the Finnish Reader's Digest, is No. One in circulation of magazines in Finland. In addition, Valitut Palat has about 50% market share in the sales of classical music recordings in Finland.

4.2.2.4 Newspapers

Newapapers (dailies and non-dailies) accounted for 31% of the total turnover of mass media in 1993. The major newspaper publishers are Sanoma Oy with Helsingin Sanomat and Ilta-Sanomat, TS Group with Turun Sanomat and Aamulehti Group with the daily Aamulehti.

In 1994, 190 publishers with 225 newspaper titles were affiliated to the *Finnish Newspaper Publishers Association*, Sanomalehtien Liitto. Of the titles, 57 were dailies (published four to seven times a week) and 168 non-dailies (published one to three times a week). In 1995, the members consist of 227 newspapers and two cable television and videotex companies.

The aggregate circulation of newspapers in 1994 was about 3,5 million. Newsstand sales accounted for about 13,2% of all dailies' total circulation figures. More than half of the total circulation of dailies is delivered through the papers' own or joint distribution networks, with three out of four subscribers receiving their dailis to their homes early in the morning. Most non-dailies reach their subscribers by ordinary daily postal delivery. The share of dailies (published every day) is 2 405 000, i.e. 48% of the total circulation of newspapers in Finland.

Aggregate newspaper circulation declined by 3,6%. Declining household purchasing power has contributed to the total fall in newspaper circulation of almost 10% during the past three years. Finland is a country of regular newspaper subscribers, and during the economic recession of the past years people have ceased to subscribe to as many newspapers as previously. Nevertheless, not a single title ceased publication in 1994.

Six newspapers had a circulation of over 100 000 in 1994. Helsingin Sanomat has the largest circulation (469 000), next comes Iltasanomat (circulation 215 000), both published by Sanoma Oy. The third in circulation is Aamulehti in the Tampere region (circulation 131 000), and the fourth Turun Sanomat (115 000). Helsingin Sanomat and Ilta-Sanomat also are the biggest newspapers according to net sales figures. The net sales of Helsingin Sanomat was (in 1000 FIM) 1 151 000 and that of Ilta-Sanomat 339 000.

The dailies had an editorial staff of 1 695 persons at the end of 1994. Helsingin sanomat employed 323 persons in the editorial staff, Aamulehti 151 and Kaleva, the biggest daily in northern Finland, had 102 editorial employees (circulation 87 000).

Members of the Finnish Newspaper Publishers Association used 139 000 tonnes of newsprint in 1994, showing a decrease of 2 000 tonnes from 1993. The advertising revenues of newspaper companies amounted to 2,3 billion FIM (483 million USD). Newspapers' share of total media advertising sales in 1993 was 59%.

4.2.2.5 Electronic publishing

Different kinds of publishers are engaged in electronic publishing in Finland: the traditional publishing houses, small hypermedia companies and newspaper publishers. Public and private sector work in cooperation for educational material. Electronic publishing consists of records (data and storage media), network-based services and applications of radio communications. Electronic publishing is also a major theme in the programmes for continuous education in universities, e.g. in the Departments of Information Studies in the universities of Oulu and Tampere.

There are more than 10 small hypermedia/multimedia companies, some just entering the market, offering tailor-made publishing products for customers. One one of major companies is Sansibar Oy in Tampere. The major newspaper publishers engaged in electronic publishing are Helsinki Media and Aamulehti Group. Otava and WSOY of the traditional publishing houses are active in electronic publishing. They have both published encyclopaedias on CD-ROM.

Up to the end of 1994 some 20 titles of CD-ROM discs had been produced in Finland. Before 1993, there were some 3000 CD-ROM drives, but in 1993 more than 10 000 drives were sold. The total number of CD-ROM drives at the end of 1994 was 30 000 pcs, not including game and toy players. CD-ROM drives more and more become standard equipment to microcomputers, and more and more programmes are distributed on CD-ROM.

Internet is becoming more important in electronic publishing. Especially the private sector takes a akeen interest in Internet (sales material, brochures and interactive trade). There are about 30 WWW magazines in Finland, published by a variety of organizations, associations, schools and universities, student unions etc. - including the WWW magazine of Valamo orthodox monastery!

4.3 PROFESSIONAL ASSOCIATIONS

4.3.1 Associations of information specialists and librarians

There are three major associations in the information service and library branch in Finland, the Finnish Society for Information Services (Tietopalveluseura), the Finnish Research Library Association (Suomen tieteellinen kirjastoseura ry.) and the Finnish Library Assocation (Suomen kirjastoseura ry). In addition, there are a number of special organizations, associations and trade unions in the branch.

Finnish Research Library Association (Suomen tieteellinen kirjastoseura)
Library Association was founded in 1929 and nowadays has about 600 members. It is a learned society emphasizing the importance of information provision as a prerequisite for research and education and as a factor of production in the Finnish economy. The association promotes research and PR in the branch as well as the professional skills of its members. The Finnish Research Library Association is an active member in the International Federation of Library Associations and Institutions (IFLA), the European Bureau of Library, Information and Documentation Associations (EBLIDA) and the association of Nordic research librarians, Nordiska vetenskapliga bibliotekarieförbundet (NVBF).

The association is divided into four sections, those for interlibrary lending, serial publications, education and study trips. There are also ad hoc working groups, e.g. for special libraries, user training and international affairs. The activities of the association consist of further education, study trips, discussions and lectures on the development of the branch, and participating in international cooperation. The association publishes its journal Signum 8 times a year. It also gives out the Guidebook to research libraries in Finland and publishes other handbooks, research reports and studies in its own publication series.

Finnish Society for Information Services (Tietopalveluseura)
The Finnish Society for Information Services, founded in 1947, brings together information professionals in Finland. In 1995 the society has about 840 members and 35 institutional members. The main goals of the society are to form a network of information professionals and specialists in enterprises, public administration, universities and research organizations, to develop professional skills and to promote development in the information service field.

Members of the society are active in several working groups, e.g. in commercial and industrial life, banking and insurance, education and training, information resources management, patents etc. The working groups organize most of the seminars and maintain national and international contacts. The main international contacts are the International Federation for Information and Documentation (FID) and the European Association of Information Services (EUSIDIC).

High quality information services in Finland are based on education and training. The society has established and for many years administered a further education programme for people with academic background who want to specialize in information management and information services. Since 1968, more than 700 information specialists have graduated from the one-year programme. At present the programme is administered by the Centre of Continuing Education at the Helsinki University of Technology.

Finnish Library Association (Suomen kirjastoseura)

Finnish Library Association (FLA), founded in 1910, now has about 2300 members, including 33 institutional members (mainly other than libraries). It is a nation-wide cultural body and a society open to any library supporter, library staff, municipal library committee members and library users themselves. The association provides Finnish decision-makers with expert information about the branch. FLA actively participates in shaping library policy, in delivering reports and recommendations and in putting forward proposals and issuing statements.

FLA arranges workshops and seminars and publishes Kirjastolehti, the monthly journal, as well as a range of handbooks and other works on the library field. It is a member of the International Federation of Library Associations and Institutions (IFLA) and has close ties with other library associations in the Scandinavian countries and in Estonia.

4.3.2 Information industry associations

Three major associations promote the cooperation of industry, public administration and users in information technology and data transmission. They are the Information Technology Development Centre (Tietotekniikan kehittämiskeskus), the Finnish Association for Network Services (TELMO) and the Finnish Data Communication Association (Suomen tiedonsiirtoyhdistys). In addition, there are other associations for information processing and computing services.

These associations work actively in various fields, e.g. in standardization in information technology and data transmission in Finland and in international cooperation. They promote R & D work and exports of EDI software and applications and take a keen interest in the development of information network services and technology, with project in quality, user interfaces and methods of information management and systems. The associations issue reports and working papers and organize seminars on current themes.

Information Technology Development Centre (Tietotekniikan kehittämiskeskus, TIEKE)

Information Technology Development Centre (Tietotekniikan kehittämiskeskus, TIEKE) aims at increasing the use of information technology in Finland, and works with standardization, process development, strategies and information services. The members of the Centre are the State of Finland, the Finnish Information Processing Association (Tietotekniikan liitto) and the association supporting the ADP Institute (ATK-instituutin kannatusyhdistys).

A "driver's licence" for pc, forecasting methods for software projects, quality issues in software production and databases about tenders and training are some examples of the products and services of TIEKE.

Finnish Data Communication Association (Suomen tiedonsiirtoyhdistys STY ry)

The Finnish Data Communication Association aims at promoting electronic data transmission, particularly EDI and standardization of data transmission. There are 80 members in the association, telecommunications operators, ministries and companies in the field of data communication and transmission.

Finnish Association for Network Services (TELMO)

TELMO, the Finnish Association for Network Services is a cooperative body of the users and providers of information network services, telecommunications operators and authorities, with 70 members organizations. TELMO makes recommendations and takes a keen interest in the development and high quality of network services and technology both in Finland and abroad. TELMO promotes the production and use of information network services and the compatibility of open information networks with easy-to-use and standardized applications for citizens, companies and various institutions. - TELMO is a member of a French and an American association, the Association Francaise de Telematique (AFTEL) and the Interactive Services Association (ISA).

Finnish Information Processing Association (Tietotekniikan liitto ry)

The Finnish Information Processing Association is an independent umbrella organization of various associations in information processing, with the aim of promoting the productive use of information technology from a human and socio-ethical point of view. There are eight member associations with about 12000 members and 500 institutional members. The Association is active in research and development, standardization, education and PR, preparation of laws and decrees and various ad hoc working groups. The association is a member of Nordisk Dataunion and of the International Federation for Information Processing (IFIP) and participates in European cooperation in CEPIS.

The association itself or its various member organizations are engaged in research, development, education and training, PR and communication and various activities of national and international organizations. It makes an active contribution to the preparation and application of laws and statutes and in promoting the execution of various decisions and measures that have an effect in the activities of the branch. The associatn finances standardization as well as terminology work. It has played an active role in the working group of "Finland's way to the information society", drawn up the general contractual terms of ADP 1994 and financed a programme for promoting Finnish software exports. There are experts in special issues concerning the branch, e.g. in adp contractual terms, personal data file act, data protection and copyright issues. The Research Foundation of Information Processing (Tietotekniikan tutkimussäätiö) and a publisher of adp literature, Suomen ATK-kustannus Oy have their offices at the premises of the Finnish Information Processing Association.

Finnish Computing Services Association (Tietojenkäsittelyn Palveluyritysten Liitto, TIPAL r.y.)

The Finnish Computing Services Association is the branch organization of 120 member companies that represent almost 80% of the total Finnish market for computing and professional services and software products. Almost all significant computing services companies are members of the Finnish Computing Services Association. They represent almost 80% of the total Finnish market for computing and professional services and software products. In 1993 the members recorded a growth rate of 6,4% (in 1992 it was a decrease of -2,8%). The total turnover of the member companies in 1993 was over 7 000 million FIM, and the number of employees about 8500.

TIPAL is an interest group that represents the employers. It aims at promoting the activities of the member companies, the development of Finnish computing services and software industry, collecting statistical and other information and organizing training.

The association makes statements about official decrees and statutes of authorities. It has also contributed to drawing up the contractual terms of the companies and the manual of contract law in the branch.

4.3.3 Resolution of the Finnish information and knowledge sectors

The resolution of the Finnish information and knowledge sectors, given to the Finnish minister of culture in February, 1994, was presented in the 47th international congress of FID in Tokyo in October, 1994, as a model of the common strategies of information and knowledge sectors. It was the only national example related to the Tokyo international resolution, the Strategic Alliance of International Information Organizations to serve better the World Community.

During eight months, 25 Finnish associations that represent 100 000 professionals working in the information and knowledge sectors, evaluated the strengths and weaknesses, the threats and opportunities of the branch. They agreed on common goals and cooperation in practice. The resolution is an analysis of the present situation and future targets of these sectors and has already resulted in practical collaboration projects.

Strengths in Finland consists of an internationally high level of education and technology and a highly developed infrastructure, also a varied printed media and press and the high standard of information services and systems, as well as active participation in international cooperation. Information and knowledge professions are also well integrated into other kinds of know-how. - Weaknesses in Finland include scattered production and use of information, copyright issues, avoiding discussion of ethical issues, and suppliers' and producers' unawareness of user's needs.

The text of the resolution is in figure No. 2. The undersigned organizations were: Information Technology Development Center (Tietotekniikan kehittämiskeskus ry), Finnish Council for Information Provision (Tietohuollon neuvottelukunta), Finnish Business Archives Association (Liikearkistoyhdistys), Communication Education Society (Viestintäkasvatuksen seura ry), National Board of Education (opetushallitus), Finnish Association of Organizational Communicators (Suomen Tiedottajien Liitto ry) , Finnish Association of Marketing Research Agencies (Suomen Markkinatutkimusliitto ry), Finnish Association for Network Services (TELMO ry), Union of Journalists in Finland (Suomen Journalistiliitto), Advisory Board for Information Management Training (Info-koulutuksen neuvottelukunta), Helsinki University of Technology,

Lifelong Learning Institute Dipoli (TKK-Koulutuskeskus Dipoli), Finnish Society for Futures Studies (Tulevaisuuden tutkimuksen seura), Finnish Association of Graduate Engineers TEK (Tekniikan Akateemisten Liitto TEK ry), Finnish Library Association (Suomen kirjastoseura), Finnish Information Processing Association (Tietotekniikan liitto ry), Finnish Society for Information Services (Tietopalveluseura ry), Finnish Research Library Association (Suomen tieteellinen kirjastoseura ry) and University of Tampere, Department for Information Studies (Tampereen yliopiston informaatiotutkimuksen laitos).

The folllowing are some examples of various collaboration projects relating to the resolution:

- the Information and Knowledge Cooperation Forum, meeting twice a year to discuss issues relating the these sectors
- joint training for professionals in different information and knowledge sectors, organized by the Lifelong Learning Institute Dipoli at the Helsinki University of Technology, together with the organizations drafting the resolution
- various seminars on information policies of the future
- communication camps for school children and summer seminars
- collaboration in the data technology sector
- the Finnish Software Exports Development Programme by 30 leading software firms.

RESOLUTION OF THE FINNISH INFORMATION AND KNOWLEDGE SECTORS

The information and knowledge sectors are constantly developing as the need for information and knowledge increases, technology improves, media are integrated and communication and data processing form networks. This is a universal trend. We the undersigned present in the following our joint national strategy for the development of the information and knowledge sectors.

A forum will be established to promote cooperation and to discuss common issues in the information and knowledge sectors.

The information and knowledge sectors commit themselves to developing and promoting

- cooperation in training.
- the gathering of information in different forms and from different sources for joint and easy use.
- interaction in arranging services and providing feedback to their generators.
- a strategy for the sector that will serve the goals of business and society alike.
- ethical principles for the different professions.

Our common goal is to influence society by promoting

- the perception, control and use of information concerning the future in decision-making.
- the active use of information to benefit business and society.
- the creation of new, competitive product and service clusters.
- the equality of citizens as information and knowledge users.
- starting in preschool, the lifelong learning in acquiring, evaluating and using in practice versatile information.
- communications awareness as a goal of communications training and education.
- the readiness of the citizens to use information technology.
- the opportunities for the citizens to benefit from information technology during work and leisure.
- the awareness among decision-makers and the citizens of the significance of the information and knowledge sectors.

By implementing the objectives of this resolution and the required measures, Finland will be building up unique cooperation in the information and knowledge sectors, also at the international level.

Figure 2. Resolution of the Finnish information and knowledge sectors (Resolution of the Finnish information and knowledge sectors, 1994).

4.4 EDUCATION AND TRAINING IN LIBRARY AND INFORMATION SCIENCE

Academic level

Library and information science is taught in three universities in Tampere, Oulu and Turku/Åbo. About 335 graduate students and 40 postgraduate students study the subject in these three universities. In the University of Tampere, Department of Information Studies, there are 270 graduate students and 24 postgraduate students. Academic staff numbers 10, research fellows 8 and administration two persons. In the University of Oulu, Department of Information Studies and Sosiology there are 30 graduate students, 10 postgraduate students, 6 persons of academic staff and one in administration. The corresponding numbers for Åbo Akademi University, Department of Library and Information Science are: 35 graduate and eight postgraduate students and five persons of academic staff.

Professional training is given in the centres of continuing education of the above mentioned universities for persons already working in the field. Summerschools in library and information science are also arranged by the universities of Tampere, Turku and Oulu, specially for students doing their doctoral dissertations.

Polytechnical level (Fachhochschulen) and business college level

Education in library and information skills is given in five business polytechnics ("Fachhochschulen") and three business colleges. The business polytechnics are situated in Helsinki, Joensuu, Jyväskylä, Oulu and Seinäjoki. The business colleges are situated in Kerava, Raisio and Vaasa.

Schools

Basic library and information skills are taught in every school. There are 4177 comprehensive schools for primary education in Finland. The number of secondary day schools and secondary evening schools is 477. Information technology is a popular optional subject at the two last grades of the comprehensive school, being chosen by over half of the pupils. On an average of three hours per week the pupils are instructed in using the computer as a tool and in the basics of information technologies and programming. Information technology is also an optional subject in the upper secondary schools, also chosen by over half of the students.

Courses, seminars and conferences

Special courses and seminars in Finland are given by various organizations, e.g. by VTT Information Service, University of Tampere - Department of Information Studie, University of Oulu -Department of Information Studies and Sosiology, Åbo Akademi University - Department of Library and Information Science, the Finnish Society for Information Services and the Nordic Council for Scientific Information. International and national conferences are arranged by the same organizations.

4.5 RESEARCH AND DEVELOPMENT IN INFORMATION SERVICES

Research and development work is done in four universities in Finland. They are the University of Tampere (Department of Information Studies), University of Oulu (Department of Information Studies and Sosiology), Åbo Akademi University in Turku (Department of Library and Information Science, education in Swedish) and University of Jyväskylä (Department of Computer Science and Information Systems).

The more professional level of R&D work in the branch is done by the following organizations: VTT Information Service, Nokia Research Centre, Helsinki University of Technology, Information Technology Development Center (TIEKE ry) and the Finnish Association for Network Services (TELMO ry).

Central research and develoment areas are networked information, electronic publishing, user needs, information retrieval, document management, international standards related to electronic documents, and socio-economical issues.

Paths of implementation/effectivenes of the innovation cycle can be estimated as follows: basic research 40%, applied research 50% and R&D work leading to commercialised products 10%. The budjets of the R & D projects vary from 10 000 FIM to 5 million FIM.

5 TECHNOLOGICAL INFRASTRUCTURE

5.1 TELECOMMUNICATIONS INFRASTRUCTURE AND POLICY

In 1992, transport and communications accounted for 9,2% of Finland's GDP; in 1993, the figure was 9,4% (table 28).

Table 28. Contribution of transport and communications to Finland's GDP in 1992 and 1993 (Liikennetilastollinen vuosikirja 1994, p. 23).

	1992	*1993*
	(FIM million)	
Transport and storage	25 886	2 712
Post and telecommunications	10 618	10 428
of which: telecommunications	6 197	6 185
Total: Transport and communications	38 031	39 100
Proportion of total,%	9,2%	9,4%

5.1.1 Telecommunications operators

The Telecommunications Act defines telecommunications as the building and maintenance of telecom networks and the practice of telecommunications in those networks. The licence needed for such operations is granted by the Government, in certain cases by the Ministry of Transport and Communications. In 1994, public telecom operations were conducted by the State-owned Telecom Finland, 48 telecommunication companies, the Finnish Broadcasting Company YLE and five other organizations. Of these latter, Datatie, a company established by telecommunication companies and firms using telecom services, offers data transmission services and internal connections to its corporate clients nationwide. Telivo, which is owned by the energy company Imatran Voima, offers long-distance telecom connections both in Finland and abroad. Radiolinja, which engages in national GSM mobile phone operations, is owned partly by telecommunication companies and partly by nationwide wholesale and retail chains,

banks and insurance companies. Kaukoverkko Ysi is engaged in long-distance network telecommunications and is owned by regional telecommunication companies. Finnet International, another firm owned by regional telecommunication companies, has been engaged in international telecommunications since July 1994. - Tables 29 and 30 present statistics on common carriers in Finland.

Table 29. Statistics on common carriers in Finland in 1993 and 1994 (Televiestintä-tilasto 1995, pp. 60, 63 and 64).

	1993	*1994*
Staff employed by common carriers, full-time		
- Telecom Finland	6 445	6 210
- regional telecom companies	8 653	8 276
Staff/1000 telephone subscriptions:		
- Telecom Finland	8,6	8,1
- regional telecom companies	4,3	4,1
Regional telecommunications companies		
- telephone subscriptions		2 019 878
- staff		8 276
Telecom Finland:		
- telephone subscriptions		770 789
- staff		6 210

Roughly as large as Telecom Finland, the Finnet Group is a consortium of private telecommunication companies set up in August 1995. It is made up of 52 local telecom companies that will retain their independence while sharing a joint nationwide strategy in telecommunications, product development and marketing. Estimated Finnet Group turnover for 1995 is FIM 5,2 billion, and it has a staff of 8900. Two million of Finland's 2,8 million client connections are in the Finnet Group network.

The turnover of Finland's telecommunications will total FIM 12 billion in 1995. The Finnet Group will account for as large a slice of this as Telecom Finland, that is, 43% (equipment sellers 13%). Turnover is expected to rise to FIM 15 billion by 2000. The brisk pace of investment in the telecoms field continues, with FIM 3 billion being invested in 1995. The Finnet Group will account for over half of this.

The turnover of common carriers in Finland in 1994 totalled FIM 9,4 billion, which accounted for FIM 5,1 million of GDP. The ratio of turnover to GDP was 1,85. In 1992 the average was 1,86 in Finland and 2,12 in the OECD.

Table 30. Common carriers in Finland, by turnover in 1994 (Televiestintätilasto 1995, pp. 67 - 68).

Telecom Finland	4 927 million FIM
Helsinki Telephone Company	1 712 million FIM
Other telecom operators	2 827 million FIM

Telecom Finland and regional telecommunication companies are the major players in public telecom operations in Finland. Table 31 lists the main market shares in the various sectors of the branch in 1993 and 1994.

5.1.1.1 Telephony

The number of subscriber connections in the fixed network in Finland is 2,8 million, of which 72% are in the networks of regional telecommunications companies and 28% in that of Telecom Finland. Some 70% of phones are in homes, and over 10% in the corporate and public sector. The estimated number of handsets is 4 million.

Finland is divided into 12 telecommunications regions. The telephone networks offer fax transmission, surveillance and control services and ISDN multiservices as well as local and long-distance calls and data transmission. Almost 80% of local networks are digital, which is a slightly lower percentage than that for Sweden, but appreciably higher than e.g. that for Denmark.

Statistics about telephone subscriptions per 100 inhabitants in some OECD countries is given in table 32.

Table 31. Main market shares of public telecom operations in Finland in 1993 and 1994, FIM million (Televiestintätilasto 1995, p. 70).

	1993	*1994*	
	FIM million		
Local telephony, total	2 899	2 954	of which:
- Telecom Finland	928	892	
- regional telecommunications	1 971	2 062	
Domestic trunk-line telephony, total	793	475	of which:
- Telecom Finland	739	218	
- Telivo	36	12	
- Kaukoverkko Ysi		240	(invoicing)
- others	18	5	
International telecom operations, total	1 052	958	of which:
- Telecom Finland	1 051	935	
- Finnet		16	
- Telivo		5	
- other	1	2	
Mobile communications, total	1 460	1 711	of which:
- Telecom Finland	1 434	1 637	
- Radiolinja	7	55	
- regional telecommunications	18	18	
- others	1	1	
Data transmission, total	524	590	of which:
- Telecom Finland	282	319	
- local telephone companies (only partly)	184	189	
- Datatie	58	60	
- others		22	
Total public telecom operations in Finland	6 728	6 688	of which:
- Telecom Finland	4 434	4 001	
- regional telecommunications	2 173	2 269	
- others	121	418	

Table 32. Telephone subscriptions per 100 inhabitants in some OECD countries in 1993 and 1994 (Televiestintätilasto 1995, p. 82).

	1993	*1994*
Sweden	68,5	67,7
Switzerland	62,8	61,0
Canada	59,7	
Denmark	58,4	59,9
Iceland	54,7	55,6
Finland	54,5	54,9
France	53,8	
Norway	52,9	53,9

5.1.1.2 Mobile communications and paging

Telecom Finland constructs and maintains several mobile phone networks; regional telecommunications companies have only one. There are two GSM networks in Finland, one built and maintained by Telecom Finland and the other by Radiolinja, a privately owned company. There were 110 000 GSM connections in these two networks in 1994, and 173 000 on May 1, 1995. Telecom Finland constructs and maintains a paging network covering almost the whole country. The biggest regional telephone company, the Helsinki Telephone Company (HPY), has a paging network of its own in its area.

The total value of mobile communications traffic in Finland is about FIM 2,1 billion. There are around 800 000 cellular phones in the country. Growth is fastest in use of the GSM network. The Finnet Group provides about half of the calls in the GSM network.

Table 33 gives statistics about mobile communications and paging in Finland.

Table 33. Mobile phone subscriptions and subscribers to paging networks (Televies-tintätilasto 1995, pp. 37, 38 and 40).

	1993	*1994*	*May 1, 1995*
Mobile phone subscriptions, number	489 000	675 000	781 000
Connections per 100 inhabitants	9,63	13,24	
Number of mobile phone calls		292,8 million	
of which			
- in NMT network		256,1 million	
- in GSM networks		36,7 million	
Subscribers to paging networks (Tele and HPY), number	45 800	47 400	

5.1.1.3 Teleprinters and telefaxes

With the increasing number of faxes, the number of teleprinters has declined in the past few years; see table 34.

Table 34. Teleprinters and telefaxes in Finland (Televiestintätilasto 1995, p. 47 and Liikennetilastollinen vuosikirja 1994, p. 133).

	1992	*1993*	*1994*
Telex exchanges, number	7	6	
Built-in number capacity	9 973	9 823	
Teleprinters:			
- used by telex subscribers	3 409	2 718	
- used by P&T	254	234	
- total	3 663	2 952	2 587
Teleprinter traffic in 1000 minutes:			
- domestic	2 772	2 200	1 753
- international	3 984	3 383	2 883
- total	6 756	5 583	4 636
Telefaxes, number	105 000	115 000	124 000

(Estimates only; not all card and LAN faxes included.)

5.1.1.4 Data transmission

Nationwide data transmission services are supplied by Telecom Finland, the private company Datatie, and Telivo, a company owned by Imatran Voima. Local connections are offered by the telecommunication companies and Telecom Finland. Several companies offer nationwide switched connections. Packet data transmission services are supplied by Telecom Finland in the Datapak network and by regional telecommunication companies in the Finpak network. Datex is the service for the switched data transmission connections offered by Telecom Finland. Access to international networks is possible from all these networks.

There were over 11 000 network terminals in Finland's data transmission networks in 1994 (cf. table 35). The number of online banking terminals per 1000 inhabitants is 0,56.

Table 35. Number of network terminals in data transmission networks in Finland (Televiestintätilasto 1995, p. 42).

	1993	*1994*
Datex	3 571	2 692
Datapak	3 274	4 311
Finpak	3 700	4 220
Total:	10 545	11 223

Table 36 gives statistics about modems and online banking terminals, table 37 about the public data transmission network in Finland.

Table 36. Modems and online banking terminals in Finland (Televiestintätilasto 1995, p. 42).

	1993	*1994*
Number of modems, estimate	265 000	320 000
Number of online banking terminals	2 994	2 833
Online banking terminals per 1000 inhabitants	0,59	0,56

Table 37. Public data transmission network in Finland (Statistical Yearbook of Finland 1994, p. 266 and 1995, p. 268).

Connections by transmission rate bit/s

	1992	*1993*	*1994*
Datex			
2400 bps	1 851	1 489	1 197
4800 bps	2 074	1 566	1 126
9600 bps	559	516	369
Total:	4 484	3 571	2 692
Datapak			
Async≤ 9600	115	836	1 584
2400 bps	52	48	47
4800 bps	171	148	125
9600 bps	1 564	1 778	1 921
19200 bps	262	353	478
48000 bps	22	24	26
64000 bps	58	87	130
Total:	2 244	3 274	4 311
User identifiers	6 799	6 988	6 873

5.1.1.5 Value-added services

With the convergence of telecommunications and information technology, the basic telecom services have been supplemented with increasingly refined data network services. These include value-added telephone services (e.g. answerphone, voice mail and voice recognition), message handling for E-mail, EDI services, menu, that is open service networks (Telecom Finland's Telesampo and regional telecom companies' Infotel), video services and various data services offered by government, universities and firms.

An estimated 215 000 inhabitants used telecom data services in 1994, with households accounting for 41,4% of users and businesses for 41,2%.

5.1.2 Overall situation and telecommunications policy

The full force of competition in telecommunications hit Finland in early 1994. At least two alternative domestic carriers are available all over the country and there are three independent long-distance operators. Telecom Finland, a member of the Suomen PT Oy Group, became an independent company at the end of 1993, and in June 1994 Telecom Finland and Kaukoverkko Ysi, a consortium of regional telecommunications companies, divided the long-distance telecoms market more or less equally between them; Telivo had a market share of a few per cent. The competition in long-distance telecoms operations had stabilized by spring 1995, and no immediate changes are foreseen in the distribution of market shares.

The burgeoning competition in international telecoms has had little impact on turnover from Telecom Finland's international operations. The market share is transferring to new enterprises more slowly than in long-distance competition.

In autumn 1994 the first public telecommunications licence that did not include the right to build a telecoms network was granted. By summer 1995 six such licences had been granted. Elsewhere in Europe these new telecommunications companies are known as service providers. Some of them handle only resales services acquired from other carriers; others use their own equipment.

5.1.2.1 Mobile communications

Common carriers have continued to upgrade their radio applications as a way of competing with carriers offering services on the fixed telecoms network. The Ministry of Transport and Communications aims to promote competition in this area, too, through legislative means.

Mobile communications continues to advance apace. The number of cellular subscribers is growing at the cost of wire-line subscribers, and mobile communications are beginning to pose a major challenge to the fixed home telephone. The whole sector is marked by aggressive campaigning and very attractive offers for new subscribers. In 1994 Sweden, Norway and Finland had the highest mobile phone penetration in the world; the number of phones per 100 inhabitants in Finland was 13,24 (9,63 in 1993) and in Sweden 16,5. The number of GSM subscribers in Finland grew particularly fast in the first half of 1995.

5.1.2.2 Legislation

The Ministry of Transport's draft proposal to amend the telecommunications legislation was completed in May 1995. The objective of the proposal is to facilitate entry into the telecoms branch, relax payment controls and organize the status of service operators. The aim is that telecommunications should be treated like any other business and made subject to the same competition and consumer protection laws. The proposal and its reception show that full liberalization of telecommunications is much closer in Finland than anywhere else in Europe.

5.1.2.3 International cooperation

The position of telecommunications in Finland is very different from that in other EU countries. Here the market share of the biggest domestic carrier is around 55%; in Sweden and the UK it is 90%, and elsewhere even higher. At the meeting of the council of EU telecommunications ministers held in June 1995 Finland came down strongly in favour of the speedy opening of mobile communications networks to competition in Europe. At Finland's request, competition will be considered in the preparation of future EU legislation. Likewise the size of common carriers will be restricted. Nor need Finland return to trade regulation in public telephone operations.

5.1.3 Competition and telecommunications companies

Regional telecommunications companies offer their clients all telecom services locally, nationally and internationally. Apart from the local nature of operations, their strength lies in the fact that users own almost 80% of subscriber connections. With the deregulation of the market introduced in 1994, the range of services expanded.

The Finnet Group comprises telecommunication companies, their subsidiaries and national associate companies. Finland has 46 telecommunications companies that build telecoms networks and provide telecoms services. National telecoms operations are carried out by four associate companies established by the telecommunications companies: Datatie (data transmission services), Radiolinja (GSM-based service - Europuhelin 950), Kaukoverkko Ysi (long-distance traffic) and Finnet International (international telecommunications).

The Association of Telephone Companies in Finland (Puhelinlaitosten Liitto) founded in 1921 is the central organization and cooperation body of telecommunication

companies. The total turnover of the Finnet Group approaches FIM 5 billion (as does that of Telecom Finland). Companies' own business operations account for FIM 4,2 billion of Group turnover. Over 70% of Finland's 2,8 million telephone subscribers are connected to Finnet networks. The Group handles around 60% of long-distance traffic; its goal is a 30% market share of foreign calls. Half of all cellular phones using the GSM system are connected to Finnet's network and well over half of all GSM calls are made in this network. At the end of 1994, Telecom Finland accounted for 44% of long-distance traffic; in foreign calls, its share rose to around 80%.

The high level of telecommunications in Finland has always been based on private entrepreneurship and know-how. The liberalization process in the branch is only a logical conclusion of this. Internationally Finland is a leader in telecommunications services, a few years ahead of other EU countries. The competitive situation between two kinds of 'groups', private and publicly owned, has contributed to the high level of telecommunications technology and services in Finland.

The liberalization of network competition in Finland got under way in 1985 and was completed in 1994. As a result, data transmission charges are lower in Finland than anywhere else in the world. For example, charges for switched data transmission are a mere fifth of the OECD average.

5.1.4 State-of-the-art and prospects of telematics applications

Telematics applications, based on telecommunications and information technology, are a vital field in the outlook of the future society. This chapter profiles Finland's high and versatile state-of-the-art in telematics applications, a strategic industry. Examples of Finland's participation in EU's research programmes and frame programmes are given in "Finland, a pioneer in telematics applications" from March, 1995.

5.1.4.1 Open scene

Finland has an open telecommunications architecture, high density cabling, a mobile telephone network and a high level of modern computers. Finland has a liberal legislation about tele-communications, and has applied free market conditions in end-user products since the 1980's. The scene is also free for competition in all telecommunications services nowadays. The networks have evolved in a multi-operator field and the supply of telecommunications services is growing rapidly. ATM networks have been launched by both major operators in the 1990's.

A national R&D programme concentrates on multimedia, another specially for SMEs in the telecommunications indstry. The Finnish Network Programme in Telecommunications for Small and Medium Size Enterprises from 1994 to 1997, initiated by the Technology Development Centre, aims at high-quality telecommunications products and services by creating a national network of small and large companies. At present, 50 SMEs and many large companies have joined in. The National Multimedia Programme started this year, promoting the advancement of new telecommunications and multimedia service industry. An open multimedia pilot network will be built. During the next three years the expenditure for the programme is expected to amount to 100 MECU. - In addition, several dozen industrial telecommunications projects have been initiated by industry.

Telecommunications industry employs several subcontractors and service enterprises indirectly. There has bee a rapid growth in the production and exports of PCs and all kinds of software products. The Nokia Group has the biggest market share in Europe in cellular telephone equipment market and the second biggest in the United States. Many SMEs in Finland focuse on special products and are leaders of the world in their market sectors, e.g. cable TV equipment, components for video-conferencing and paging and voice mail systems.

Finland is one of the leading countries in telecommunications services in the world. The penetration rate in fixed telephone networks is the fifth highest in the world, in mobile communications the second highest. In 1992, fault density in public telephone networks was the fourth lowest in the world.

5.1.4.2 Applications in transport, urban and rural areas and environment

Transport

Due to sparse population, long distances and the country's northern location Finland faces several transport problems in costs, economic efficiency and level of service of public transport, long winter season, road safety and temporary capacity problems in urban areas. Finland has built advanced transport telematics platforms for mobile, radio and television based services and roadside information systems. Road weather conditions are monitored by 200 automatic weather stations and road condition monitoring cameras. Traffic flow is also monitored by an automatic system. There are trip planning services through a public information network (TELMO). Smart-card technology is used in long-distance buses.

Urban and rural areas

Solutions to the problems of rural areas have been sought by new techniques. In the early 1990's there were about one hundred telehouses in Finland. The use of telework centres has, however, proved modest. Public funding has been diminishing, and so has the number of telehouses. They are now turning into providers of supportive services for enterprises.s The main telehouse projects have been the experiments carried out in 1991-1994 by the University of Turku and some national trials by the Ministry of Labour.

In the development project for TELMO service architecture was created and promoted for telematic services. With respect to population, Finland is the second after France measured by the number of users of telematic information services.

Environment

Environmental administration consists of the Ministry, the Environment Centre of Finland (up to the end of February, 1995, the National Board of Waters and the Environment), together with the Environment Data Centre (EDC), and the district offices. They all form a nationwide IT network. The E-NET connects to all other governmental networks via public telecommunic-ations networks (Internet and NORDUnet). The EDC has vast experince particularly in handling graphical data. Recently, the E-NET has been enhanced to include a Regional information network specialising in environmental information about the eastern and southern neighbouring countries of Finland.

5.1.4.3 Applications in healthcare

Finland's health system provides equal access to all citizens, and the majority of health service providers are public institutions owned by communities. SMEs mostly account for health information systems industry in Finland. Currently Finland uses almost 10% of its GDP on healthcare. Measures have been taken to improve the outcome and quality of healthcare services, and they include networking across institutional boundaries. Information and telematics systems are widely used in healthcare at primary and secondary levels.

The industry in assistive technology comprises about 100 enterprises, mostly very small. The Finnish healthcare system is very advanced and has taken up several telematic systems, e.g. mobile telephones and computers in the social care sector, and various devices to support the disabled and elderly people in independent living at home.

Finland is the only country in the world with a nationwide security telephone system for the elderly and the disabled.

5.1.4.4 Research

Finland is one of the most advanced countries in the world in research networks. The Finnish University and Research Network (FUNET) was established as early as 1984 by the Ministry of Education, to organize telecommunications connections between universities in Finland.

FUNET soon joined and became a provider of EARN, and is also part of the NORDUnet research network. At present, all Finnish universities and most polytechnics are members of FUNET, together with 30 other public and industrial research institutes. All universities have Internet connections through FUNET. The number of Finnish Internet hosts (ip-hosts within the .fi-domain) is one of the highest per capita in the world.

Center for Scientific Computing (CSC), the administrator of FUNET and its supercomputers, is owned by the Ministry of Education. FUNET has long traditions in cooperation with the Nordic Council of Ministers.

In 1993, FUNET was the first in Europe in implementing new technology. An ATM pilot project was launched between FUNET, Tampere University of Technology and Telecom Finland. The connection has been in production since October, 1994. FUNET plans to update the whole core network to ATM technology during 1995.

5.1.4.5 Information engineering and language engineering

Information engineering

Many companies in Finland specialize in designing and programming multimedia presentations, with special attention to interfaces and information retrieval methods. Finland is a European pioneer in producing and delivering electronic books, available for over 10 years in major Finnish bookstores. CD-ROM technology is widely applied in offices. Books publishers apply modern techniques in their publishing process, as do magazine and newspaper publishers, too. Publishing through networks (Internet / WWW) is a growing area. Another increasingly interesting area is the use of a mobile telephone for information searching, specially with voice input.

Language engineering

Finland compares well with other European countries in the high level of research and available language engineering tools and products. Awareness in and use of computational and telematic aids in the language and translation professions is growing with the spreading of digital electronic text interchange. There are two long-term research-centred players (Kielikone and the University of Helsinki) and a few specialized commercial operators, as well as some major IT companies and R&D organizations (Nokia, IBM ICL) engaged in language engineering in Finland. The project of developing a series of programmes for the computational analysis of Finnish, was commercialized as a company, Kielikone Ltd.

5.2. COMPUTER INFRASTRUCTURE

5.2.1 Member companies of the Finnish Computing Services Association

About 630 000 people of the work force of two million Finns use computers or computing services at work. There are 120 member companies at a branch organization, the Finnish Computing Services Association (TIPAL, Tietojenkäsittelyn Palveluyritysten Liitto), accounting for about 80% of the total Finnish market for computing and professional services, software and hardware products. The total turnover of the member companies in 1993 was more than FIM 7000 million, with a growth rate of 6,4%. The member companies employ about 8500 persons.

5.2.2 Production, sales and use of microcomputers in Finland

Production of the electronics and electrical sector in Finland in 1994 increased with 29% and amounted to 35 billion FIM. The production of communications equipment increased as much as 55%. Table 38 shows the percentages of the various branches of the total production of the electronics and electrical sector in Finland in 1994.

Estimates of VTT Automation give two alternatives of growth up to the year 2000. In the alternative of rapid growth the production of microromputers would increase annually by 12% from 1996 to the end of the century, and domestic markets would grow annually by 7%. In the alternative of slow growth the production of microcomputers would grow by 6% and domestic markets by 3%.

Table 38. Production of the electronics and electrical sector in Finland in 1994 (Tieto-viikko, April 7, 1995).

	%
Telecommunications equipment	39
Electrical power industry	15
Computers	13
Automation	8
Components	8
Others	17

The value of microcomputer production in Finland in 1994 was about 4,5 billion FIM. It is estimated that the growth rate in 1995 will be 22%. Two biggest manufacturers (ICL Personal Systems and Salcomp Oy, manufacturing microcomputer displays) account for almost FIM 3,5 billion of the total turnover. In addition, there are several smaller manufacturers (e.g. Mikrolog, Computec, Elektrobit). Mikrolog, the company assembling Osborne microcomputers in Finland, believe it will sell 16 000 microcomputers in 1995. In 1994, with the sales of 10 500 microcomputers and a turnover of 208 million FIM, Mikrolog had a 6% share of the market and employed about 100 persons.

There are about 30 micromputers per 100 inhabitants in the United States, whereas in Finland and Sweden there are about 15 microcomputers per 100 inhabitants. The growth rate of the markets for microcomputers in Finland is estimated to be 40% in 1995. Households will become more and more important customers in the branch.

At the end of 1993 about 21,5% of Finnish households had a microcomputer, at the end of 1994 as many as 26%. It is estimated that 570 000 Finnish households own about 600 000 microcomputers (most of them, anyhow, older and less efficient models). About 14% of the microcomputers have a modem connection, but all modems are not used very actively. One third of the households use their microcomputers for professional purposes at home, 70% for word processing and 60% for games. About 205 000 new microcomputers were sold in 1994, of which 45 000 for household use.

According to IDC, sales of new microcomputers to households in 1995 would amount to 66 000 microcomputers, i.e. 26 000 more than in 1994. In addition, there are the used microcomputers and those given by companies to their personnel for use at home. The

main brands at home use are Compaq, IBM and ICL. Last year, Compaq sold 6 500 Presario microcomputers, with 15% of the total sales to households.

Combining the estimates of IDC and Market-Vision about sales of microcomputers in Finland from 1987 to 1994, we arrive at 1,2 million pcs. The number of microcomputers that are not in use any more may be estimated at 500 000 pcs. This gives an estimate of 15 microcomputers per 100 inhabitants. I.R.O. Research estimates that 308 000 households acquire a microcomputer during the next two years. Only half of the equipment, however, will be new. In 1994, about 205 000 microcomputers were sold, 45 000 of them for household use.

In 1994, about 123 000 printers were sold in Finland, of which 34% were laser printers and 53% ink-jet printers. Hewlett-Packard is No. One with 50% share of the market, next comes Canon with 30% of the market.

Estimation of the total number of CD-ROM drives at the end of 1994 is about 30 000 pcs, excluding game and toy players. With game and toy players, the numbers may total 100 000 drives.

5.2.3 Hardware and software establishments

In the Register of Enterprises (database YRTI, Yritysrekisteri) of Statistics Finland, category 3002 contains information about the manufacture of computers and other information processing apparatus, category 722 about software supply and consultancy. An enterprise may have several establishments.

According to information from 1993, there were 36 establishments manufacturing computers and other information processing apparatus. Their total turnover amounted to 4 057 million FIM, and the number of personnel to 2 257. In 1993, 1 207 establishments were engaged in software consultancy and supply, with a total turnover of 3 533 million FIM. They employed 7 642 people.

Manufacture of computers and other information processing apparatus

The 36 establishments in SIC 3002 made an average turnover per person of about 1,8 million FIM. The companies and establishments were quite evenly distributed in various classes of turnover, mostly five or six companies in each size class of turnover. Six establishments were listed in the turnover class from 200 000 FIM to 499 000 FIM, another six in the turnover class from one million FIM to 4,9 million FIM. - Classifying according to number of personnel, the majority (15) of the 36 establishments employed

less than four persons. The 15 small companies made an average turnover of 555 000 FIM per employee. Only four companies or establishments employed more than 100 persons.

Software consultancy and supply

Companies in SIC 722 (a total of 1207 establishments) made an average turnover of 462 000 FIM per personnel. There were over 200 establishments each in the following turnover classes: 1 000 FIM to 99 000 FIM, 200 000 FIM to 499 000 FIM and 500 000 FIM to 999 000 FIM. Most of the establishments belonged to the turnover class from one million to 4,9 million FIM (343 establishments). They made an average turnover of 345 000 FIM per employee.

According to number of personnel, 70% of the companies and establishments employed less than four people. They made an average turnover of 341 000 FIM per employee. Companies employing five to nine people were the second biggest category (194 of them). Only eight companies employed more than 100 persons.

6 ECONOMIC AND POLITICAL INFRASTRUCTURE

6.1 POLITICAL INFRASTRUCTURE

Finland has a surface area of 338 000 sq km and a population of 5 098 000 people (Dec. 31, 1994), with an average population density of 16,6 per square kilometre. There are two official languages; Finnish as the mother tongue is spoken by over 93% of the population and Swedish by about 6% of the population.

Finland is a parliamentary democracy with a republican constitution. From the twelfth century to 1809 Finland was part of the Kingdom of Sweden. In 1809, Finland was annexed to Russia as an autonomous Grand Duchy. On Dec. 6, 1917, Finland declared her independence. The republican constitution of 1919 remains essentially unchanged today. The legislative power is exercised by the Parliament and the President of the Republic. The 200 members of the Parliament are elected by universal suffrage for a period of four years. Finland is divided into 461 self-governing municipalities. Members of the municipal councils are elected by universal suffrage for a period of four years.

During the election period from March, 1991 to March, 1995 the seats of the various parties in the Parliament were distributed as follows: Center Party (agrarian) 55, Social Democratic Party 48, National Coalition Party (conservative) 40, Left Wing Alliance 19, Swedish People's Party 11, Green League 10, Christian League 8, Rural Party 7, Liberal Party 1 and others 1. In the elections of 1995, the distribution of the seats was the following: Social Democratic Party 63, National Coalition Party 39, Center Party of Finland 44, Left Wing Alliance 22, Swedish People's Party 11, Christian League 7, Finnish Rural Party 1, Green League 9, Progressive Finnish Party 2, Ecological Party 1 and others 1 seat.

6.2 GENERAL ECONOMIC SITUATION IN FINLAND IN 1994

In 1994 the Gross Domestic Product (GDP in purchasers' values) in Finland was 511 600 million FIM. The growth rate of GDP was 3,9%, compared to the previous year. In 1993, GDP decreased by 1,6% compared with the year 1992. For the current year 1995, the rate of growth of GDP is predicted to be around 5% and for 1996 around 4,5%. GNP, the Gross National Product, amounted to 490 089 million FIM in 1994.

In the period from 1950 to 1959, the average annual (compounded) growth of real GDP was 4,7% and from 1960 to 1969 it was 5%. From 1970 to 1979 the growth rate was 3,7% the same as from 1980 to 1989. The average annual growth of GDP in Finland has been 3,6% from 1950 to 1993. Finland's GDP per capita in 1993 was USD 16 500. Changes in the volume of GDP from 1985 to 1994 are shown in the following picture.

The unemployment rate in relation to the total work force in Finland amounted to 18,4% in 1994 (17,9% in 1993). Various economic research centres in Finland expected the unemployment rate to decrease in 1995, compared with that of 1994. The rate for 1995 was predicted to be at about 16,5% which still means an average of 400 000 Finns unemployed.

The inflation rate in Finland for 1994 was exceptionally low at 1,1%. The Ministry of Finance expected the inflation rate to stay at about 1,5% also in 1995.

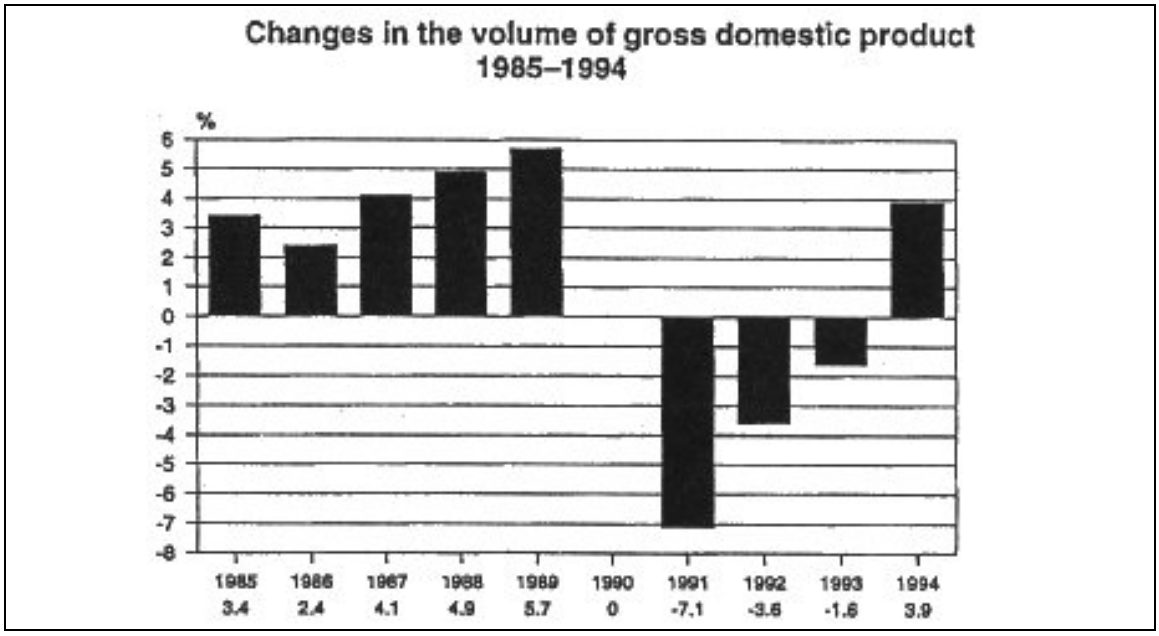

Figure 3. Changes in the volume of GDP 1985 - 1994 (Statistics Finland: Tilasto-uutisia 1995:15).

Output

Industrial output grew by almost 12%. The development of output continued uneven in different sectors. Output increased in wholesale and retail trade, hotel and restaurant services, and certain other services. In contrast, construction and public services

continued to contract. Primary production grew by as much as 7,8%. Agricultural output remained at the level of 1993 but that of forestry showed an increase of 14%.

The total of secondary production increased by 8,4% from the previous year. Manufacturing expanded the most, by 12%. Of the manufacturing industries, the metal and engineering industry showed the most of expansion, by as much as a fifth. As a result of the expansion of manufacturing, there was an appreciable increase in market fellings as well as in transport and communications. Output in electrical energy supply increased by 7%, consumption by 4%.

Expenditure, investments and national income

Finland's national income in nominal terms grew by 9,5% last year. National income per capita amounted to FIM 79 240. Disposable income at households in nominal terms increased a little but the real purchasing power of households fell by 1,3%.

Measured by the price index of gross domestic product, there was an increase of 2,5% in the price level of the economy. The consumer price index grew by 1,1%. The nominal national income showed a significant growth rate by 9,4%. Taxes and obligatory social security costs account for a very high percentage of GDP in Finland, in 1994 as much as 47,2% (45,7% in the year 1993). Direct taxes showed an increase of 17% compared to the previous year, and taxes of goods and services were paid by almost 5% more than in 1993. Obligatory social security contributions also increased by almost 8%.

Disposable income in nominal terms grew by 9,5%. There was still a deficit of more than 11 billion FIM in the revenue of the state. The households' disposable income remained at about the same level in 1994 as in 1993. The real purchasing power of the households decreased by 1,3%, whereas in 1993 by almost 5%.

Private consumption expenditure grew by 2%. Acquisitions of durable goods increased by 9% compared with 1993. Public consumption expenditure decreased by only 0,5%. Investments started to recover after a downswing of four years, particularly investments in machinery and fixtures.

6.3 NATIONAL INFORMATION POLICY

6.3.1 Development of scientific libraries and information services in Finland

Finland arising from the ruins after the Second world war placed a great emphasis on creating a system of central libraries and on further developing information and documentation services. Industry needed research, research needed scientific and technical information. The Finnish Pulp and Paper Research Institute (Keskuslaboratorio Oy, KCL) had started with information and documentation services in the 1920's. Information services were also one of the main services offered by the Chemical Industry Federation of Finland to its members. Technical Research Centre of Finland was founded in 1942, and in 1947 started with publication and documentation services. The Minister of Education in 1954 set up a permanent board of scientific libraries and ten years later a committee to plan the development of scientific information services in Finland.

General development in the OECD on science and information policy have had a great influence on the corresponding outlines in Finland. A permanent council was set up in 1969 for scientific information. Three years later, together with the board of scientific libraries, it was formed into the Finnish Council for Scientific Information and Research Libraries (tieteellisen informoinnin neuvosto, TINFO). The present well-functioning information service network in Finland (cf. chapter 4.1) is based on the committee reports of the TINFO council. From 1994 onwards, the Finnish Council for Information Provision (tietohuollon neuvottelukunta), set up by the Ministry of Education, continues the work of the former TINFO council.

6.3.2 Finland's way to the information society

Nearly all OECD countries and many international communities have drafted or are preparing information society strategies. January, 1995, marked significant developments towards the information society in Finland. A report commissioned and approved by the Ministry of Finance outlines a national strategy. A position paper outlined by the Cabinet Office on measures for the development of an information society was approved by the Government on 18 January. The new Government, formed in April, 1995 and led by Prime Minister Paavo Lipponen, has a number of information society oriented objectives and tasks in its program.

In Finland, the concept of information society strategy dates back to the work of the Information Technology Advisory Board (1976 to 1991) and a country review of Finland's IT and telecommunications policies performed by the OECD in 1990 to 1992. The OECD country review, the first of its kind in the world, concluded that Finland, though having reached an astonishingly high level of IT and telecommunications penetration and expertise, lacked a clear strategy in these areas. The Ministry of Finance was given the task of preparing this kind of strategy and the teport, Finland Towards the Information Society - a National Strategy, was completed at the end of 1994.

The work benefitted from the launching of concept of the Information Highway, from the Bangemann report and the decisions of the European Council on Europe's way to the Information Society.

The networked economy and the information society

To secure the wellfare of citizens and the development of the society, there must be a strive towards productivity and competitiveness throughout the society. This is the only means of eliminating or reducing unemployment.

Information technology has been integrated in all procedures, products, and structures in businesses and in communities. It is an essential competitive factor for products and production. In implementing information technology to business and societal structures information technology merges in information networks with data and communications. It also integrates with publication and audio-visual technologies within culture and entertainment. Thus information industry is becoming the leading economic sector in the world. A networked economy provides a real opportunity for Finland.

An increase in digital presentation of information for all types of information (data, text, sound, still pictures, and live pictures such as video) and the development of information networks, as well as their reaching to work sites and households, are the most significant trends in information technology.

Advanced technical development of information networks already guarantees the use of enough transfer capacity to send text, pictures, voice and video images to terminals and workstations within the network. Important further issues will be the security of the information network, tariffs and the level of services. Information technology is seen to penetrate all sectors of the society, public as well as private.

Based on the recommendations of the Bangemann report the EC Commission has presented a work program called "Europe Towards the Information Society". The EU information society strategy is significant for Finland. EU research projects provide an important source of new expertise, and also provide employment for Finnish experts. Finland has a lot to offer, e.g. its experience in liberalizing the telecommunications market, as well as high level applications knowhow such as large national registers, citizens' information networks, and geographical information systems.

6.3.3 Finland's strategy, a vision for the future

The objective of the strategy is to gain and maintain a competitive edge within the world economy and to help solve domestic economic problems. Therefore, it is necessary for Finland to equal, and in some areas, to exceed in sophistication the best IT applications in competing countries. Finland's technological know-how and top level IT products and applications give us reason to believe the ambition to be realistic.

The following future vision was created starting from the given premises:

* Finland is an advanced information society based on networking.
* Finland is a world class competitor in the implementation of information and communications technology.

Finland's information society strategy is based on three main elements: 1) renewal into an information society, 2) the development of information industry, and 3) the assurance of necessary conditions, i.e. research, knowhow, and the development of an IT infrastructure.

Outline for a national strategy and priority recommendations
The following national guidelines have been drafted to point the way:

1. Information technology and information networks are to serve as tools in private and public sector renewal.
2. Information industry is to become an important sector of economic activity.
3. Professional expertise in information and communications technology is to be maintained at a high overall level, with selected peaks.
4. Everyone is to have the opportunity and basic skills for using the services of information society.
5. Finland's information infrastructure is to perform in all aspects as competitive and capable of providing high quality services.

The priority recommendations of action of each guideline are the following:

* Provide a strong impetus to the development of public information networks and Finland's Information Highway.
* Encourage the innovative application of information and communications technologies in all areas of the private and public sectors.
* Develop modern information network services to strengthen the competitive position of the SME's.
* Improve the conditions for growth of the information industry into a major new sector.
* Participate actively in the implementation of the EU information society program (including privacy protection and copyright).
* Ensure that all have the opportunity and basic skills to use the services provided by the information society.
* Make national information resources and public documents easily accessible to all citizens through public information networks.
* Ensure that IT research and education are appropriate and encourage the formation of world class research units.
* Promote the interoperability of Finland's information infrastructure and the export of information network services.

Implementation of the strategy

The following proposals for implementing the strategy were made in the report:

* The Council of Ministers should make a decision in principle about the aims and action for the development of a Finnish Information Society. An implementation plan should be drafted for the years 1995-1997.
* An Information Society Advisory Board should be established.
* The execution of the strategy should be supported by wide scale publicity campaigns and educational programs.
* The implementation of the strategy, Finland's Way to the Information Society, primarily be seen as an investment in Finland's renewal. In addition to ordinary investments, it would require at least 0,2% of GNP, or approximately one billion FIM (about MECU 170) of new funding annually. The major portion would be realized the marketplace.
* It is the responsibility of the government to guarantee the necessary prerequisites for renewal.
* The most significant publicly funded investment comes from supplying schools libraries with adequate information technology and networking.

6.3.4 Government position on measures for the information strategy

The position paper of the Government of Mr. Esko Aho, of the Centre Party, dated 18 January, 1995, stipulates that each administrative branch prepare detailed action plans to implement the information society strategy principles. The ministries are to redirect, as necessary, their resource allocations to give effect to the Government decision.

The detailed planning phase is coordinated by the Ministry of Finance and overseen by the meeting of permanent undersecretaries.

6.3.4.1 Aims of information society policies

Finland aims to secure its position as a leading information society in the year 2000. This will mean that:

* Finland's information, communications and content industries contribute an important share of production and exports and Finland has a vibrant entrepreneurship in these areas.
* All citizens have access to electronic information and communication services and possess the skills to use them; the services are easy to use.
* Business and administrative functions, structures, products and services are being renewed.
* IT professional skills are competitive at the world level.
* Finnish information infrastructures are competitive and functional in all respects; this implies broadband capabilities.
* Legislation and other norms should facilitate the information society and promote the use of networks and competition.
* Every citizen has the right to information.
* The availability of public sector information in networks and libraries must be improved.
* The needs of people in all walks of life should be met equitably.
* Finnish cultural and linguistic identity must be preserved.
* Finland aims to accelerate the trend to telecommunications competition in Europe.

The role of government is to provide a favorable framework for building the information society. The most important governmental activities in the years to come will be the following:

Network infrastructures

* Set of projects on "Finnish Information Highway" including pilot ATM and ISDN environments for multimedia development
* Promotion of generic and support services, of network compatibility, and of

information security.

Applications in business and industry

* Systematic studies of IT and network application potential
* Measures to improve conditions for SMEs
* Program to promote telework by networking.

Public sector

* Projects to reform public service functions through advanced use of IT and networks
* Measures to promote and unify electronic information exchange among administrations and to create integrated customer-oriented public service systems
* Projects for direct customer access to public sector information
* User-friendly pricing of services provided via public networks.

Information and communication industries

* Better access to risk financing
* A high quality supply of public braodcasting programs
* Start of digital radio and television broadcasting.

Education and training

* Ensuring appropriate IT, information management and communication skills at all levels of education
* Special attention to teacher training
* IT&C professional education to be increased in volume and kept up to date qualitatively
* Measures to provide adult population with basic IT&C training
* Access to information network services for the entire school system
* Promote remote and multimedia studying at all levels.

Culture

* Ensuring a supply of Finnish cultural products on the Finnish and international information highway
* Encouraging the birth of multimedia enterprises.

Research and development

* Spearhead projects, particularly by SMEs
* Active participation in international research work
* Sufficient national and international scientific networking and computing capacity to research
* Research on economic, social and cultural aspects of the information society
* Results of projects on IT and working life to be made available to employers.

Transport

* Program on transport telematics to lower logistics costs.

Social welfare and health

* An information strategy for the welfare and health (WH) fields
* The formation of an economic WH cluster
* Improve real time information exchange in the WH field.

National information resources

* Improved access to and utilization of national registers and statistical databases
* Clear division of responsibilities in the provision of national information services
* Support to public libraries as node points of an open information network.

Legislation and other framework conditions

* Draft legislation allowing the use of electronic media for transactions by citizens and firms with government agencies
* Develop private law to take account of the implications of electronic networking for business
* International or internationally compatible solutions to problems related to protected material, particularly copyright
* Unify legislation on confidentiality and business secrets
* Renew privacy legislation
* Increase input to national and international standardisation efforts
*A plan for a statistical system to measure the development of information society.

International Cooperation

* Active participation in EU and other international IT&C and telematics projects
* Promote telecommunications competition in Europe
* Make Finland better known through information networks.

Directives for Implementation

* Each ministry is responsible for the attainment of the objectives in its area of competence and shall prepare a detailed action plan for the development of the Finnish information society in its area of competence by the beginning of March, 1995.

6.3.4.2 Information society and the new government

The parliamentary election held in March resulted in the appointment, on 13 April 1995, of a new Government led by Mr. Paavo Lipponen, a Social Democrat. The new Government's programme places a special emphasis on education and research and includes a number of references to information society policies, in accordance with the principles stated in the above sections.

The Government will foster the development of a well functioning Information Society and promote the utilization of information networks and the Information Highway. One of the targets is a broadband Information Highway reaching homes, public services and SMEs.

The school system will be connected to information networks and their services will be made available to all schools. Basic skills needed in the information society will be made available to all. The library system is to form an integral part of the IS strategy.

The Government promotes the use of electronic communications for education and for telework and stresses the importance of networking of firms. The Government promotes the enterprises' real competitiveness based on innovations, skilled labour, quality of working life and high standard environment protection. One of the main aims is a growing ratio of investments in research and development, specially concentrated on such areas of industry and service expertise as energy, telecommunications and environment.

The Government also promotes free and equitable competition in printed and electronic communications. Telecommunications legislation will be further developed in a way required by a versatile information strategy and to increase competition at home and in Europe.

In education, science and culture the Government will, according to the principle of life-long learning, foster the ability of the individual, the society and the industrial life to live up to changes, internationalization and the enhanced importance of information. The

Government will utilize all the possibilities offered by the information networks and the information highways.

Preliminary action plans of the ministries were submitted on 1 March to the Ministry of Finance, which coordinates information technology programs in Government. After consultations and further elaboration, implementation plans, including financial implications for the 1996 budget, were submitted in May and June. They will be brought together as a document by the Ministry of Finance.

6.4 R&D EXPENDITURE

Finland shows dramatic figures in the expenditure for high technology R&D and in the share of high technology products in exports in 1994.

In 1994, Finland's exports amounted to 154 000 million FIM (32 000 million USD). During the past 10 years Finland has shown a higher growth rate in exports of high-tech products than any other country in Europe.The country's economy is growing a "third leg", that of electronics, in addition to the wooden and metal legs. Electronic and electrical industries totalled 18% of the exports, engineering and metal products 19%, chemicals 10%, steel and metals industry 8%. Paper industry, however, still has the major share of exports, as much as 27%, while wood products account for 9%.

Production and export of PCs and other kinds of software have increased rapidly. Finland consumes 42% - which is more than any other Nordic country - of the semiconductors imported to Scandinavia, indicating the transition to high-tech products in Finnish industry. Many SMEs are world leaders in their high-tech market sectors, e.g. paging and voice mail systems, components for video-conferencing and cable TV equipment.

See figures 4 and 5 for R&D expenditure in OECD countries and for the percentage of high-tech exports.

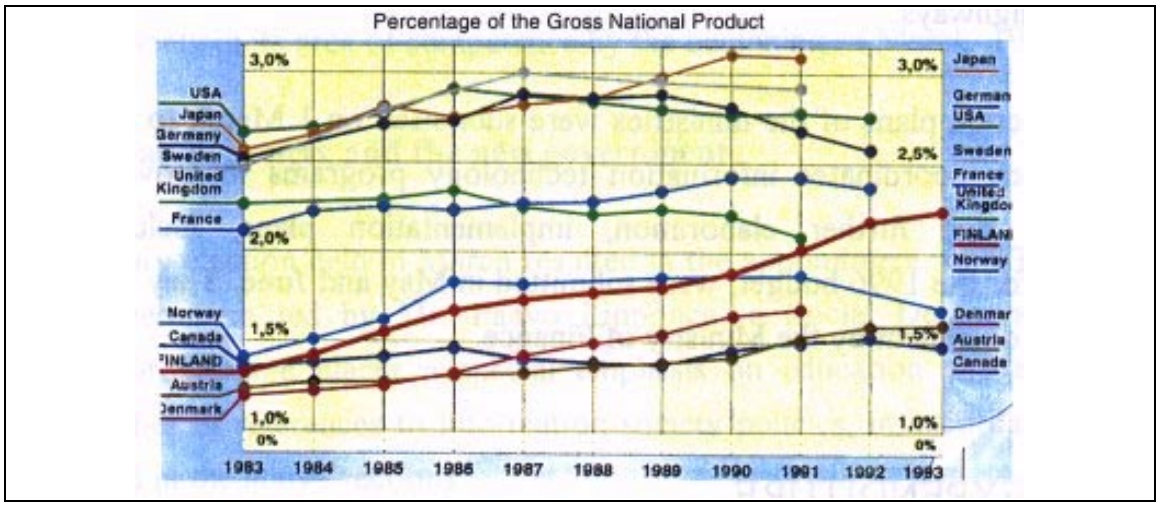

Figure 4. R&D expenditure in some OECD countries (Views on Finnish Technology 1995, p. 5).

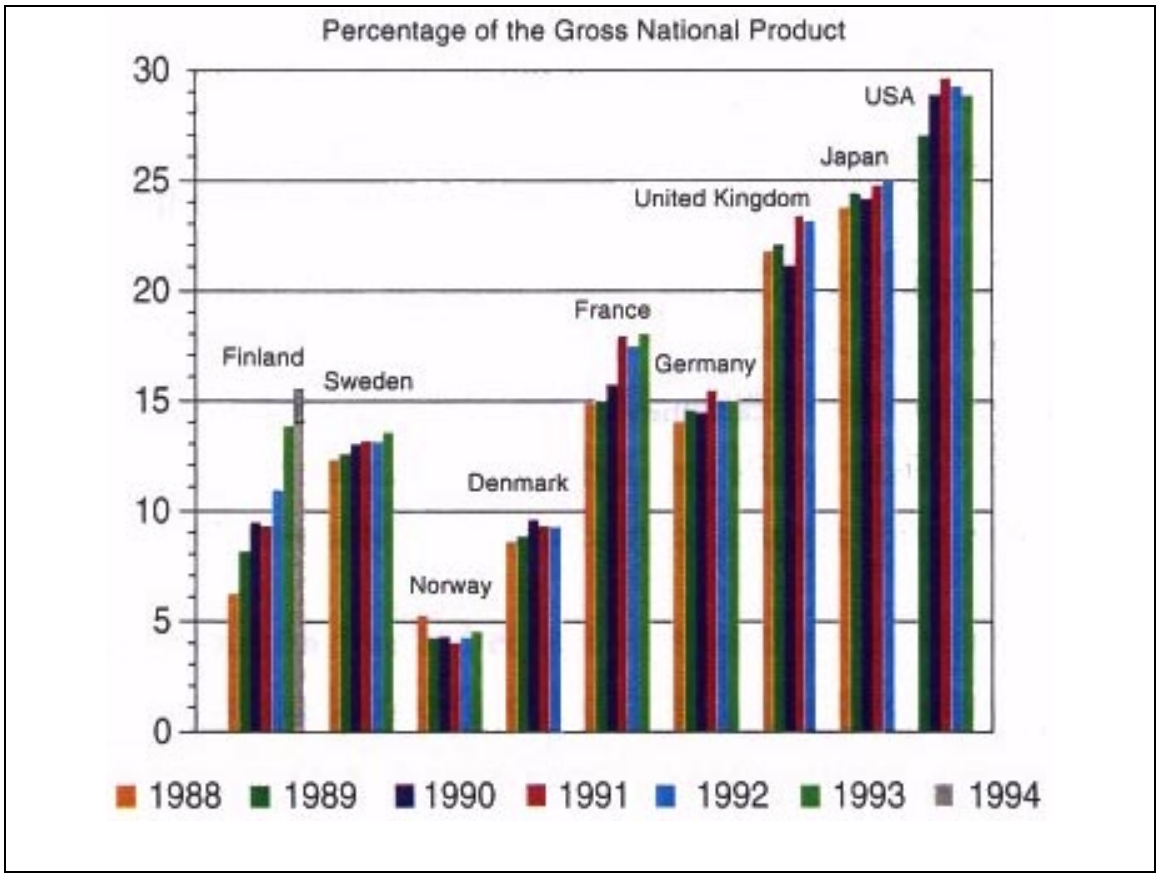

Figure 5. The percentage of high-tech exports in some OECD countries, percentage of the Gross National Product (Views on Finnish Technology 1995, p. 5).

Finnish R&D expenditure has risen from 1,3% of GNP in 1983 to 2,2% in 1993. The share of high-tech exports has risen to 16% of the total exports of Finland, compared to a share of 4% in 1980. The total expenditure for R&D in Finland in 1995 will be 11 560 million FIM (2 380 million USD). Companies finance 60% of this, Finnish government contributes by 40%. Technology Development Centre (TEKES) , with an annual budget of 1 600 million FIM (330 million USD) is the main financing organization for applied and industrial R&D.

Finnish high-tech exports amounted to 23 900 million FIM in 1994 (5 100 million USD). They comprise telecommunications equipment, mobile phones, computers, measurement devices and pharmaceuticals.

6.5 LEGAL AND REGULATORY ISSUES

Telehallintokeskus (Telecommunications Administration Centre) is the central authority in Finland to supervise the application of telecommunications regulations. It is organizationally divided into various administrative sections. There is no central authority to supervise electronic mass media.

6.5.1 Data protection (privacy protection) in Finland

General regulations about personal data files and protection of personal data in Finland are included in the law about personal files (Act No. 471/87) and decree about personal files (Decree No. 476/87). Attention has been paid to the principles of data protection stated in the data protection agreement of the European Council (No. 36/92 in Finland). Finland signed the data protection agreement in 1992. In addition, special statutes about registering personal data are included in many other laws and decrees in various fields.

General access to government information

Democracy in Scandinavia is based on freedom of information, and Finland is a well-known supporter of this principle, together with the other Scandinavian countries. Act No. 83/51 in Finland consists of statutes about the publicity of public documents. This law states the general principle of freedom of information as to public documents. This principle means that everyone has the right to get information about the activities of public authority, local or governmental. Public documents mean documents drafted or made out by public authority, also documents sent to or given to or at the disposal of public authority. According to Act No. 83/51 documents can be divided into three

groups: 1) public documents, 2) documents to be kept secret/confidential and 3) documents that are public subject to consideration.

The Act is also valid for documents on computer record that the authorities have at their disposal. Access to information in this case means that the authorities place the relevant equipment at the person's disposal to read, listen to or by other means understand the document. It is also possible for the authorities to give in writing the information in the record to the person asking for it. With the authorities' permission, the information can also be given as a photocopy or by arranging technical access to the computer record where the document is stored.

Many municipal libraries have a special section for administrative documents, agendas and decisions of communal and town councils etc.

Legislative reforms have been initiated by the Ministry of Justice about publicity of documents of public authorities. By reforming legislation about general access to government information and about confidentiality the Ministry of Justice aims at more open administration, by e.g. increasing the publicity of the drafting, preparation and revising of laws, decrees and administrative affairs in general.

6.5.2 Database protection in national copyright legislation

The Copyright Act of Finland (No. 404/61) does not include special regulations about protection of databases. Databases are not separately mentioned in the list of works in paragraph 15 of the Copyright Act. According to the Act, a database is protected as a piece of work, providing that general conditions for protecting a piece of work are valid, i.e. when a piece of work is the genuine and original result of the creative work by the its author.

It is possible for databases that do not fill the requirements for a piece of work, to be protected as lists by particular list protection. In accordance with regulations mentioned in paragraph 49 of the Copyright Act a list is protected against copying if it consists of a vast amount of information. Protection extends to a period of 10 years from the end of the year of producing the list.

Issues of special concern about copyright and electronic databases at present in Finland are briefly mentioned in the following:

* right to reproduce a piece of work, digital copying
* copying for private use
* citation right
* management of rights
* control of distribution and transfer of works
* the concept of publicity (public presentation, showing, reproduction.

6.5.3 Computer-related crime

A total reform of the Penal Code of Finland is under way. Almost all of the amendments to legislation according to the Council of Europe Recommendation R(89)9 on computer-related crime are included in phase I of the reform which entered into force on Jan. 1, 1991. Amendments of phase II of the reform will enter into force on Sept. 1, 1995 (Government Proposal submitted to the Parliament in the spring of 1993).

Computer-related fraud and computer forgery

A provision on *computer fraud* is introduced in chapter 36, section 1 of the Penal Code reformed in 1991. Accordingly, a person who, with the intention of obtaining unlawful financial benefit or harming another, by entering false data into a computer or by otherwise interfering with automatic data processing, falsifies the end result of data processing and in this way causes another person financial loss shall be convicted for fraud. An attempt shall also be punished.

Amendments in chapter 33 of the Penal code state that also a recording suitable for automatic data processing can be an object of *forgery*. The definition of forgery includes the following text: ...prepares a false document of other piece of evidence or falsifies such a document or piece of evidence in order for it to be used as misleading evidence or uses a false or falsified piece of evidence as such evidence...

Damage to computer data or computer programmes, computer sabotage

According to chapter 35, a person who, in order to cause damage to another, unjustifiably destroys, defaces, conceals or hides data recorded on an information device or other recording, shall be convicted to for *damage to property*.

All the forms of *computer sabotage* are punishable as damage to property in accordance with chapter 35. If the data recorded on an information device or another recording is altered in a such a way as cannot be deemed damage to property, the act may be punished according to chapter 28 of the Penal Code, dealing with unauthorized use.

Unjustifiable prevention of the transmission of messages by telecommunications or the radio is punishable according to chapter 38, of the amended Penal Code (Section 5: Interference with communications, Section 6: Aggravated interference with communications, Section 7: Communications violation).

Unauthorized access and unjustified interception

The penalty provisions, already amended and entered into force on Jan 1, 1991, now cover also the unauthorized off-site use of an information system via a telecommunications link (chapter 28).

In phase II of the reform, entering into force on Sept. 1, 1995, section 8 of chapter 38 covers the *unjustifiable entry* into an information system by breaking the security arrangements. Also the mere breaking into the system will be punishable, even if there were no unauthorized use as such. Also the attempt will be punishable.

The entry into an information system is punishable as such, if the object is a personal data file maintained with the assistance of automatic data processing, as defined in the Personal Data File Act of Finland.

Provision in chapter 38, section 8 also cover the unjustified obtainment of information about the contents of a telephone call, telegram, transfer of text, images or data or another comparable form of telecommunications. It is not a prerequisite that the interception be effected by technical means.

Section 8, with the title Breaking into a computer network, states that also a person who, without breaking into an information system or a part thereof, uses a special technical device to unjustifiably obtain information contained in the system shall be convicted for breaking into a computer network.

Unauthorized reproduction or alteration of computer data or computer programmes

In accordance with the amended provisions of the Finnish Copyright Act (No. 34/91) also a computer programme is to be deemed a literary work protected by copyright. Thus also a breach of copyright of a computer programme is punishable as a copyright offence. The punishability covers the unjustified distributionk publication and duplication of a computer programme protected by copyright.

The unauthorized reproduction of a semiconductor product from its legally protected topography is punishable according to the Act on Exclusive Rights to the Topography of a Semiconductor Product (32/91), which entered into force on July 1, 1991.

There are no particular penalty provisions in the Finnish legislation for the alteration of computer data or computer programmes. The provisions dealing with forgery, damage to property, unauthorized use and breaking into a computer network, will fulfill the need for relevant and reasonable. penalties.

Computer espionage, unauthorized use of a computer or computer programme, computer viruses

Chapter 30, section 4, of the Penal Code contain provisions on *industrial espionage*. They state that a person who unjustifiably obtains information regarding the business secret of another e.g. by entering without permission into a closed space prohibited to unauthorized persons or into an information system protected from unauthorized persons, shall be sentenced for industrial espionage to a fine or to imprisonment for at most two years. An attempt also is punishable.

The *unauthorized use of a computer* is to be punished in Finland according to chapter 28 of the Penal Code. Copying of a computer programme is considered duplication of a work protected by an exclusive right. This means that in accordande with the amended Copyright Act the unauthorized use of a computer programme usually entails a copyright offence.

Although Finnish provisions do not mention the distribution of *computer "viruses" or "worms"* as a penalised form of conduct, the provisions in force and proposed already quite extensively cover the most reproachable forms of distribution of computer viruses.

Usually the distribution of computer viruses or worms results in damage to the data stored or to its usefulness, and makes the distributor liable for a punishable act of damage to property according to chapter 35 of the Penal Code. The distribution of a virus may require entry into the information system or unauthorized use of the same, thus being punishable in accordance with chapter 28 of the Penal Code.

7 FURTHER QUALITATIVE ASSESSMENTS

7.1 STRENGTHS AND WEAKNESSES OF SUPPLY AND DEMAND IN THE NATIONAL MARKET

Despite her small population Finland is an internationally advanced country in supplying and using electronic information services. Finland is a higly literate country and a high-technology country with a high-standard educational system. The stable economic and political situation provides good conditions for conducting and supporting high-level research in various applications of modern technology. Finland has a high-quality national packet-switched data communications network facilitating the use of online information systems, and adp knowledge in Finland is at a high international level.

Attitudes towards information technology are favourable both among political authorities and the Government and in the society in general. Information is a traditionally valued factor of production, and there is a high-standard, well developed institutional infrastructure to support the supply and use of electronic information services (cf. the chapters about infrastructure). Common platforms exist for the suppliers, producers and users of online electronic information to facilitate cooperation and discussion about mutually interesting issues.

National and international suppliers of online or offline eletronic information do not compete very intensely with each other, but rather complete each other's supply in Finland. National hosts (about 70) mostly offer national information in Finnish to Finnish customers. Competition, if any, is in the supply of factual information where parallel versions of the same information are offered. The Finns have a good knowledge of languages, especially English, which is the most widely used language in electronic information services. There is not much sense in foreign hosts or database producers entering the Finnish market with a Finnish version of their online databases or information systems. They would have an internationally minor number of users and views of profit would not be very good. Big international suppliers are strong in real-time information services and in offering international information in about any line of science, technology or business information.

7.2 INTERNET AND THE CHANGING SOCIETY

How to prevent a new class society in the Information Age? Information Cooperative Katto-Meny argues there is a danger that information technology becomes a priviledge for the elite, increasing inequality in the society. We should aim at changing the society's structures so as to avoid such a danger. Public libraries, the trunk line of information, would be the most natural channel of combining the traditional and the digital written culture. Libraries also are the best services providers of Internet connections free-of-charge. The first measures have already been taken in some libraries, as well as Internet cafés in Finland.

It is vital to invest in information infrastructure. Public support is necessary for new electronic cultural services via libraries; offering the services free-of-charge will be a guarantee for the equality of citizens in the information society. Information Cooperative Katto-Meny (abbreviated from the Finnish name Kansalaisjärjestöjen TietoToimisto and the Swedish name Medborgarorganisationernas Nyhetsbyrå) is a Finnish citizens' organization with 80 organizations as members. They are organizations engaged in various electronic cultural activities, e.g. literature, arts, cinema, publishing houses and magazines.

We live in a transition period; the beginning of a network society can be compared to the beginning of the cooperative movement. Mr. Böök calls for citizens and cooperatives to be active in bringing information technology to large circles in our society. The Government of Finland and the ministries have already taken measures on the set course.

7.3 VISIONS OF COMMUNICATIONS

7.3.1 General

The driving force behind the media is people’s needs, whether for information, experiences (entertainment) or advertising. The liberalization of competition boosts the need for advertising; the increase in leisure the need for entertainment and the ever more complex and technical world in which we live the need for information. Advances in communications frequently depend on the ways in which these often overlapping needs are satisfied. Of particular interest is the combination of information and entertainment, or ‘edutainment’, a process that makes learning fun.

In real terms, Finnish mass media grew one-and-a-half fold in the 1980s; it accounts for about 3% of GDP. The printed media dominated this figure with a share of over 73%, and yet the 1980s will be remembered as the decade of expansion in electronic and recorded media.

Finland is a global leader in printed media. This country's printing industry accounts for around 3% of GDP, whereas the average for western Europe as a whole is 1 - 2%.

The dominant media have maintained their position well. Electronic and printed media both have their advantages, but present consumer patterns can be expected to change more drastically than they would have in earlier generations.

Literacy stands at over 99% in Finland. Newsprint consumption amounted to about 45 kg per person in 1990. Newspapers, almost invariably ordered by subscription and delivered to homes early in the morning, are read by 96% of Finns every day; television is watched by 72%. Measured in money terms, private consumer expenditure is increasing but the proportion of the media relative to total expenditure is declining. The Research Institute of the Finnish Economy (ETLA) expects annual growth of 2% in consumer electronics by 1998. In the USA the average household spends around USD 915 on the media, telephones included, every year. In 1990, Finnish households spent some FIM 4400 on the media, telephones excluded (table 40); with telephones, the figure would have been almost the same as that for the USA. - Talb 39 shows patterns of consumption of printing products in Finland and in industrial countries as a whole.

Table 39. Consumption of printing products in Finland (Joukkoviestintätilasto 1993, p. 31, table 1).

	Value in Finland	*Typical value in industrial countries*
Newspapers		
- circulation/1000 inhabitants	521	200 - 350
Magazines & periodicals		
- circulation/1000 inhabitants	2 500	600 - 2 000
Books		
- titles/10 000 inhabitants	20	8 - 15
Time spent on reading (minutes per day)		
- newspapers	40	30 - 45
- magazines	40	15 - 30
- books	25	20 - 35

Table 40. Expenditure on the media in Finland in 1990 according to Statistics Finland (Siivonen & Antikainen 1995. Viestinnän visiot, p. 14, table 8).

	FIM/household	*%*
Books	516	11,7
Newspapers, magazines and other printed material	1 780	40,4
Electronic media total	1 158	26,3
Recorded media total	954	21,6
Consumer expenditure on media, total	4 408	100,0
Proportion of consumer expenditure		3,8

Electronic media equipment

Printed media can be used without equipment; electronic media cannot. In 1993, more than 90% of households had a colour TV, but only just over 20% a PC. Purchases of colour TVs amount to over FIM 500 million a year; that is more than 200 000 sets. The number of video recorders sold exceeds 100 000, making for a total value of FIM 400 - 500 million. PCs have been on the market for 10 years or so; in 1990 sales totalled FIM 300 million, but in 1992 only FIM 113 million. A booming economy rapidly increases sales of PCs. A CD-ROM drive will soon be a standard fixture as will a modem. There are 600 000 - 700 000 Pcs in which CD-ROM drives could be installed. At present there are over 20 000 CD-ROM drives, but in a few years' time this figure will probably have risen to 100 000.

7.3.2 Prospects in Finland

7.3.2.1 General

The operating parties in the information industry - the media and the electronics and data transmission industries - are on the lookout for national and international cooperation and strategic alliances. It is several years now since publishers, Telecom Finland and the regional telecommunication company set up cable TV and videotex in Finland. With the emergence of network publishing and the opening of the CD-ROM markets publishers will surely be seeking even more extensive cooperation with the electronics and data transmission sectors. It is important that national interests should be retained on markets in this cooperation.

The growth in electronic media is influenced by the widespread use of computers and CD-ROMs and the introduction of broadband communications networks to homes and work places, but also by conventions and consumer acceptance. Despite the possibility of a certain polarization, consumption patterns are not likely to change very rapidly. There are signs that people are dividing into two main groups as far as the media are concerned: those who read printed material and those who read on screen.

In table 41, Timo Siivonen and Hannele Antikainen, two researchers in graphic arts technology at the Technical Research Centre of Finland, present their subjective view of future trend in the printed media and a cautious prognosis for electronic publishing in 2000. Their figures are based on recovery of the economy but also on the improbability of a boom such as that of the 1980s. In their opinion, the printed media have almost reached saturation point, and the figures for growth in the traditional publishing markets and the proportion of electronic media are expected to be lower than in the CEC table for all Europe (table 42).

Table 41. Publishing markets in Finland in 1993 and forecast for 2000 (Siivonen & Antikainen 1995. Viestinnän visiot, p. 35, table 17).

	Traditional publishing		*Potential of electronic publishing in 2000*	
	1993	*2000*		
	(FIM million)		*(%)*	*(million FIM)*
Books	1 930	2 200	4-12	180
Magazines & periodicals	2 670	3 000	4-12	240
Newspapers	4 820	5 100	1-3	100
Printed advertising material	1 450	2 000	4-12	160
Total:	10 870	12 300	1-12	680

Newspapers include local papers and free sheets.

Table 42. Publishing markets in Europe in 1992 and forecast for 2000 (CEC) (Siivonen & Antikainen 1995. Viestinnän visiot, p. 30, table 13).

	Traditional publishing		*Potential of electronic publishing in 2000*	
	1992 (MECU)	*2000 (MECU)*	*(%)*	*(MECU)*
Books	18 500	27 200	8-18	3 480
Magazines & periodicals	22 000	32 500	5-15	3 250
Newspapers	25 000	37 000	5-10	2 775
Company publications	10 000	15 000	10-25	2 625
Total:	75 700	111 700	6,5-15	12 130

According to this prognosis, by 2000 Finland will have 300 000 or more CD-ROM drives. If an average 300 000 CD-ROM-drive owners spend FIM 500 on CD-ROMs, this will amount to a turnover of FIM 150 million. In addition, households will probably spend even more on CD-ROM games than on CD-ROM books, which will push total sales of CD-ROMs even higher. At the same time the price of disks will probably come down. A used CD-ROM market is foreseeable, implying a slight decline in sales of new disks.

Small-scale publishers may publish books on ordinary computer diskettes, too, or store books in data networks. Organizing profitable network publishing is a problem that will have to be tackled at some point. The copyright and compensation rules for audiovisual material will also have to be worked out.

7.3.2.2 The press

Largely thanks to their early delivery, newspapers enjoy a strong position on the Finnish reader market. Nevertheless, the day will come when network services will augment or even supplant newspapers, but not before 2010 at the earliest. With the spread of broadband technology, the daily paper may end up as a fully electronic medium.

Finland has almost as many newspapers as it can handle; local papers and free sheets included, turnover in 2000 is expected to be around FIM 5000 million. The turnover of electronic papers will hardly increase to hundreds of millions of marks by the end of the present decade. The CD-ROM presents no threat to the daily paper.

Publishers of magazines and periodicals will probably use computer and CD-ROMs as ancillary products of the printed newspaper. The turnover of network and CD-ROM versions is currently, however, marginally, small. Services are primarily used by special groups only, not the general public. General interest magazines and a few speciality ones (e.g. interior decorating and fashion magazines) can be expected to continue in printed form long into the 21st century, whereas, many specialist and professional magazines will, like scientific journals, increasingly be found on CD-ROMs and networks.

7.3.2.3 Internet

The speed of the Internet makes it an important data transmission channel, as it enables advertisers and writers to bypass current media and publishers and to transmit their messages or works direct to the target groups cheaply and rapidly. Charges for the services will, however, probably restrict its use. Finland's information industry is nevertheless going to find new players on its court.

By the year 2000 the present division of the media into graphic, and electronic and recorded sectors will no longer be justified. Network publishing and paper publishing are different branches of the same tree. Organizing the production and marketing of its content and the profitability of operations will be left to publishers. Growth in demand for the printed word is, however, a matter of life and death for printers.

8 PREVIOUS FINNISH SURVEYS AND PRESENT CONCLUSIONS

8.1 PREVIOUS SURVEYS ABOUT THE USE OF ONLINE INFORMATION SERVICES IN FINLAND

The use of online information services in Finland has been surveyd five times, covering the years 1978, 1980, 1983, 1985 and 1989. All these user studies were sponsored by the Finnish Council for Scientific Information and Research Libraries (TINFO, Tieteellisen informoinnin neuvosto) and were performed a the Information Service of the Technical Research Centre of Finland (VTT).

In the survey about 1989, an extensive questionnaire was sent to all the information services in Finland and by the major Finnish hosts and network services to their customers. Altogether 1186 responses were received, out of which 704 came from active users, 180 from users who had access to online services but had not used them in 1989, and 302 responses from non-users. The number of responses had almost tripled since the survey in 1985.

The usage of online services in 1989 was measured both in connect hours and in expenditures. On the basis of the responses and by applying the 75-25 rule the total user population (organizations and information service units) in Finland was estimated to have been almost 3 000; they used altogether 73 000 connect hours in 1989. Out of this usage 78% was for domestic services and 22% for foreign services. The total cost of the online usage was estimated to have been 22 million FIM (cf. table 43).

The greatest number of the connect hours in 1989 was used by the governmental sector (38%), universities and other academic institutions (27%) and by large industrial companies (16%). If measured by expenditures, the most active user groups were the large companies (47%), universities (29%) and research institutions (10%). The majority of the users (40%) was located in Helsinki and its surrounding areas.

The growth rate of the use of online services in Finland was still very strong but had slowed down since the survey in 1985. Until 1985, the growth rate was exponential doubling in about two years, but since that it had turned to be more linear. The

comparision to Sweden and the United States revealed that per capita the hourly usage in Finland in 1989 was on the same level as in the U.S and somewhat larger than in Sweden. In expenditures, the usage in the U.S. was about twice as much as in Finland.

Table 43. The usage of online services in Finland 1978 - 1989 (Eskola & Lehti 1990).

Year	*Number of user organizations*	*Total connect hours*	*Expenditures (million FIM)*
1978	42	1 900	0,7
1980	80	4 600	2,1
1983	400	16 000	5,4
1985	1 000	37 000	9,6
1989	3 000	73 000	22

8.2 BACKGROUND INFORMATION ON THE PRESENT SURVEY

MSSTUDY Finland was part of a multinational study for assessing the situation of the markets for electronic information services for professional purposes in 1994 in the member states of the European Economic Area (MSSTUDY), covering 17 countries and initiated under the European Commission's IMPACT 2 -programme. The main level of the study was the macro level. The main objective, according to IMPACT 2 and its Information Market Observatory (IMO), was to identify the strengths and weaknesses of existing electronic information services in the EU and to stimulate and reinforce the competitive capability of European suppliers of electronic information services.

The study was done in the participating countries during the year 1995, according to a common manual and a pre-survey made a year earlier by the coordinating committee of MSSTUDY. The scope and depth of the study varied in each country, according to the contract the country made with the European Commission. The same questionnaires about supply and demand were used in each country in the quantitative part of the study, to get an overview of the size, structure and dynamics of the national markets for electronic information services. In addition to quantitative and qualitative study of the markets, the participants were to cover the relating various infrastructure sectors. No common agreement could be reached about the depth and intensity of the infrastructure

side of the study and each country was free to cover the sections considered the most important for the national markets.

The participating countries delivered their national reports to the European Commission by November, 1995. The coordinating group of the study was to aggregate the results into a pan-European report about the markets for electronic information services for professional purposes in ETA countries.

8.3 FINLAND

Suppliers were the only compulsory group to be covered by each country by quantitative means. In addition to her original contract, Finland also chose to study different groups on the demand side. No overall conclusions about the supply side could be made, based alone on the questionnaires filled in by the respondents. All the numbers given in the report about the overall markets for electronic information services in Finland are estimates made by the author, by supplementing the information from the questionnaires with further qualitative study from printed sources and in discussions with experts in Finland.

The scene is changing rapidly with new technology and applications in telecommunications, data transmission, hardware and software. Government measures and national information policy and strategie support the development of the infrastructure related to electronic information services, and the emerging information society. Hosts and producers contribute to changes in the contents of electronic information as well as the channels via which it is accessed.

It was, however, possible to give a rough estimate about the markets for electronic information services in Finland in 1994. The figures are partly based on responses to the supply side questionnaires - although the overall response rate was only 29% - and partly on other printed sources and opinions of experts. Internet connections are supplied on a commercial basis as well as, for a large part, on a not-commercial basis. Turnover numbers then must be very rough estimates. The same also applies to a certain part of e-mail supply. Besides, suppliers of e-mail services and Internet connections often are the same organizations and it is not always possible to make a strict difference between the two services.

Estimates presented in table 44 *do not include* international supply of retrospective online information services (Dialog, STN International, ESA-IRS, Data-Star, Questel/Orbit or others). The table does include an estimate about the international supply of real-time information services in Finland, and partly of credit information. To come to an overall market estimate, the above figures must be completed with information about international supply.

Information about demand concerns only the target groups selected for the survey. No overall conclusions have been made. Based on the latest previous demand survey in Finland (usage in hours and expenditure) from 1989, and considering the rapid development in the field, Finland can still be considered one of the most advanced countries in the world in using electronic information services.

Table 44. Estimate of the markets for electronic information services for professional purposes in Finland in 1994.

	Million FIM	*Million ECU*
Hosts of retrospective online information services (international supply excluded)	70	11
Hosts of credit information	85	14
Real-time information services, financial and news	200 to 220	32 to 35
Audiotex services for professional purposes (*)	195	31
Telematic information networks	45 to 55	7 to 9
Electronic mail services	45 to 50	7 to 8
Internet connections	10	1 to 2
CD-ROMs	11	2
Further optical and magnetic information media	5,5 to 6	0,9
Total:	666 to 702	106 to 113

(* Audiotex services altogether: 375 60)

Further qualitative assessments about the various infrastructure sections are given in the corresponding chapters and in the executive summary.

8.4 PRELIMINARY COMPARISONS ABOUT EUROPE

A European report about the markets for electronic information services for professional purposes will be published the Commission at the end of April, 1996. The coordinating group of the multinational study measures the following main entities (estimates) for the European Economic Area (EEA) as a whole and for each participating country: *A = total expenditure in the country for electronic information services (EIS) = total market; B = worldwide revenues of domestic suppliers; C = exports (= revenues of domestic suppliers in foreign countries); D = imports (revenues of foreign suppliers in the country). The total market will thus be A = B - C + D.*

Some preliminary figures (table 45) may be given about the total market in Europe and in Finland. The total European market in the EEA countries is estimated at about 4 034,9 million ECU. The United Kingdom is estimated to have a 29,1% market share of the total market, Finland a 2,9% market share.

Table 45. Preliminary data about the markets for electronic information services (EIS) in the European Economic Area (EEA) in 1994: revenues (turnover) and market share (MSSTUDY workshop in Luxembourg on Dec. 13, 1995).

Region/country	*Revenues in million ECU (MECU)*	*European market share in %*
EEA	4 034,9	100
United Kingdom	1 174	29,1
Denmark	211,6	5,2
Norway	133,6	3,3
Sweden	128,8	3,2
Finland	116,7	2,9

Preliminary data about the total EIS expenditure in relation to the inhabitants (in ECU) and about the total EIS in relation to GDP (‰) given in table 46.

Table 46. Preliminary data about the markets for electronic information services (EIS) in the European Economic Area (EEA) in 1994: main indicators (MSSTUDY workshop in Luxembourg on Dec. 13, 1995).

Region/country	*Total EIS expenditure in relation to the inhabitants (in ECU)*	*Total EIS in relation to GDP (‰)*
EEA	10,8	0,65
United Kingdom	20,8	1,38
Norway	31,3	1,47
Sweden	15	0,79
Finland	22,9	1,63

Certain facts were specially emphasized in the preliminary overview of the national studies given in the workshop. Finland is No. 2 in the world after Iceland as far as Internet hosts/servers per 1000 inhabitants are concerned, 5% of the whole population of Finland is connected to Internet (200 000 users), half of them for commercial use. Audiotex has a significant share of the markets for electronic information services in Finland. There is a well-functioning network of libraries, and all the most important special and research libraries are also open to the public and act as information brokers in their special fields of knowledge.

According to tables received from the coordinating group of the MSSTUDY via CEC in March, 1996, the total market for EIS for professional purposes (A) in Finland in 1994 was estimated to be 116,7 million ECU (Sweden: 175,9); wordwide revenues of domestic suppliers (B) 99,8 million ECU (Sweden: 123,5); exports (C) 5,7 million ECU (Sweden: 6,1) and imports 22,6 million ECU (Sweden: 58,5). The corresponding figures for all EEA would be: total market for EIS for professional purposes 3 956,8 million ECU, worldwide revenues of domestic suppliers 6 225,5 million ECU, exports 3 471,8 million ECU and imports 1 203,1 million ECU.

EXECUTIVE SUMMARY

GENERAL

MSSTUDY Finland was part of a multinational study for assessing the situation of the markets for electronic information services for professional purposes in 1994 in the member states of the European Economic Area, covering 17 European countries and initiated under the European Commission's IMPACT 2 -programme. This report is a modification of the national report which Finland delivered to CEC in November, 1995.

Finland covered the supply and demand sides of the markets for electronic information services by quantitative means. The supply questionnaire was sent to 147 recipients, a) Finnish database producers and hosts of online information systems, including representatives of foreign hosts, b) suppliers of telematic services and c) audiotex services, d) electronic mail services and Internet connections, and to e) producers or distributors of offline information products, mostly of CD-ROMs. The demand questionnaire was sent to 108 recipients in four target groups, a) information brokers and external information intermediaries and to b) the main scientific and research libraries, acting as information brokers in their special fields; also to c) the main public libraries and d) an industrial group, i.e. intermediaries in the chemical and pharmaceutical industry in Finland. The quantitative surveys were supplemented by qualitative information gathered from various printed sources and in discussions with experts of the branches concerned.

Finland covered the following infrastructure sections related to the markets of electronic information services: library services, printed media infrastructure, professional associations, education and training, research and development, telecommunications infrastructure, computer infrastructure, economic and political infrastructure, national information policy, legal and regulatory issues. The sections were covered up to a varying scope and by means of printed sources and expert opinions. A chapter about future visions of communications is included.

SUPPLY

There are about 70 national online hosts in Finland, and a dozen of them are the major hosts. Almost 40 database producers also act as hosts or vice versa, many online database producers also sell or produce CD-ROMs. Altogether, 147 supply questionnaires were distributed: 107 copies to Finnish hosts and database producers and agencies for foreign hosts, 13 to suppliers of electronic mail and Internet services as well as audiotex services, 22 to producers and distributors of CD-ROM products and 5 to suppliers of telematic open information networks (value-added or kiosk services) or videotex services.

The overall response rate was 29%. Over 45% of the respondents were public institutions, whereas private companies accounted for 36% of the respondents. The response rates of the various groups, based on the Finnish address lists, were the following: hosts and database producers 30%; electronic mail and Internet suppliers 38%; CD-ROM producers or distributors 14%, telematic or videotex services 40%. Most of the representatives of foreign hosts did not answer for Finland alone but referred direct to the headquarters of their parent organization. Foreign hosts, however, play an important part in the market in Finland. Figures presented in the report have to be supplemented with their share in order to come to the final size of the markets in Finland.

It was not possible to draw conclusions from the questionnaires alone about the total market of the supply of electronic information services in Finland in terms of money. Nevertheless, it was possible to work out an estimate about the Finnish market, with supplementary information from printed sources and expert discussions, *not including import, i.e. the share of foreign hosts of retrospective online information systems.*

The size of the markets for electronic information services for professional purposes in Finland in 1994 was estimated to amount to approx. 666 to 702 million FIM (106 to 113 million ECU). The figures comprise the following estimates, *in million FIM (brackets: million ECU)*: a) hosts of retrospective online information services (*international supply excluded*) - 70 million FIM (11 million ECU); b) hosts of credit information services - 85 (14); c) real-time information services, financial and news - 200 to 220 (32 to 35); d) audiotex services for professional purposes - 195 (31); e) telematic information networks - 45 to 55 (7 to 9); f) electronic mail services - 45 to 50 (7 to 8); g) Internet connections - 10 (1 to 2); h) production and distribution of CD-ROMs - 11 (2); i) further optical and magnetic information media - 5,5 to 6 (0,9).

There are both national and international suppliers of *real-time information services* in Finland. It may be estimated that the turnover of the major hosts, international as well as national, for real-time financial and news services supplied in Finland amounts to approx. 200 to 220 million FIM (32 to 35 million ECU).

Summing up: the turnover of domestic suppliers in Finland plus imports (revenues of foreign suppliers in Finland) minus exports (revenues of domestic suppliers in foreign countries) equals to the total market in Finland for electronic information services which is estimated to be 116,7 million ECU in 1994 (according to aggregated figures by the MSSTUDY coordinating group of CEC from March, 1996). The total European market in the EEA countries in 1994 is estimated to amount to 4 034.9 million ECU (revenues with electronic information services in the EEA countries). United Kingdom has a share of 29.1% of the market, Denmark a 5.2% share, Norway 3.3, Sweden 3.2 and Finland 2.9%.

Electronic mail services and Internet connections

Turnover numbers of the supply of *electronic mail services* and *Internet connections* are only rough estimates. Internet connections as well as electronic mail services are supplied on a commercial basis and, for a large part, on a non-commercial basis. The players in the market for electronic mail services consist of both public and private companies as well as many voluntary organizations, pc user groups or associations. The major commercial electronic mail services are provided by big telecommunications operators and computing centres and also by hardware and software suppliers. It is estimated that about 350 000 Finns use electronic mail services. Besides the services on a commercial basis, there are dozens of non-commercial services. FUNET, the academic network of Finnish universities, provides both electronic mail services and Internet connections. Tens of thousands of pupils and teachers use Internet and electronic mail services via Freenet, an educational network project which started in 1993. University students also have access to electronic mail and Internet services. Internet services are provided in four major nationwide networks, those of Telecom Finland, Finnet Group of regional telecommunications companies, Helsinki Telephone Company (HPY) and EUnet Finland. Internet users may be estimated to number about 200 000, 5% of the population of Finland. In July, 1995 there were about 111 000 Internet servers in Finland, a growth rate of 125% from July, 1994. The leading four countries in the world, based on the number of Internet servers/hosts per 1000 inhabitants in July, 1995, were: 1) Iceland - 26,15 Internet servers per 1000 inhabitants; 2) Finland - 22,19; 3) USA - 16,74 and 4) Norway - 15,54 (Statistics from TIEKE, Information Technology Development Centre).

Audiotex services
In spring, 1994 there were about 6300 audiotex telephone numbers, of which 2800 premium-rate services. Two groups of operators supply *audiotex services*, Telecom Finland (about 70% of audiotex service numbers) and the Finnet Group of regional telecommunications companies. In Finland it is not the operators that determine the price that the caller pays, but - in contrary to general practice elsewhere in Europe - the producers of audiotex information who then pay the operators their share of the price. Rather than consider the suppliers' turnover one should talk about the money that consumers spend for audiotex services. According to estimates, the market for audiotex services in Finland in 1994 amounted roughly to 375 million FIM (60 million ECU). Entertainment services account for 180 million FIM (29 million ECU); the remaining 195 million FIM (31,5 million ECU) is spent on other kinds of services, more or less professional.

Value-added telematic information networks
Two major suppliers of *value-added telematic information networks* dominate the market of telematic information services in Finland, Telecom Finland with its *Telesampo* network and the group of regional telecommunications companies with *Infotel*. Both Telesampo and Infotel are menu-based service networks where the user from his computer can access a wider range of services, national and international online databases, videotex services and messaging services, from banking to forums of discussion, from news and weather forecasts to telephone catalogues and marketing channels and entertainment. Telematic services in Finland are *"truly telematic"* by technology, combining the data transmission capacity of telecom networks with the intelligence of computers. Videotex technology is hardly used at all any more in Finland. Over 90% of Telesampo's services are in ASCII form, including banking services. According to TELMO, the Finnish Association for Network Services, 215 000 Finns, i.e. more than 4% of the population, spent 985 000 hours in using telematic information networks in 1994; some 80% of the use via kiosk services where no user ID is necessary. Telematic services were mostly used for banking, over 42% of the minutes spent in the services.

DEMAND

Finland covered the compulsory group of a) information brokers or external information intermediaries (33 questionnaires) and, instead of information intermediaries in banks, three other target groups. They were b) the main scientific, research and special libraries (41), c) the main public libraries (24) and d) intermediaries in the chemical and pharmaceutical industry (10 enterprises). Altogether, 108 demand questionnaires were sent out about the use of electronic information services for professional purposes. Potential users were not surveyed. - The overall response rate was about 36%. Response rates in the four target groups varied, and not all of the respondents answered all the questions. - *Based on the responses, no overall conclusions can be made*, but information gathered from the various target groups only refers to that specific responding group's demand. Based on a previous demand survey (usage and expenditure of online information systems in Finland) from the late 1980's and considering the rapid development in the field, Finland can still be regarded as one of the leading countries in the world in using electronic information services.

Information brokers
There is only a minor number of private information brokering firms in Finland, and their revenues, if any, are of no significance. Most of the brokers are public organizations, big scientific, research or special libraries with information service units. Some branch organizations or industry federations also act as information brokers and intermediaries for their members, e.g.

in the pulp and paper and food industry. The 33 questionnaires sent out to brokers also included 13 scientific or research libraries that can be categorized as brokers, too.

Information intermediaries in the industrial target group
The target group of enterprises in the chemical and pharmaceutical industry chosen for the demand survey represents users and information intermediaries traditionally active, pioneers and some of the most active users of online information in Finland. The major companies in the branch have long established information service units or departments of their own. A total number of 10 participants were chosen for the survey, nine major companies with their own information intermediaries and a branch federation.

Scientific and research libraries
Finland has a very well organized network of libraries, both public and scientific. The major scientific, research and special libraries also act as information brokers so they were a natural choice for the demand side survey. The Guidebook to scientific libraries in Finland 1993 (Suomen tieteellisten kirjastojen opas 1993) lists almost 800 scientific, research or special libraries. A decision was made to send the demand questionnaire to libraries which participate in the annual research library statistics (Tieteellisten kirjastojen yhteistilasto, Union statistics of research libraries) for the Ministry of Education. They numbered 47 in the year 1993, 20 of them academic (university) libraries and the remaining 27 other kinds of research or special libraries.
The number of scientific, research and other special libraries in the address list for the survey originally amounted to 54. Since twelve of them also belonged to the list of information brokers and one to the industrial target group, the remaining total was 41 libraries.

Public libraries
Among the network of public libraries, the 18 district libraries, greater in size and importance and corresponding to the central libraries elsewhere, were chosen for the demand side survey. The questionnaire was also sent to Helsinki City Library (National Central Library of the public libraries) and a few other major municipal libraries, together with those public libraries that until March, 1995 had published their own World-Wide Web pages. The final number of participating libraries was 24.

INFRASTRUCTURE

Library services
All Finnish libraries and information service units with their holdings and services, open for public use, belong to a closely-knit, well-functioning library network. It consists of central research libraries, district libraries (regional central libraries), other regional, central and research libraries, information service units in firms, archives and, to a certain extent, also of museums. Library holdings altogether consist of more than 54 million volumes of books and serials, and of an increasing amount of audiovisual and micro-fiche material and computer records. Due to the general economic depression in Finland, public funding of research libraries has been reduced in the past few years, compelling most libraries to rationalizing measures.

All of the most important *scientific and research libraries* are open to the public and act as information brokers in their special fields of knowledge. Helsinki University Library is the National library of Finland, and Helsinki City Library is the National central library for public libraries. The national coverage of Finland's scientific libraries is the highest in the world. University libraries set up the main part of the almost 800 scientific, research and special libraries of Finland. The Union statistics of Finnish research libraries consists of 20 academic

library organizations and 27 other special libraries. The total number of library units participating in the Union statistics in 1993 was 514. The information system LINNEA connects about 800 scientific library units, and the MANDA system serves public libraries. All local systems are inter-conntected, and national databases serve all users.

Public municipal libraries in Finland form an internationally excellent network of information providers. In 1994 Finland housed 998 main and local municipal libraries. Volumes in public libraries totalled over 39 million issues, of which 36 million books. Of the five million Finns about two thirds use library services regularly and 49% have a library card. The average annual number of loans per inhabitant was 20,2. There are 29 clusters of 131 municipalities engaged in the joint use of automated data processing for libraries. In the spring of 1994, 68% of the municipalities had in use or were about to use computerized library systems. Helsinki City Library is the first public library in the world to have established a WWW server for a pilot project. About 50 libraries already have access or plan to have access to Internet.

Printed media infrastructure

Mass media total turnover in Finland in 1994 amounted to 16 billion FIM (2.6 billion ECU). *Print media* accounted for 75% of the total, about 12 billion FIM (1.9 billion ECU). Mass media's share of the total workforce has remained constant since the early 1980's, at about 2%. Print media companies are the biggest employers in the branch. The *Finnish Association of Publishers* had 66 members in 1994. Members of the association annually publish about half of the new titles in Finland. The seven major publishers account for 70% of the total sales of the member companies (total sales in 1992: 1244 million FIM = 200 million ECU). They published half of the new titles in 1994 and about 77% of the new editions. Besides bookshops and book wholesalers, book clubs (mostly owned by the big publishers) are an important feature in book-trade in Finland. The major bookstore chains, Suomalainen Kirjakauppa and Akateeminen kirjakauppa, also sell CD-ROMs. Suomalainen Kirjakauppa (also an agency for FT Profile) belongs to Rautakirja Group which is engaged in many kinds of media, including wholesale distribution of videos, cinema theatres and retail sales of mass media products.

Magazines and periodicals accounted for 18% (2670 million FIM) of mass media total turnover in 1993. About 2500 different magazines and periodicals are published regularly in Finland. There are four major publishers. *Newspapers* accounted for 31% of mass media total turnover in 1993. In 1994, 190 publishers with 225 newspaper titles (57 dailies) were affiliated to the *Finnish Newspaper Publishers' Association*. In 1995, the members consist of 227 newspapers and two cable television and videotex companies. The aggregate circulation of newspapers in 1994 was 3,5 million copies. More than half of the total circulation of dailies is delivered through the papers' own or joint distribution networks, early in the morning to the subscribers' homes. Six newspapers had a circulation of over 100 000 copies in 1994.

Traditional publishing houses, small hypermedia companies and newspaper publishers are engaged in *electronic publishing*. There are more than ten small hypermedia or multimedia companies which offer tailor-made products for customers. Up to the end of 1994 some 20 CD-ROM discs had been produced in Finland. The total number of CD-ROM drives was 30 000 pcs, not including game and toy players. There are about 30 WWW magazines in Finland.

Professional associations

There are three major associations in the information service and library branch in Finland, active in education, training and international cooperation. They are the *Finnish Research Library Assocation* (Suomen tieteellinen kirjastoseura), the *Finnish Society for Information Services* (Tietopalveluseura) and the *Finnish Library Association* (Suomen kirjastoseura). The Finnish Society for Information Services has established and for many years administered a

further education programme for people with academic background who want to specialize in information management and information services. Since 1968, more than 700 specilists have graduated from the one-year programme which is at present administered by the Centre of Continuing Education at Helsinki University of Technology.

Three major associations promote the cooperation of industry, public administration and users in information technology and data transmission. They are the *Information Technology Development Centre* (Tietotekniikan kehittämiskeskus, TIEKE), the *Finnish Association for Network Services* (TELMO) and the *Finnish Data Communication Association* (Suomen tiedonsiirtoyhdistys, STY). The *Finnish Information Processing Association* (Tietotekniikan liitto) is an independent umbrella organization of associations in information processing (eight member associations with 12000 members and 500 institutional members). The *Finnish Computing Services Association* (Tietojenkäsittelyn Palveluyritysten Liitto, TIPAL) is the branch organization of 120 member companies that represent 80% of the total Finnish market for computing and professional services and software products.

Education and training

Library and information science is taught in three universities in Finland, in Tampere, Oulu and Turku (Åbo Akademi, education in Swedish). The total number of graduate students is about 335, and of post-graduate students about 40. Professional training is given in the centres for continuing education of the three universities for persons already working in the field. Education in library and information skills is also given in five business polytechnics and three business colleges. Basic library and information skills are taught in every school. There are more than 4100 comprehensive schools for primary education, and over 470 secondary schools in Finland.

Research and development

Research of academic level in information science and information services in Finland is done at the universities of Tampere, Oulu, Jyväskylä and Turku (Åbo Akademi). More professional level of R & D work is done at VTT Information Service, Nokia Reseach Centre, the Technical University of Helsinki, Information Technology Development Center (TIEKE) and the Finnish Association for Network Services (TELMO). Central R & D areas are networked information, electronic publishing, user needs, information retrieval, document management, international standards for electronic documents, and socio-economic issues.

Telecommunications infrastructure

In 1993 the GNP of transport and communications amounted to 39100 million FIM, contributing with 9,4% to the total for the nation. The value of telecommunications was 6158 million FIM.
In 1994 public telecommunications operations were conducted by State-owned Telecom Finland, 48 telecommunications companies, the Finnish Broadcasting Company YLE and five other organizations. Telecom Finland and Finnet Group of regional telecom companies are roughly equally large in turnover, about 5 billion FIM both. Internationally Finland is a leader in telecommunications services, a few years ahead of other EU countries. The turnover of Finland's telecommunications will total 12 billion FIM in 1995 and is expected to rise to 15 billion FIM by 2000. The brisk pace of investments in the field continues, with 3 billion FIM being invested in 1995. - In 1994 the total number of network terminals in data transmission networks in Finland was 11223 pcs. There were 2587 teleprinters and 124000 telefax machines in use in Finland in 1994. - Finland is one of the three leading countries in the world in relation of mobile phones per 100 inhabitants. In 1994 the rate of mobile phones per 100 inhabitants was 13,24 in Finland (16,5 in Sweden).
The full force of competition in telecommunications hit Finland in early 1994. At least two alternative domestic carriers are available all over the country and there are three independent long-distance operators. In Finland, the market share of the biggest domestic carrier is around

55%, very different from the other EU countries. Data transmission charges are lower in Finland than anywhere else in the world.

Computer infrastructure
About 630 000 people of the work force of 2 million Finns use computers or computing services at work. There are 120 member companies at the Finnish Computing Services Association, accounting for about 80% of the total Finnish market for computing and professional services, software and hardware products. The total turnover of the member companies in 1993 was more than FIM 7000 million, with a growth rate of 6,4%. The member companies employ about 8500 persons. The value of microcomputer production in Finland in 1994 was about 4,5 billion FIM. It is estimated that the growth rate in 1994 was 22%. The two biggest manufacturers account for almost FIM 3,5 billion of the total turnover. At the end of 1993 about 21,5% of Finnish households had a microcomputer, at the end of 1994 as many as 26%. There are about 30 micromputers per 100 inhabitants in the United States, in Finland and Sweden about 15 microcomputers per 100 inhabitants.

National information policy
A report commissioned and approved by the Ministry of Finance outlines a national strategy, Finland Towards the Information Society, and a position paper outlined by the Cabinet Office on relevant measures was approved by the Government of Finland on 18 Janury. Information technology is an essential competitive factor for products and production, and a networked economy provides a real opportunity for Finland. The objective of the national strategy is to gain and maintain a competitive edge withing the world economy and to help solve domestic economic problems. Finland's information society strategy is based on three main elements: 1) renewal into an information society, 2) development of information industry and 3) assurance of necessary conditions, research, knowhow and development of IT infrastructure. The following vision was created: a) Finland is an advanced information society based on networking, b) Finland is a world class competitor in the implementation of information and communications technology. The role of government is to provide a favourable framework for building the information socity. The strategy outlines national guidelines and priority recommendations as well as governmental activities.

Economic and political infrastructure
Finland measures 38 000 sq km and has about 5 million inhabitants, with an average population density of 16,6 per square kilometre. The Gross Domestic Product (GDP, in purchasers' values) of Finland in 1994 was FIM 511 600 million, with a growth rate of 3,9% compared to the previous year. In 1995, the growth rate was predicted to be about 5%. From 1950 to 1993 the average annual growth rate of GDP has been 3,6%. Finland's national income in nominal terms grew by 9,5% in 1994. National income per capita amounted to FIM 79 240. The inflation rate in 1994 remained exceptionally low, at 1,1%. The unemployment rate in relation to the total work force in Finland reached the top figures of 18,4% in 1994, with an average of 456 000 people unemployed. It was predicted that he rate of unemployment in 1995 would be 16,5%, which still means an average of 400 000 Finns unemployed.

R&D expenditure
In 1994, Finland's exports amounted to 154 000 million FIM (32 000 million USD). During the past 10 years Finland has shown a higher growth rate in exports of high-technology products than any other country in Europe. Finnish high-tech exports amounted to 23 900 million FIM in 1994 (5100 million USD), comprising telecommunications equipment, mobile phones, computers, measurement devices and pharmaceuticals. Finland's economy is growing a third "leg", that of electronics, in addition to a wooden and a metal leg. Finnish R&D expenditure has risen from

1.3% of GNP in 1983 to 2.2% in 1993. The share of high-tech exports has risen to 16% of the total exports of Finland, compared to a share of 4% in 1980.

Legal and regulatory issues

Telehallintokeskus (Telecommunications Administration Centre) is the central authority in Finland that supervises the application of telecommunications regulations. There is no central authority to supervise electronic mass media.

General regulations about personal data files and protection of personal data in Finland are included in the law about personal files (Act No. 471/87) and decree No. 476/87. In addition, special statues about registering personal data are included in many other laws and decrees in various fields. Act No. 83/51 in Finland states the general principle of freedom of information as to public documents. Accordingly, everyone has the right to get information about the activities of public authorities, local or governmental. The act is also valid for documents on computer record that the authorities have at their disposal.

Copyright law (Act. No. 404/61) in Finland does not separately mention electronic databases. They are protected as performances of creative work by the copyright law or under separate cover for catalogues. Amendments to the Copyright Act (No. 34/91) also cover unauthorised reproduction of a protected computer programme. Amendments of phase I of the total reform of the Penal Code of Finland entered into force on Jan 1, 1991, amendments of phase II on Sept. 1, 1995. Computer fraud, computer forgery, datage to computer data or computer programmes and computer sabotage will all be included in the amendments of the various chapters of the Penal Code. The penalty provisions also cover unauthorised entry into and off-site use of an information system via a telecommunications link.

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ANNEX 1

SUPPLY: QUESTIONNAIRE ABOUT THE SUPPLY OF ELECTRONIC INFORMATION SERVICES FOR PROFESSIONAL PURPOSES IN FINLAND IN 1994

A Study for the Commission of the European Union

The Supply of Electronic Information Services for Professional Purposes in Finland in 1994

Strictly Confidential

This survey is carried out with the Support of the European Commission. Similar studies will be carried out in the whole European Economic Area.

Reference Period: 1st January 1994 - 31st December 1994

This questionnaire has been developed for suppliers.

Please answer all the questions as fully as possible. Definitions to this survey are given on the back page of the questionnaire. For further assistance please contact us.

Note: Please give all money figures in national currency, FIM (net of any sales or turnover tax, where applicable) for the reference period.

Please return this questionnaire when completed to

Contact Person:	Merja Lehti
Institute:	VTT Tietopalvelu
Address:	PL 2000 02044 VTT
Telephone:	(90) 456 4382
Fax:	(90) 456 4374

Palautus 20.5.1995 mennessä.

EU: STUDY FOR ASSESSING THE MARKET FOR ELECTRONIC INFORMATION SERVICES FOR PROFESSIONAL PURPOSES IN THE EUROPEAN ECONOMIC AREA IN 1994

THE SUPPLY OF ELECTRONIC INFORMATION SERVICES FOR PROFESSIONAL PURPOSES IN FINLAND IN 1994

Tarjontaa koskeva kyselylomake

Kysymysryhmät:

1. Tiedot vastaajaorganisaatiosta
- Huom. jaottelu organisaatiotyypin mukaan: yksityiset yritykset, valtionyhtiöt, julkiset organisaatiot (esim. korkeakoulut ja muut oppilaitokset), puolijulkiset organisaatiot (esim. kauppakamarit)

2. Toiminnan laji
- suorakäyttöisten tietopalvelujärjestelmien tarjoajien (hosts) lisäksi mukaan otetaan näiden järjestelmien edustajat Suomessa

3. Henkilökunta
- määrät laskettuna kokopäiväisiksi työntekijöiksi

4. Kokonaisliikevaihto kalenterivuonna 1994
- julkisrahoitteisissa organisaatioissa sisältää myös julkisen rahoituksen osuuden

5. Liikevaihdon maantieteellinen jakauma kalenterivuonna 1994

6. Liikevaihdon jakauma tuotteittain ja palveluittain kalenterivuonna 1994

7. Liikevaihto aloittain vuonna 1994

8. Liikevaihto käyttäjäryhmittäin 1994

9. Online-käyttäjien määrä 1994

10. CD-ROM-levyjen myynti 1994

11. Kannattavuus vuonna 1994

12. Kustannukset

13. Outsourcing
- mitä tehtäviä tehtiin itse, mitä teetettiin oman organisaation ulkopuolella

Käsitteiden määritelmiä

The Questionnaire

1. Details of Organisation (Status 1994)

Name of your organisation:

.....

Principal activity of the organisation:

.....

Contact person:

.....

Address:

.....

.....

Telephone:
.....

Fax number:

.....

E-Mail address:

.....

Name of parent organisation:

.....

Names of subsidiaries or branches included in the answers to this questionnaire:

.....

.....

Legal status of your organisation:

( ) private company (yksityinen yritys
( ) public company (valtionyhtiö)
( ) public institution (julkishallinnon organisaatio, esim. korkeakoulu)
( ) semi-public institution (esim. kauppakamari)

2. Types of Activity

2.1 *Please indicate in which of the following categories you would classify your organisation* (for guidance, definitions are given on the back page of this questionnaire). Tick as many boxes as apply.

( ) *Database Producers*

Online Distributors

( ) Retrospective online database services
( ) Real-time information services/hosts: financial information
( ) Real-time information services/hosts: other information, especially political and general news
( ) Videotex services suppliers
( ) Audiotex services suppliers
( ) Electronic-Mail (E-Mail) services suppliers
( ) Information services delivered via the Internet
( ) Other online services - please specify
.....
.....

.

Offline Distributors

( ) CD-ROM distributors
( ) Distributors of other offline services - please specify:
.....
.....

( ) *Other Information Services* - please specify:
.....
.....

Definitions: see back page of the questionnaire

3. Staff

Number of staff employed in the calendar year 1994 (full-time equivalents) in the following categories

Absolute figures

..... *3.1* *Total* (including departments that are not related to electronic information services, e.g. print products)

..... *3.2* *Staff in the departments related to electronic information services*

3.3 *Staff by Functions*

Please break down the staff related to electronic information services according to the following functions:

In %

..... Management / administration
..... Sales / marketing
..... Data gathering / editorial
..... Technical
..... Other - please specify:
.....
.....
100 % Total
=========

4. Total Income in the Calendar year 1994 (kokonaisliikevaihto)

(ks. selitystä lomakkeen sivulla 2)

FIM

..... *4.1* *Your total income in all countries of the world*

In %

..... *4.2* *What was your growth rate in total income between 1993 / 1994?*

4.3 *Please break down your total income according to the following categories*

FIM

..... Market income (revenues / turnover)
..... Public subsidies
..... Other income
Please specify: .....

In %

..... *4.4* *What was your growth rate in market income (revenues) between 1993 and 1994*

5. Market Income (Revenues) by Geographic Distribution (1994)

Please break down your market income (revenues) according to the following categories:

In %

..... In your country
..... Other countries of the European Economic Area (EU and EFTA)
..... North America
..... Rest of the world
.....
100 % Total
=========

6. Market Income (Revenues) by Types of Services and Products (1994)

Please break down your market income (revenues) according to the following categories:

6.1 Electronic and Non-Electronic Services (Print Media)

In %

..... Electronic information services for professional purposes
..... Printed products

.....
100 % Total
=========

6.2 Electronic Information Services

Here: Total of all electronic information services = 100 %. If exact figures are not available, please give estimates.

In %

..... Database production
..... Retrospective online database services
..... Real-time information services/hosts (including financial, political and general news)
..... Videotex services
..... Audiotex services
..... Electronic-Mail (E-Mail) services
..... Fax-based information services
..... Further online services - please specify:
.....
.....
..... CD-ROM
..... Further optical information media
..... Magnetic information media (discs, tapes, etc.)
..... Document delivery (e.g. SDI services, full-text in printed or electronic form)
..... Information broking, consultancy
..... Training, seminars
..... Hardware and software relating to electronic information services - please specify:
.....

.....
100 % Total
=========

Definitions: see back page of the questionnaire.

6.3 Multimedia

Please estimate your market income (revenues) for multimedia products. If you have no multimedia products, please go on to question 7.

In %of market income

..... Revenues for multimedia products

Please break down your market income for multimedia products according to the following categories (market income for your multimedia products here: 100 %)

Multimedia type 1: text with graphs, tables, pictures
..... Online-services
..... CD-ROM and other pc-driven offline-services

Multimedia type 2: text with audio
..... .Online-services
..... CD-ROM and other pc-driven offline-services

Multimedia type 3: text with video
..... Online-services
..... CD-ROM and other pc-driven offline-services

Multimedia type 4: text with audio and video
..... Online-services
..... CD-ROM and other pc-driven offline-services

.....
100 % Total
=========

7. Market Income (Revenues) by Subject Area (1994)

Please break down your market income (revenues) according to the following categories:

In %

..... Finance / stock exchange / banking
..... Company profiles and credit ratings
..... Further business and economic information
..... Legal information
..... Patent information
..... Scientific / technical / medical information
..... Government information / political news
..... Travel information
..... Other information - please specify:
.....
.....
.....

100 % Total
=========

Definitions: see back page of the questionnaire.

8. Market Income (Revenues) by User Groups (1994)

Please break down your total revenues according to the following categories:

In %

..... Most important user group - please specify: .....
..... Second most important user group - please specify: .....
..... Third most important user group - please specify:
.....
..... Fourth most important user group - please specify: .....
..... Rest - if possible, please specify:
.....
.....
.....

.....
100 % Total
=========

9. Number of online-users (1994) *

Please estimate the number of users in the following categories:

Absolute figures

..... Retrospective online database services
..... Real-time information services/hosts (including financial, political and general news)
..... Videotex services
..... Audiotex services
..... Further online services - please specify:
.....
.....

* Note: Users of real-time should be taken to mean user terminals. Users of *other online* services should be taken to mean *active* passwords (at least once a year in 1994).

If you charge your customers by any other volume criteria, please specify:
.....

10. Sales of CD-ROMs (1994)

Please provide estimates of CD-ROM sales as follows:

Absolute figures

..... Number of titles sold
..... Number of units sold

If possible, break down your number of units sold in

..... Stand alone CD-ROMs
..... CD-ROMs for network use

11. Profitability (1994)

11.1 *Were your activities in the electronic information service sector profitable in 1994?* (profitable = at least total recovery of costs)

YES	NO	
( )	( )	In terms of operating costs only
( )	( )	In terms of full costs

11.2 *If not, when do you except these activities to cover:*

1995	1996	1997	Later or never	
( )	( )	( )	( )	Your operating costs
( )	( )	( )	( )	Your full costs

12. Costs

12.1 *Total Costs*

FIM

..... Your total costs in 1994

12.2 *Breakdown by Types of Costs (1994)*
Please break down your total costs in 1994 according to the following categories

In %

..... Staff costs
..... Investment expenditures - please specify
.....
..... Other costs

.....
100 % Total
=========

12.3 *Breakdown of Costs by Types of Activity*

..... Data gathering / processing / editorial
..... Technical operations
..... Sales / marketing
..... User service, training
..... Other costs - please specify
.....
.....

.....
100 % Total
=========

13. Outsourcing (1994)

Which tasks did you carry out yourself and which were outsourced?

Internal	External	Both	
( )	( )	( )	Data gathering / processing / editorial
( )	( )	( )	Software development and maintenance
( )	( )	( )	Technical operations (e.g. host service)
( )	( )	( )	Public relations
( )	( )	( )	Marketing
( )	( )	( )	Further activities - please specify:

.
.....
.....

Kiitos yhteistyöstä!

Palauta lomake 20.5.1995 mennessä ensimmäisellä sivulla mainittuun osoitteeseen.

ANNEX 2

DEMAND: QUESTIONNAIRE ABOUT THE USE OF ELECTRONIC INFORMATION SERVICES FOR PROFESSIONAL PURPOSES IN FINLAND IN 1994, WITH COVER NOTES FOR THE TARGET GROUPS

Arvoisa vastaanottaja!

KANSAINVÄLINEN KYSELY: ELEKTRONISTEN TIETOPALVELUJEN MARKKINAT EUROOPAN TALOUSALUEEN MAISSA VUONNA 1994

Kohde, tarkoitus

EU:n IMPACT 2 -ohjelmassa on tämän vuoden alussa käynnistetty kansainvälinen selvitys *elektronisten tietopalvelujen markkinoista ammatillisiin tarkoituksiin vuonna 1994* (Studyfor assessing the situation of the markets for electronic information services for professional purposes in the member states of the European Economic Area).

Selvitys koskee elektronisten tietopalvelujen tarjontaa ja kysyntää sekä alaan liittyvää infrastruktuuria, ja se tehdään yhtenäisin menetelmin viidessätoista Euroopan talousalueen maassa. Tarkoituksena on saada makrotason kuva Euroopan tilanteesta (markkinoiden koko ja rakenne, alan vahvuudet ja heikkoudet yleiseurooppalaisella tasolla) vertailujen ja strategisten johtopäätösten tekemiseksi elektronisten tietopalvelujen kehittämiseksi edel-leen. - EU:n komissio julkaisee työstä yhteiseurooppalaisen raportin vuoden 1995 lopussa.

Suomi

VTT Tietopalvelu on aikaisemmin useaan otteeseen selvittänyt Tieteellisen informoinnin neuvoston eli TINFOn (nykyinen tietohuollon neuvottelukunta) toimeksiannosta suora-käyttöisten tiedonhakujärjestelmien käyttöä Suomessa (viimeksi vuonna 1985 ja 1989, VTT Tiedotteita 673 ja 1169). VTT Tietopalvelu kansallisena IMPACT-neuvontakeskuksena on valittu selvityksen tekijäksi Suomessa. - IMPACT 2 -ohjelman kansalliset neuvon-takeskukset toimivat Euroopan eri maissa ja niiden tehtävänä on edistää elektronisten tietopalvelujen käyttöä levittämällä asiaa koskevaa tietoa omassa maassaan.

Saatte kirjeen liitteenä kyselylomakkeen. *Toivomme myönteistä suhtautumistanne kyselyyn.* Osallistumisenne on tärkeää kokonaiskuvan saamiseksi Suomen ja edelleen koko Euroopan tietopalvelujen markkinoista. Vastaustiedot käsitelllään luottamuksellisesti.

Palautus ja lisätiedot

Kysely pyydetään palauttamaan 15.6.1995 mennessä VTT Tietopalvelun osoitteeseen.
Lisätietoja antaa Merja Lehti, VTT Tietopalvelu, puh. (90) 456 4382, telekopio (90) 456 4374, sähköposti (Internet): Merja.Lehti@vtt.fi

Tervetuloa mukaan kansainväliseen selvitykseen!

VTT Tietopalvelu

Merja Lehti, ekon., informaatikko

Liite Käyttöä koskeva kyselylomake

Jakelu Tietokonsultit (information brokers, intermediaries)

The Use of Electronic Information Services for Professional Purposes in Finland

Strictly Confidential

This survey is carried out by VTT Information Service with the Support of the European Commission. Similar studies will be carried out in all the Member States of the European Union.

Reference Period: 1st January 1994 - 31st December 1994

This questionnaire has been developed for information brokers or external information professionals / intermediaries offering information services for professional purposes for any customer.

Please answer all the questions as fully as possible. Definitions to this survey are given on the back page of the questionnaire. For further assistance please contact VTT Information Service. .
Note: Please give all money figures in your national currency, FIM (net of any sales or turnover tax, where applicable) for the reference period.

Please return this questionnaire when completed to

Contact Person	Merja Lehti	
Company	VTT Tietopalvelu	
Address	PL 2000	
	02044 VTT	
Telephone	(90) 456 4382	
Fax		(90) 456 4374

Palautus 15.6.1995 mennessä.

Arvoisa vastaanottaja!

KANSAINVÄLINEN KYSELY: ELEKTRONISTEN TIETOPALVELUJEN MARKKINAT EUROOPAN TALOUSALUEEN MAISSA VUONNA 1994

Kohde, tarkoitus

EU:n IMPACT 2 -ohjelmassa on tämän vuoden alussa käynnistetty kansainvälinen selvitys *elektronisten tietopalvelujen markkinoista ammatillisiin tarkoituksiin vuonna 1994* (Study for assessing the situation of the markets for electronic information services for professional purposes in the member states of the European Economic Area).

Selvitys koskee elektronisten tietopalvelujen tarjontaa ja kysyntää sekä alaan liittyvää infrastruktuuria, ja se tehdään yhtenäisin menetelmin viidessätoista Euroopan talousalueen maassa. Tarkoituksena on saada makrotason kuva Euroopan tilanteesta (markkinoiden koko ja rakenne, alan vahvuudet ja heikkoudet yleiseurooppalaisella tasolla) vertailujen ja strategisten johtopäätösten tekemiseksi elektronisten tietopalvelujen kehittämiseksi edel-
leen. - EU:n komissio julkaisee työstä yhteiseurooppalaisen raportin vuoden 1995 lopussa.

Suomi

VTT Tietopalvelu on aikaisemmin useaan otteeseen selvittänyt Tieteellisen informoinnin neuvoston eli TINFOn (nykyinen tietohuollon neuvottelukunta) toimeksiannosta suorakäyttöisten tiedonhakujärjestelmien käyttöä Suomessa (viimeksi vuonna 1985 ja 1989, VTT Tiedotteita 673 ja 1169). VTT Tietopalvelu kansallisena IMPACT-neuvontakeskuksena on valittu selvityksen tekijäksi Suomessa. - IMPACT 2 -ohjelman kansalliset neuvon-takeskukset toimivat Euroopan eri maissa ja niiden tehtävänä on edistää elektronisten tietopalvelujen käyttöä levittämällä asiaa koskevaa tietoa omassa maassaan.

Saatte kirjeen liitteenä kyselylomakkeen. *Toivomme myönteistä suhtautumistanne kyse- lyyn.* Osallistumisenne on tärkeää kokonaiskuvan saamiseksi Suomen ja edelleen koko Euroopan tietopalvelujen markkinoista. Vastaustiedot käsitelllään luottamuksellisesti.

Palautus ja lisätiedot

Kysely pyydetään palauttamaan 15.6.1995 mennessä VTT Tietopalvelun osoitteeseen.
Lisätietoja antaa Merja Lehti, VTT Tietopalvelu, puh. (90) 456 4382, telekopio (90) 456 4374, sähköposti (Internet): Merja.Lehti@vtt.fi

Tervetuloa mukaan kansainväliseen selvitykseen!

VTT Tietopalvelu

Merja Lehti, ekon., informaatikko

Liite Käyttöä koskeva kyselylomake

Jakelu Kemian ja lääketieteen alan yritykset, joilla on tietopalvelu

Study for the Commission of the European Union

The Use of Electronic Information Services for Professional Purposes in Finland

Strictly Confidential

This survey is carried out by VTT Information Service with the Support of the European Commission. Similar studies will be carried out in all the Member States of the European Union.

Reference Period: 1st January 1994 - 31st December 1994

This questionnaire has been developed for information professionals / intermediaries working in chemical or pharmaceutical industry and offering information services for professional purposes for any customer.

Please answer all the questions as fully as possible. Definitions to this survey are given on the back page of the questionnaire. For further assistance please contact VTT Information Service. .
Note: Please give all money figures in your national currency, FIM (net of any sales or turnover tax, where applicable) for the reference period.

Huom. Tiedot pyydetään keräämään myös tytäryhtiöiltä tms., jos niillä on kyselyyn kuuluvaa palvelua. Lomaketta voi monistaa tähän tarkoitukseen.

Please return this questionnaire when completed to

Contact Person	Merja Lehti	
Company	VTT Tietopalvelu	
Address	PL 2000	
	02044 VTT	
Telephone	(90) 456 4382	
Fax		(90) 456 4374

Palautus 15.6.1995 mennessä.

Arvoisa vastaanottaja!

KANSAINVÄLINEN KYSELY: ELEKTRONISTEN TIETOPALVELUJEN MARKKINAT EUROOPAN TALOUSALUEEN MAISSA VUONNA 1994

Kohde, tarkoitus

EU:n IMPACT 2 -ohjelmassa on tämän vuoden alussa käynnistetty kansainvälinen selvitys *elektronisten tietopalvelujen markkinoista ammatillisiin tarkoituksiin vuonna 1994* (Study for assessing the situation of the markets for electronic information services for professional purposes in the member states of the European Economic Area).

Selvitys koskee elektronisten tietopalvelujen tarjontaa ja kysyntää sekä alaan liittyvää infrastruktuuria, ja se tehdään yhtenäisin menetelmin viidessätoista Euroopan talousalueen maassa. Tarkoituksena on saada makrotason kuva Euroopan tilanteesta (markkinoiden koko ja rakenne, alan vahvuudet ja heikkoudet yleiseurooppalaisella tasolla) vertailujen ja strategisten johtopäätösten tekemiseksi elektronisten tietopalvelujen kehittämiseksi edelleen. - EU:n komissio julkaisee työstä yhteiseurooppalaisen raportin vuoden 1995 lopussa.

Suomi

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Saatte kirjeen liitteenä kyselylomakkeen. *Toivomme myönteistä suhtautumistanne kyselyyn.* Osallistumisenne on tärkeää kokonaiskuvan saamiseksi Suomen ja edelleen koko Euroopan tietopalvelujen markkinoista. Vastaustiedot käsitelllään luottamuksellisesti.

Palautus ja lisätiedot

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Lisätietoja antaa Merja Lehti, VTT Tietopalvelu, puh. (90) 456 4382, telekopio (90) 456 4374, sähköposti (Internet): Merja.Lehti@vtt.fi

Tervetuloa mukaan kansainväliseen selvitykseen!

VTT Tietopalvelu

Merja Lehti, ekon., informaatikko

Liite Käyttöä koskeva kyselylomake
Jakelu Tieteelliset kirjastot (yhteistilastoon osallistuvat)
Yleiset kirjastot: maakuntakirjastot sekä WWW-kirjastot

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Study for the Commission of the European Union

The Use of Electronic Information Services for Professional Purposes in Finland

Strictly Confidential

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Reference Period: 1st January 1994 - 31st December 1994

This questionnaire has been developed for external information professionals or intermediaries in public libraries offering information services for professional purposes for any customer.

Please answer all the questions as fully as possible. Definitions to this survey are given on the back page of the questionnaire. For further assistance please contact VTT Information Service. .
Note: Please give all money figures in your national currency, FIM (net of any sales or turnover tax, where applicable) for the reference period.

Huom. Pääkirjastoja pyydetään keräämään tiedot myös kyselyyn mahdollisesti kuuluvilta sivukirjastoilta. Lomaketta voi monistaa tähän tarkoitukseen.

Please return this questionnaire when completed to

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Reference Period: 1st January 1994 - 31st December 1994

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Please answer all the questions as fully as possible. Definitions to this survey are given on the back page of the questionnaire. For further assistance please contact VTT Information Service. .
Note: Please give all money figures in your national currency, FIM (net of any sales or turnover tax, where applicable) for the reference period.

Huom. Yliopistojen ja korkeakoulujen pääkirjastoja pyydetään keräämään tiedot myös kyselyyn mahdollisesti kuuluvilta osasto- ja laitoskirjastoilta. Lomaketta voi monistaa tähän tarkoitukseen.

Please return this questionnaire when completed to

Contact Person	Merja Lehti	
Company	VTT Tietopalvelu	
Address	PL 2000	
	02044 VTT	
Telephone	(90) 456 4382	
Fax		(90) 456 4374

Palautus 15.6.1995 mennessä.

EU: STUDY FOR ASSESSING THE SITUATION OF THE MARKETS FOR ELECTRONIC INFORMATION SERVICES FOR PROFESSIONAL PURPOSES IN THE EUROPEAN ECONOMIC AREA IN 1994

THE USE OF ELECTRONIC INFORMATION SERVICES FOR PROFESSIONAL PURPOSES IN FINLAND IN 1994 / ELEKTRONISTEN TIETOPALVELUJEN KÄYTTÖ AMMATILLISIIN TARKOITUKSIIN SUOMESSA 1994

Käyttöä koskeva kyselylomake

Huom. Kysymyksiin voi vastata myös suomeksi tai ruotsiksi. Kaikki rahamäärät Suomen markkoina.

Kysymysryhmät tarkennuksineen:

1. Tiedot vastaajaorganisaatiosta

- Organisaation nimi ja päätoiminnat
- Jaottelu organisaatiotyypin mukaan: yksityiset yritykset, valtionyhtiöt, julkiset organisaatiot (esim. korkeakoulut ja muut oppilaitokset), puolijulkiset organisaatiot (esim. kauppakamarit)
- Henkilökunnan lukumäärä
- Osaston nimi ja päätoiminta
- Vastaajan nimi ja osoitetiedot
- Kuuluuko vastaaja johonkin tietopalvelu- tai kirjastoalan yhdystykseen?

2. Tiedonvälitystoiminnan jaottelu 1994

2.1 Mitä palveluita tarjoatte?
2.2 Mitä tiedonlähteitä käytätte ja kuinka usein vastatessanne tietopalvelulle tulleisiin kysymyksiin? Huom. "internal" tarkoittaa omassa organisaatiossa käytettävissä olevia tiedonlähteitä.

3. Budjetti 1994

3.1 Kokonaisbudjetin jakaantuminen eri toiminnoille (karkea arvio prosentteina)
3.2 Kokonaisbudjetti 1994 (kaikki kustannukset ilman arvonlisäveroa)
3.3.1 Kokonaismenot elektronisten tietopalvelujen käytöstä osastollanne/organisaatiossanne 1994
3.3.2 Kokonaismenot elektronisten tietopalvelujen käytöstä tuotetyypin mukaan vuonna 1994 (karkea arvio prosentteina)
3.3.3 Kokonaismenot elektronisten tietopalvelujen käytöstä aihealueen mukaan vuonna 1994 (karkea arvio prosenteissa)

4. Kokonaisliikevaihto 1994

4.1 Kokonaisliikevaihto tietopalveluista
4.2 Voitteko arvioida, miten kokonaisliikevaihto jakaantui erilaisten tietopalvelujen kesken (karkea arvio prosentteina)?

5. Asiakkaat

5.1 Kuinka monelle asiakkaalle tarjositte palveluja 1994 (prosentteina)? Erikseen sisäiset (oman organisaation) asiakkaat ja ulkopuoliset asiakkaat.

5.2 Nousiko vai laskiko liikevaihtonne sisäisten asiakkaiden kohdalla vuoteen 1993 verrattuna?
5.3 Nousiko vai laskiko liikevaihtonne ulkopuolisten asiakkaiden kohdalla vuoteen 1993 verrattuna?
5.4 Miltä toimialoilta tulivat tärkeimmät ulkopuoliset asiakkaanne (karkea arvio prosentteina)?

6. Elektronisten tietopalvelujen käytön esteet

6.1 Mitkä ovat tärkeimmät esteet (ongelmat, haitat), jotka vaikuttavat siihen, että asiakkaanne käyttäisivät itse elektronisia tietopalveluja? Arvioikaa esteet asteikolla 5 - 1 (5 = hyvin merkitsevä este, 1 = ei ole este).
6.2 Tärkeimmät markkinointitoimenpiteet, joita suunnittelette vuodeksi 1995. Arvioikaa asteikolla 5 - 1 (5 = hyvin merkitsevä toimenpide, 1 = ei lainkaan merkitsevä).

Käsitteiden määritelmiä (englanniksi)

1. Details of Organisation (Status 1994)

Name of your company/organisation:

.....

Main activities of your company/organisation:

.....

Legal status of your company/organisation:

private company ____ public company ____

public institution ____ semi-public institution ____

Number of total staff employed in your company/organisation (*at your location, in full time equivalents in the calendar year 1994*). *Please indicate the exact number*:

.....

Name of your department:

.....

Main function of your department:

.....

Number of total staff employed in your department working as information intermediary/professional (*in full-time equivalents in the calendar year 1994*). *Please indicate the exact number:*

.....

Contact person: .....

Address:

.....

.....

Country: .....

Telephone: .....

Fax number: .....

E-Mail-address: .....

Are you a member of any information brokers' association? If yes, please indicate the full name/s.

1 .....

2 .....

3 .....

2. Details of your information intermediary activities in 1994

2.1 Which services do you offer?

	yes	*no*
Retrieval in *online* electronic information services	( )	( )
Retrieval in *offline* electronic information services	( )	( )
Retrieval in *offline* library services, archival services	( )	( )
Training courses / further education	( )	( )
Consulting	( )	( )
Database production, input in databases	( )	( )
Distribution of software programmes / packages	( )	( )

Other information services, *please specify*:

.....

.....

2.2 Which of the following sources do you use and how frequently when preparing and answering your requests?

	Use			
Media	in more than 50% of searches	in less than 50% but more than 10% of searches	in less than 10% of searches	never used
Printed media (i.e. daily news-papers, journals, books)	( )	( )	( )	( )
Personal contacts (i.e. experts, colleagues, exchanges at meetings)	( )	( )	( )	( )
Internal online electronic information services (i.e. in-house databases)	( )	( )	( )	( )
External online electronic informa-tion services (i.e. online databases)	( )	( )	( )	( )
External offline electronic informa-tion services (i.e. CD-ROM)	( )	( )	( )	( )
Others, *please specify*:				
.....	( )	( )	( )	( )
.....	( )	( )	( )	( )

Definitions: see back page of the questionnaire.

3. Budget in 1994

3.1 *How was your total budget allocated to the following functions? Please give rough estimates.*

	0-10%	11-50%	51-75%	76-100%
Online electronic information services	( )	( )	( )	( )
Internal database production and maintenance	( )	( )	( )	( )
External database production and maintenance	( )	( )	( )	( )
Offline electronic information services	( )	( )	( )	( )
Printed media		( )	( )	( )
( ) Management, administration			( )	( )
( ) ( )				
Outsourcing	( )	( )	( )	( )
Administration of archives	( )	( )	( )	( )
Further education and training, seminars,		( )	( )	( )
( )				
conferences				
Other, *please specify*:				
.....	( )	( )	( )	( )
.....	( )	( )	( )	( )

3.2 *What was your total budget in 1994?*

(all costs you indicated in 3.1, exclusive of VAT)

approximately .....
(please indicate in national currency, FIM)

3.3.1 *What was your total expenditure for using <u>electronic</u> information services in your department (organisation) in 1994?*

approximately .....
(please indicate in national currency, FIM)

Please note: from this point onwards we are only interested in electronic information services.

3.3.2 What was your total expenditure for the use of electronic information services by type of product in 1994? Please give rough estimates.

	0-10%	11-50%	51-75%	76-100%
Retrospective online database services	( )	( )	( )	( )
Real-time information services (including financial, political and general news)	( )	( )	( )	( )
Videotex services	( )	( )	( )	( )
Audiotex services	( )	( )	( )	( )
Electronic-Mail services	( )	( )	( )	( )
Other online services, *please specify:*				
.....	( )	( )	( )	( )
CD-ROMs	( )	( )	( )	( )
Other offline electronic services, *please specify:*				
.....	( )	( )	( )	( )
Other optical media, *please specify:*				
.....	( )	( )	( )	( )
Magnetic information media (tapes), etc.	( )	( )	( )	( )

Definitions: see back page of the questionnaire.

3.3.3 What was your total expenditure for electronic information services by subject area in 1994? Please give rough estimates.

	0-10%	11-50%	51-75%	76-100%
Finance / stock exchange / banking	( )	( )	( )	( )
Company profiles and credit ratings	( )	( )	( )	( )
Further business and economic information	( )	( )	( )	( )
Legal information	( )	( )	( )	( )
Patent information	( )	( )	( )	( )
Scientific / technical / medical information	( )	( )	( )	( )
Government information / political news	( )	( )	( )	( )
Travel information	( )	( )	( )	( )
Other information, *please specify*:				
.....	( )	( )	( )	( )
.....	( )	( )	( )	( )

Definitions: see back page of the questionnaire.

4. Revenue

4.1 What was your total revenue in 1994 with information services?

.....

(please indicate in national currency, FIM)

4.2 Can you please estimate how this total revenue was allocated to your information services offered? Please give rough estimates.

	0-10%	11-30%	31-50%	51-75%	76-100%
Retrieval in *online* electronic information services	( )	( )	( )	( )	( )
Retrieval in *offline* electronic information services	( )	( )	( )	( )	( )
Retrieval in *offline* library services, archival services	( )	( )	( )	( )	( )
Consulting	( )	( )	( )	( )	( )
Database production, database input	( )	( )	( )	( )	( )
Distribution of software programmes / packages	( )	( )	( )	( )	( )

Other information services, *please specify*:

.....	( )	( )	( )	( )	( )
.....	( )	( )	( )	( )	( )

5. Customers

5.1 For how many customers did you offer your services in 1994? Please indicate in percent.

.....% *internal customers / users*

.....% *external customers / users*

5.2 *In comparison to 1993, did your revenue from internal customers/users increase or decrease?*

( ) increase ( ) decrease

5.3. *In comparison to 1993, did your revenue from external customers/users increase or decrease?*

( ) increase ( ) decrease

5.4 *From which sectors did your most important external customers/users come? Please give rough estimates.*

	0- 10%	11-50%	51-75%	76-100%
Manufacturing industries	( )	( )	( )	( )
Service industries	( )	( )	( )	( )
Public sector	( )	( )	( )	( )
Other sectors, please specify:				
.....	( )	( )	( )	( )
.....	( )	( )	( )	( )

6. Barriers of Using Electronic Information Services

6.1 *Which are the most significant barriers to your customer's use of electronic information services? Please rate the barriers according to a 5-point scale (5=very significant barrier, 1=no barrier).*

	Rating				
	5	*4*	*3*	*2*	*1*
Lack of awareness from user's point of view	( )	( )	( )	( )	( )
Lack of experienced staff	( )	( )	( )	( )	( )
Technical barriers (software, hardware, retrieval language)	( )	( )	( )	( )	( )
Lack of user-friendliness	( )	( )	( )	( )	( )
Information required is not available	( )	( )	( )	( )	( )
Language problems	( )	( )	( )	( )	( )
Cost-benefit relation inadequate	( )	( )	( )	( )	( )
Prices for host services too high	( )	( )	( )	( )	( )
Staff costs too expensive	( )	( )	( )	( )	( )
Resistance from management	( )	( )	( )	( )	( )
Budget reasons	( )	( )	( )	( )	( )
Network deficiencies	( )	( )	( )	( )	( )
Further reasons, *please specify and rate*:					
.....	( )	( )	( )	( )	( )
.....	( )	( )	( )	( )	( )

6.2. What principal marketing activities do you plan during the next year? Please rate the importance of activities in a 5-point scale (5=very important activity,1=no important activity).

	Rating				
	5	*4*	*3*	*2*	*1*
Visiting customers	( )	( )	( )	( )	( )
Active participation in congresses	( )	( )	( )	( )	( )
Active participation in exhibitions	( )	( )	( )	( )	( )
Presentation of services	( )	( )	( )	( )	( )
Mailings, direct mail	( )	( )	( )	( )	( )
Better presentation of research results	( )	( )	( )	( )	( )
Publication of brochures, other materials describing your service	( )	( )	( )	( )	( )
Improvement of customer service	( )	( )	( )	( )	( )
Participation in information broker associations	( )	( )	( )	( )	( )
Public Relations	( )	( )	( )	( )	( )
Others, *please specify*:					
.....	( )	( )	( )	( )	( )
.....	( )	( )	( )	( )	( )

Kiitos yhteistyöstä!

Palauta lomake 15.6.1995 mennessä ensimmäisellä sivulla mainittuun osoitteeseen.

Definitions (alphabetical listing)

Audiotex services (suppliers): organisations delivering online information services whereby the users receive information aurally ("voice information services") - focused on so-called "premium rate services".

Distributors of offline information services/products: organisations offering for sale or lease unitised electronic information products such as **CD-ROMs**, CD-Is, other optical products, diskettes, magnetic tapes, etc. The definition excludes organisations which perform a role analogous to that of book shops or wholesalers, i.e.: which merely purchase offline information products and then resell them to users.

Database producers: organisations producing one or more databases in an electronic form, which may be used in offering online and offline information services/products.

Electronic information services (for professional purposes): The electronic delivery of information, not in a printed version. The delivery can be online or offline. **Online** means delivery via telecommunications links. **Offline** means delivery of information without the usage of any telecommunications networks, i.e. CD-ROM.

Electronic (E)-mail services: services which permit users to send messages electronically to specified recipients or receive messages from senders.

End user: customers who use the content of electronic information services and products for direct application in their own work.

External online database: see External electronic information services.

External electronic information services: all *online* and *offline* information services which are bought from external suppliers. Only the special case of Internet is not wholly covered by this definition.

Historical online database services: see Retrospective Online Database Services

In-house databases / internal online electronic information services: information services that are generated internally for internal users and that are not commercially exploited.

Information services according to subject areas:
Finance / stock exchange / banking*:** includes information on stocks and shares, banking, foreign exchange, insurance and other financial services. ***Further business and economic information: includes business news, trade opportunities, market data, general economic news and statistics, real estate, and multi-disciplinary or specialised industry services. ***Scientific / technical / medical information*:** includes, in addition to the obvious subject topics, technology and standards and multi-disciplinary or specialised scientific services.

Internal (online) electronic information services: information services that are generated internally for internal uses and that are not commercially exploited.

Magnetic information media: information products such as tapes and discs of various sizes and formats which use magnetic storage technology, including magnetic tapes, diskettes, cassettes, microfilm, etc.

Online database: is used for the electronic storage of information (text, numbers, images, etc.).

Online electronic information services see: Electronic information services

Offline: see Electronic information services.

Optical information media: information products on various types of discs which use analogue or optical storage technology, including **CD-ROM**, CD-I (Compact Disc Interactive), CDTV (Commodore Dynamic Total Vision), Electronic Books, etc.

Real-time information services: this term, strictly speaking, refers to online information services which are updated immediately new data become available, possibly several times a minute at peak times, and delivered to the users in real-time.

Request (synonym: search / query): an order by an internal or external customer which you work on for more than 10 minutes' time or for which external electronic information services must be paid.

Retrospective Online Database Services: online information services delivering information from retrospective databases which may contain different kinds of data (reference, factual, numeric data, full-text, images, etc.) in a number of subject areas (news, financial and business data, scientific and technical information, legal information, etc.) and for a number of retrospective time spans or time periods.

Supplier: an organisation offering online or offline information services such as an online database producer, an online service / host, an electronic-mail service supplier, a CD-ROM supplier, etc.

Videotex services (suppliers): organisations delivering online information services page by page or screen by screen, rather than character by character.

Excluded are:

Services broadcast with television transmission and accessible by any member of the public with a suitable receiver. **Bureau services for computing:** call handling or other facilities provided under subcontract to principals engaged in the provision of electronic information services / products.