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Monitoring the Information Society – Statistics Finland's Role in National
Strategies and Action Plans

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ABSTRACT

This paper presents the role of Statistics Finland in monitoring the information society. In the first strategic plans agreed by the Finnish Government, Statistics Finland was given the role of measuring the development towards the information society, and monitoring the achievements of governmental action plans in advancing the information society among individuals, enterprises, and the public sector. According to the framework for statistics on the information society, even existing statistics could provide quite a lot of information via reclassification, regrouping and recalculation. As the standard programme could not provide all the needed information, new surveys were developed for measuring the usage of the Internet, especially e-commerce among enterprises and consumers.

1. Introduction

The concept of the information society is in itself complex although it is commonly used. Manuel Castells, considered to be one of the most notable information society theoreticians, prefers to use the term "network society". The concept knowledge-based society and other corresponding expressions have also been used in different contexts when emphasising certain specific features of information society development.

A relatively homogenous social structure has clearly assisted Finland and the Nordic Countries in advancing in the building of the information society. Social equality has also made it possible for talented young people from modest backgrounds to receive an education. In addition, it has provided the prerequisites for spreading different information technology equipment and applications quickly through the whole of society. At the same time the stability of the society has provided a basis for a feeling of solidarity, which has made it possible to unify resources effectively to build the information society.

The Nordic Countries have adopted the policy to build up and maintain a welfare state. The welfare state includes a public, free, high-quality education system. Health care is also public,

mainly free and of high-quality, and a universal right independent of employment status. Basic pension is also ensured regardless of work status. There is also a public and affordable child care system. All of this protection has made big changes possible in Finland because people do not feel that their basic security is threatened. Moving towards the information society means a change in many areas of life.

Finland is generally considered a country that already has many of the elements of the information society. Finland has so far fared well in international comparisons regarding information society development and competitiveness. Citizens, enterprises and the public administration have extensively adopted the use of new information and communications technology. Use of the computer and the Internet is common in nearly all age groups. The mobile phone has become commonplace in nearly all population groups. The information and communications sector as a field has continued its strong growth. Even though electronic commerce has so far been modest, Finnish enterprises have, on the average, a good technical readiness for network commerce.

In Finland, any discussion about the importance of information and communications technology often actually relates to the importance of the production of goods based on this technology to the growth of the Finnish national economy. This is because of the strong growth in the share of the electronics industry of Finnish industrial output and exports. Use of information technology is, however, more important than its production, for it has an impact on all production activity that applies it.

2. National strategy towards the information society

The theme of information society surfaced in public debates especially in the early 1990s, prompted by various documents, including reports of the OECD, as well as the 1994 Bangeman Report and the 1996 Green Paper "Living and Working in the Information Society", published by the European Commission. In 1999, the Commission launched an extensive eEurope 2002 project, the aim of which is to bring the benefits of the information society to all Europeans. eEurope 2005 has followed the first step.

In Finland, too, the information society was seen as a central issue in the reforming of the economy and public administration in the early 1990s. The Ministry of Finance set up a project to prepare a national information society strategy. Setting out from this, in January 1995 the Government made a decision in principle about the measures that should be implemented to develop Finland into an information society.

The strategy drafted contained the following five different guidelines:

- Information technology and information networks as tools in private and public sector renewal
- Information industry to become an important future sector of economic activity in Finland
- Professional expertise in information and communications technology to be maintained at a high overall level, with selected peaks
- Everyone to have the opportunity and basic skills to be able to use the services of the information society
- Finnish information infrastructure to be competitive and capable of providing high-quality services.

Keen to monitor progress, in its first national information society strategy in 1995 the Government charged Statistics Finland with the responsibility to provide reports at regular

intervals and to conduct occasional studies on the programme's impacts on society. The mission of a statistical office is to provide accurate information describing social and economic phenomena. Giving out a strategy means that we should be able to measure the development towards the given targets. Systematic work to monitor the penetration of information technology, its potential applications, employment in the ICT sector and its impacts on the economy was started in the mid-1990s.

Among the tasks assigned to the National Information Society Advisory Committee, established by the Council of State, are to monitor and predict the development of the information society and report on it regularly to the country's Government. In spring 1997, the National Information Society Forum, set up to support the Committee, made an initiative backed by the Committee to reform this strategy. The Council of State and the National Fund for Research and Development (SITRA) agreed to this. The strategy was criticised for putting too much emphasis on technology.

The national information society strategy reform, launched by SITRA, emphasised that Finnish society should be developed from the needs of ordinary people. This human approach is conveyed by the stated theme of the reform: "Finnish society – a network of people". SITRA published a document in 1998 entitled "Quality of Life, Skills and Competitiveness", which deals with the starting points and goals of strategic information society development. In the SITRA publication, the following is presented as the national vision:

"Finnish society will develop and apply the possibilities of the information society in an exemplary, diversified and sustainable manner in order to improve the quality of life, skills, international competitiveness and interaction."

In 1999, the Finnish Government included in its portfolio many key objectives for developing the information society. They highlight the role of the information society in reforming the economy, strengthening of the content industry and improving of the efficiency of public services. They have to do with the development of people's skills, research and education and the evolution of information networks and the services provided by them. Connecting administration, companies and homes to the information society is a national objective that is reflected on the whole society. Telework, electronic public services and electronic commerce are its direct consequences. The Finnish Government has set up a special National Committee for Information Society Issues to promote important objectives related to the development of the information society, and to act as a co-operative forum between different bodies.

The objectives expressed in the Government programme have provided the direction and goals towards which development of the information society has been steered in Finland through public authority measures. The goals have been supplemented with several decisions in principle of the Government. Achievement of the goals has been realised through numerous regional and national projects.

The deregulation of the telecommunications field has promoted stronger competitiveness of the field and its reform. The nationally unifying information society strategy has supported and helped to direct the development. The educational policy of the public sector, offering equal opportunities for all citizens has created the intellectual prerequisites for the development of the information society. The state administration will have to make a strong input towards ensuring information and communications security through raising awareness of information security as well as through prevention of disturbances and crimes committed through data networks. However, the state administration will not interfere with the activities of the markets, e.g. by providing sufficient infrastructure to all participants in society.

Industrial policy is concerned about how well small and medium-sized enterprises cope in ever globalising competition. Electronic trade – especially via the Internet – has not gained popularity at the speed it was expected to. The Government is concerned about the digital divide. Young people have adopted the new information technology faster than their senior age groups. The recurring topic in the sparsely populated Finland has been regional

inequality, or fear of its emergence. The use of new information and communications services in Finland does not indicate increase of alienation even though there are differences in the use of these services between population groups and different regions. However, the development of regional differences has to be monitored.

There has been broad unanimity in Finland about the objectives of the information society policy. Enterprises invest in their competitiveness and the state authorities have supported product development activity, for example, with their own measures. Citizen's attitude towards the new opportunities brought along by the information society is positively inquisitive, but also sufficiently critical; all problems in society cannot be solved through the exploitation of information technology.

3. The tasks of a statistical office

Official statistics are expected, first and foremost, to give an accurate account of what is going on in society. For this purpose, the description and measurement of issues related to information and communications technology, information society, and new economy have been introduced in statistical offices over the 1990s. Statistical offices must be able to provide numerical information and support to decision-makers.

A statistical office is an impartial agency and the data provided to it are confidential. Neither are the outcomes of the data purposefully kept hidden or distorted, but are public. Under these conditions, good performance must be achieved. Confidence is of primary importance; confidence can also be nurtured by giving feedback information about central results to data providers. A statistical office cannot entice response by competitions, major prizes or by offering rewards as commercial research institutes commonly do.

Statistics Finland has been able to provide policy makers with a considerable amount of statistics on the realisation of the development of the information society. The production of official statistics is decentralised in Finland, with Statistics Finland as the most important producer of official statistics and co-ordinator of the work of other organisations that produce them; e.g. the Board of Customs is responsible for foreign trade statistics, and the Ministry of Agriculture for forestry statistics.

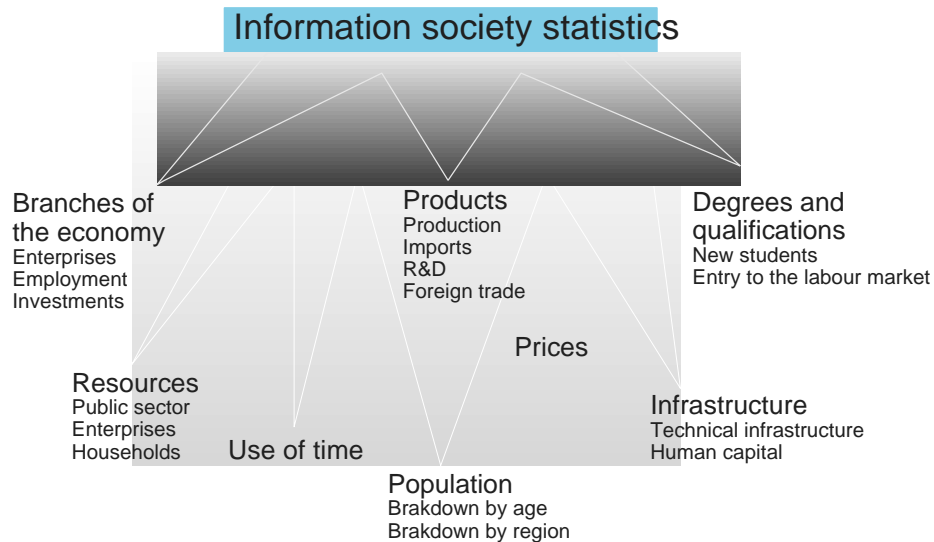
The production of information society statistics also means gathering information from all possible sources, and public and private producers. The volume of available relevant data is considerable today, also from unofficial sources. They are often produced by market research companies and consultants. These data are more or less defined and comparable over time and between countries, but they do exist and are used by administrations and operators on the markets. They should be evaluated in the process of developing and publishing adequate statistics.

When a statistical office develops statistics it cannot operate alone. Several bodies support these projects as members of advisory panels of experts. Such bodies include the Technology Development Centre TEKES, Ministries of Finance, Trade and Industry, Education, Transport and Communications, Helsinki Information Management Center, Information Technology Development Center TIEKE ry, SITRA (the Finnish National Fund for Research and Development), Finnish Information Processing Association, etc.

4. Framework for the statistical description of information society

Information society development may be evaluated from several different viewpoints. The stage of the development can be approached by evaluating how and to what extent various business sectors, government authorities and citizens have adopted modern information technology in their daily routines. However, as a phenomenon and topic the information society is much more complex than depicted by, for example, the penetration and use of certain technical appliances.

The level and state of education, knowledge and research are central to information society development. Knowledge of and skills relating to information and communications technology are needed in all sectors in the information society. The comprehensive school already will have to give sufficient skills so that the use of information technology and networks will be a basic skill possessed by every citizen. Digital literacy and an ability to analyse information are necessary civic skills in the information society.



At the time Statistics Finland started monitoring the information society, UN classifications of industries and commodities were available, so they were utilised. Today, internationally recommended classifications for the ICT sector and ICT goods already exist. An existing, good statistical infrastructure, whether it relates to national accounts, business statistics, population statistics, prices statistics or statistics on living conditions, is a prerequisite for a good description of society. A business register provides a reliable framework for enterprise surveys, whether they be of sample or census type. The best foundation for information society statistics is good basic infrastructure of official statistics. If it has some deficiencies, nor can any results be expected fast from development of completely new statistics. However, existing statistics are not often detailed enough for statistics on the information society, although describing a certain characteristics may also not succeed without them. On the other hand, surveys on consumption measure telephone and computer expenditure and time use surveys can produce even quite detailed data about the time spent using communications equipment.

Statistical monitoring of the information society must be interrelated with statistical offices' other work and operating framework. The current situation of the information society must be described as well as its future development over the years. It means producing time series, but what would be the required repetition interval? It probably varies by the topics statistics concern and their generality. It must be remembered that changing of social structures is a slow process, as are changes in attitudes and consumption habits. For example, large monitoring surveys on people's information society skills and attitudes have been carried out in Finland at three-year intervals.

The phenomena monitored by statistics may not change year after year and the results concerning one measuring period cannot be called monitoring, as interesting as cross-sectional information on ad hoc questions is. In addition to installing new needs for statistics production, it has to be remembered that statistical offices have tasks that they have to fulfil in

any case. Statistics Finland was very fortunate in having broad support from both outside and inside the agency at the initial stage of this work.

The scarce resources of statistical offices can be used by exploiting the existing statistical systems and inquiries, by re-classifying or by attaching additional questions to surveys and so on, and thus produce new information efficiently (Household Budget Surveys, business statistics). A completely new enterprise survey is initiated very rarely in Finland.

The indicators describing the information society cannot differ from the internationally used industrial classification ISIC and the commodity classification CPC, but in their revision the development of the information society is an important factor in defining the direction of the revisions.

The need of the target of statistics, such as an enterprise, to receive information about other similar companies of the same size, also motivates response to the inquiries of a statistical office. Designing an inquiry is, however, a lengthy process even when international recommendations are available. National conditions and needs vary. Government ministries often have their own policy needs and desires to monitor the results of action plans. Economic research institutes and industrial organisations often conduct studies of the same type and avoidance of overlapping work can be ensured through co-operation. It is also often a question of repetitive troubling of an enterprise, that is, the data supplier. If the data for an inquiry cannot be obtained direct from book-keeping records, the respondent may incur considerable costs from answering an inquiry.

Information society development presents challenges to the business world, the public sector and to employees alike. Especially the development of electronic commerce is changing business activities and the structures of the business world. The institutions of working life are facing new challenges. Continuous attention will have to be paid to the training of employees and to the maintenance and renewal of professional skills.

5. Measuring electronic commerce in enterprises

So far the ICT-induced change has been the most prominent in the sectors providing ICT goods and services as well as in digital content production. However since the most fundamental long-run effects of ICT relate to the way we acquire, generate, store, transmit and exploit information, all sectors will be affected.

Electronic commerce has been growing faster in the United States than in Europe. Although electronic commerce still involves issues of data security, consumer protection and taxation, it is estimated that especially BtoB commerce will almost triple even in Europe in a few years.

Electronic commerce brings enterprises both possibilities and challenges. Network commerce can, for example, lower marketing and distribution costs. To the buyer, network commerce offers a possibility to shop irrespective of time and place. Network commerce affects the structure of the markets, opens up new markets, influences the competitive position of enterprises and brings along new co-operative needs and relations. In an individual enterprise electronic commerce may affect the business idea, operating methods, production, logistics and marketing. The enterprise faces the challenge of evaluating and adapting its business idea and all its operations - production, logistics and marketing - to the new operating and marketing environment.

The State can promote the development of new business models by ensuring that the regulatory environment is up-to-date and that free competition prevails. Expansion of the use of new services can be supported through measures increasing trust in the use of the services of network commerce. These measures to increase trust have to be targeted at the protection of the data of the users, the data security of the networks and their services and at safe means of payment and communication.

The players in a digital economy can be households, enterprises and the public sector. The problem that is common to all of them is that data about the volume or the targets of the commerce can only be obtained by inquiring from the data suppliers.

Statistical agencies in the Nordic Countries have been working closely to try and harmonise research designs, definitions and methods in business surveys that are concerned with the penetration of information technology, its intensity, motives and obstacles.

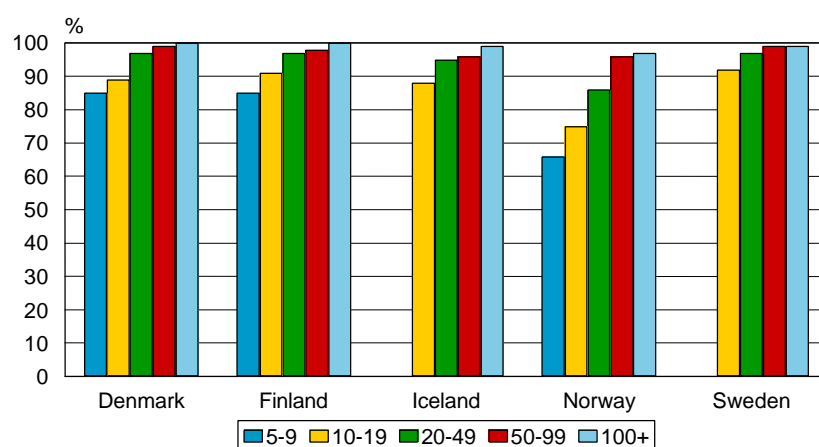
Statistics Finland has surveyed the use of Internet and electronic commerce together with the other Nordic Countries since 1999. To ensure comparability of the results all the countries have developed and used a so called "model questionnaire". This "model" has been further elaborated and approved by the OECD and Eurostat has been using the same model since 2001. Normally, questionnaires for statistical data collections are supposed to remain unchanged for long periods, but this cannot be expected in the area of collecting information on ICT usage and electronic commerce. This is a methodological challenge to statistical offices. On the one hand, there is a need to update the questionnaire with relevant questions according to user needs and, on the other hand, there is a need to provide indicators allowing for time series analysis.

The subject matter content of this inquiry is also descriptive of the speed at which needs change: in 1999, its name was Use of Information and Communication Technology in Enterprises 1999, but in 2000 it had changed to Internet Use and E-commerce in Enterprises 2000. The interest in computers had waned, as almost all enterprises already had them, and electronic commerce had emerged as a new subject of interest. This is also to be expected in the future. Subjects of interest change and a statistical office must be able to respond to new challenges.

We must also consider the availability of the required data in enterprises. If book-keeping or any other commonly used method for reporting on activities does not contain the data requested on the questionnaire, the response burden will be too high and the response rate will remain low. The same concerns households as well: will we be able to separate telecommunications services from other purchased services on our telephone bill?

In practice all medium-sized and large enterprises in Finland are connected to the Internet in the workplace.

Internet penetration by enterprise size in 2001.

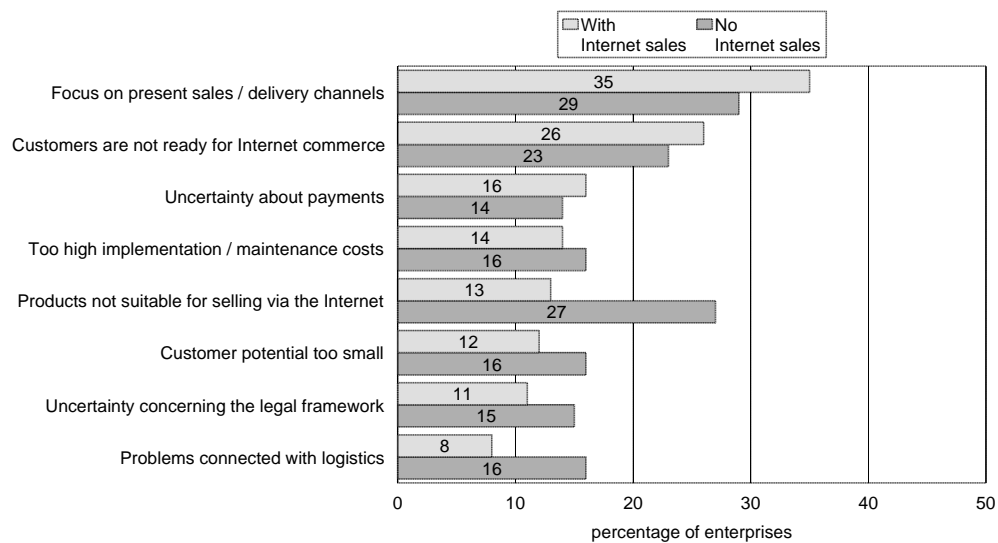


The Internet is used actively for acquisition of information and for bank services. However, a comprehensive integration of the different functions of enterprises to the Internet is still only starting in the majority of companies. It is, however, estimated that it is only at this stage that full-scale benefits of network commerce can be achieved.

The volumes of e-commerce via the Internet are still fairly modest. Why are companies not using e-commerce more?

Perceived problems in Internet sales in spring 2002. Comparison of enterprises having and not having Internet sales. Enterprises regarding the item as having much importance.

Proportion of enterprises with at least five employees.

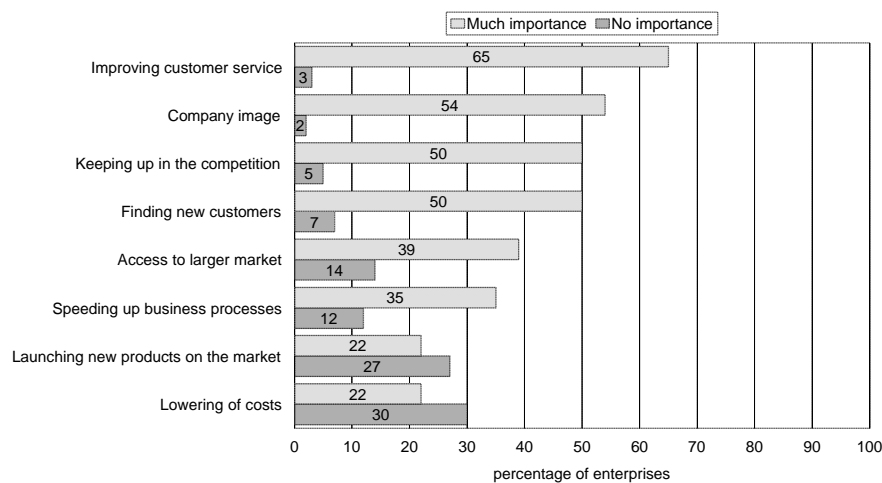


In 2000, the main constraints were considerations regarding existing sales channels, non-suitable products for e-commerce, small customer potential, and logistics problems. Enterprises regarded too frequent updates of software programmes as the biggest factor hampering the use of information technology. Biggest problems in the use of the Internet were connected with data security, which also embraces possible problems arising from computer viruses and their prevention. Opinions differ slightly if we look at the enterprises already making or not making Internet sales.

On the other hand, the desire to improve customer services is seen as a major motivation factor in implementing electronic commerce via the Internet. Promoting company image, finding new customers via the Internet, access to wider markets, and possible loss of markets are considered important.

Motivations for Internet sales in spring 2002. Enterprises regarding the item as having much importance or no importance.

Proportion of enterprises with at least five employees having Internet sales.



Of the value of the Internet sales of companies operating in Finland and employing more than five persons, clearly the main share, or about 80 per cent, came from sales to other

enterprises, around 20 per cent from sales to households and a fraction from sales to the public sector in 2001.

Experiences of measuring enterprises' electronic commerce show that respondents find it relatively easy to give a tick-box reply on qualitative questions, such as much importance – somewhat importance – no importance, or considered important – insignificant. In contrast, giving figures or estimates on percentages or monetary value is clearly more difficult and the item-non-response rate was high when the first surveys were conducted..

Technical questions have also been found to be problematic in measuring enterprises' electronic commerce and its volume. Technology is constantly advancing, for which reason the question array has to be checked all the time. Different countries use differing technologies, so it takes time to make international recommendations and adapt them to national purposes. Of electronic commerce Internet commerce is at least in theory a known term, but EDI – although a much older form of electronic commerce – is totally unknown. The respondents do not necessarily know the speed of their connection, and if they use EDI, they are not familiar with the EDI technology they use.

If we look at the volumes of electronic commerce in Finland, the use of EDI was clearly more common. The value of the enterprises' EDI sales was about EUR 20 billion compared to less than EUR 2 billion from enterprises' sales over the Internet in 2001.

6. Consumers - purchasing over the Internet

Statistics Finland started monitoring consumer's purchases over the Internet in November 2000. Since then the surveys are to be biannual. The monthly gross sample size of the Consumer Survey, to which this ICT usage survey is as an annex, is 2,200 individuals. Systematic random sampling is used to extract the sample from the updated Central Population Register. The sorting system of the sampling frame is based on geographic population density. The target area is the whole country, and the respondents represent the 15 to 74-year-old population in Finland, according to age, gender, province, and native language. All the results are weighted against the total population by means of sample weights.

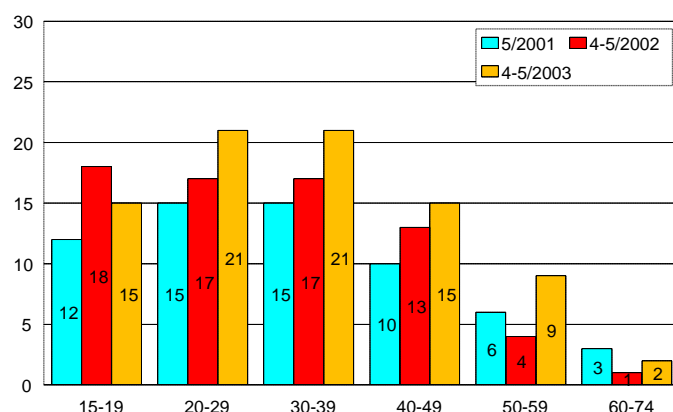
The need to know the volume and items of purchases over the Internet was clearly expressed as several estimates on the volume existed, and the forecasts were high. As a by-product, the survey also tells about the use of the Internet and mobile phone, even though changes in these in Finland are slow today and biannual monitoring may not be necessary.

The Internet is not the only channel for "remote shopping", and more traditional purchases over mail order and telephone are also monitored. In this way we may get an overview of how people's purchasing habits change, if they are changing.

Monitoring consumers' e-purchasing has been on the agenda of the OECD and Eurostat in order to achieve a common framework and definitions for surveys. Harmonising questionnaires is the only way to get internationally harmonised results. However, national needs may differ, people's attitudes towards interviewing differ, and resources in statistical offices are not identical. All in all, some basic indicators are needed on consumers' e-commerce for international benchmarking.

Figure. Users of network commerce as a percentage of total age group in early 2001, 2002 and 2003

Proportion of users of Internet commerce by age group, in spring 2001, 2002 and 2003,



Statistics Finland has carried out measurements of the volume of consumers' Internet commerce over three years. During that time, the number of people having made purchases via the Internet has nearly doubled and the value of purchases has more than doubled. The number of purchase times per buyer has grown.

At the moment the recall period of the OECD's recommendation is 12 months, Eurostat's three months and, for the sake of comparison, two weeks in Taylor – Nielsen – Sofres. When it is a question of a new thing, it is easy to remember it, but when it becomes an everyday activity, it is more difficult to recall what one ordered, when and where from and what it cost. It should, perhaps, be remembered that the Consumption Expenditure Surveys do not inquire about consumption amounts per year but about purchases on the days the respondents take part in the survey and in the Time Use Survey diaries are kept with the accuracy of ten minutes on the survey days without thinking back what the respondents did one week ago. The last mentioned data collection is, of course, burdensome for the respondents and expensive to carry out due to the large sample sizes required, but the reliability of the data is unequalled.

References

- On the Road to the Finnish Information Society III. Statistics Finland, 2001.
 Report of the Information Society Advisory Board to the Finnish Government on 14 June 2000.
 Report of the Information Society Advisory Board to the Finnish Government on 20 June 2001.
 Report of the Information Society Advisory Board to the Finnish Government on 11 December 2002.
 Manuel Castells & Pekka Himanen: The Information Society and the Welfare State. The Finnish Model. Oxford University Press, 2002.
 Internet use and e-commerce in enterprises, 2001 and 2002. Statistics Finland.
 Mika Maliranta – Petri Rouvinen: Productivity effects of ICT in Finnish Business. ETLA Discussion papers n.o.852, Helsinki 2003. www.etla.fi