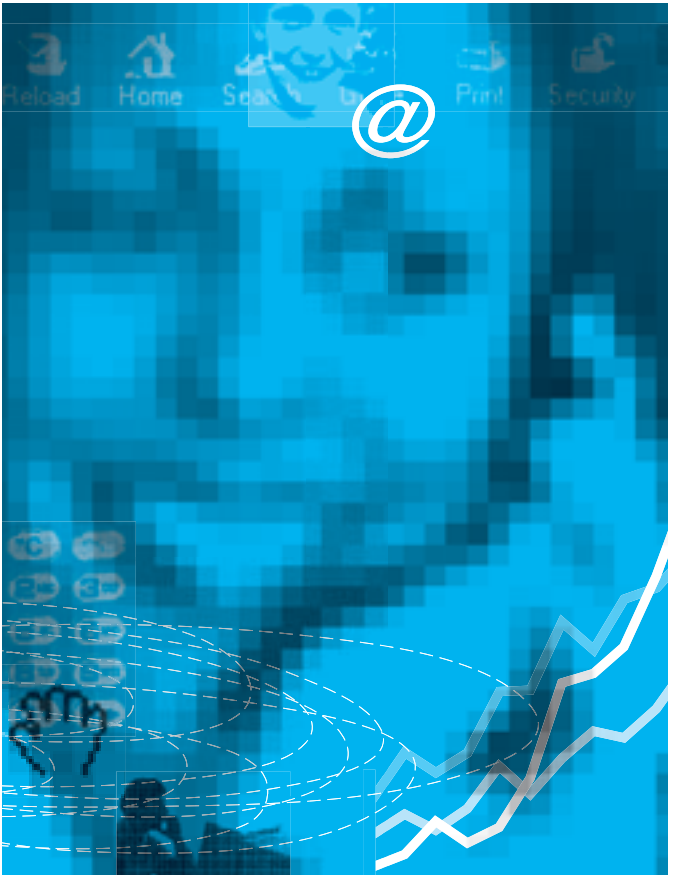
Indicators for the information society in Switzerland



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Bundesamt für Statistik
Ufficio federale di statistica
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Swiss Federal Statistical Office

Neuchâtel, 2003

Brief review of the information society in Switzerland

Swiss economy's ability to compete

- On the basis of employment and foreign trade statistics, the OECD paints a contrasting picture of Switzerland in terms of information and communication technologies (ICT): the share of ICT sector employment in total business sector employment is rather high, but foreign trade in ICT is less important.
- The increase in the number of students and apprentices in ICT education and training should mean a marked increase in the number of specialists at the economy's disposal in a few years.
- There have been extraordinary technical developments in communication and information devices in recent years. Switzerland has an excellent ICT infrastructure, but this technical potential is (still) under-used for electronic commerce.

Digital divide in the general public

- Men are more familiar with ICT than women. For instance, they use the Internet more frequently, though the gap has narrowed in this respect. The percentage of women in ICT education/training is low. Gender differences start early: for instance, boys are more likely than girls to have a computer provided for them at home.
- A high level of education facilitates access to ICT. This applies to Internet use where differences by level of education are tending to increase.
- The youngest population groups are most familiar with ICT. Consequently, the older the people, the more important the role of lifelong IT training.

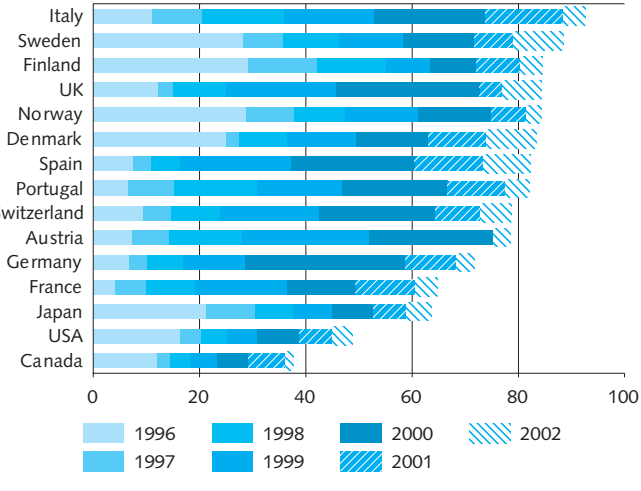
ICT	= Information and Communication Technologies
IT	= Information Technologies

Telephone infrastructure

With 79 mobile phone subscribers per 100 inhabitants in 2002, Switzerland does not belong to the leading OECD countries. Italy, UK, Spain, Portugal and the Scandinavian countries have higher subscription rates than Switzerland.

In 2002, Switzerland had one of the highest percentage of telephone main lines worldwide (73 lines per 100 inhabitants). The ISDN (Integrated Services Digital Network) penetration rate is among the highest in the world, growing from 69'000 subscribers in 1995 to 861'000 subscribers in 2001.

Mobile phone subscribers per 100 inhabitants: international comparison, development 1996-2002



Source: ITU, BAKOM, own calculations

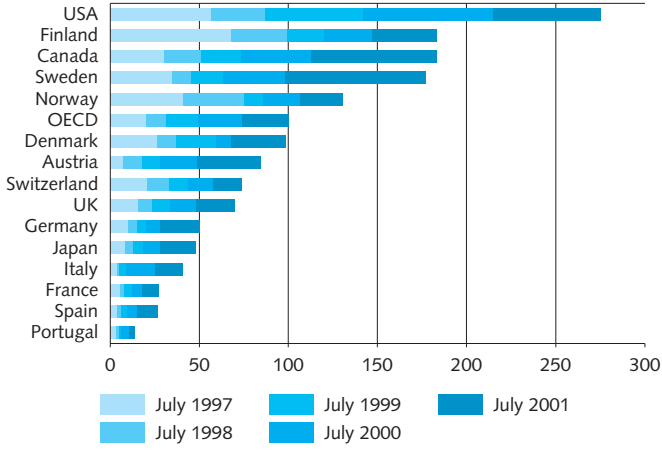
Internet infrastructure

In July 2001, Switzerland had 74 hosts (computers linked to the Internet and maintained by a third party side) per 1000 inhabitants (compared to 21 in July 1997). This infrastructure is more developed in the United States, Canada and the Scandinavian countries in particular.

The number of websites in Switzerland (20 websites per 1000 inhabitants in 2002) is below the OECD average. Switzerland had 215 secure web servers per million inhabitants, which indicates, compared to the OECD average of 142 secure web servers per million inhabitants, Switzerland's commitment to e-commerce.

According to the OECD, Switzerland had in 2001 the highest percentage of individuals using e-mail (90%) but a rather low percentage of individuals finding information about goods and services on the Internet.

Hosts per 1000 inhabitants, international comparison, development 1997-2001



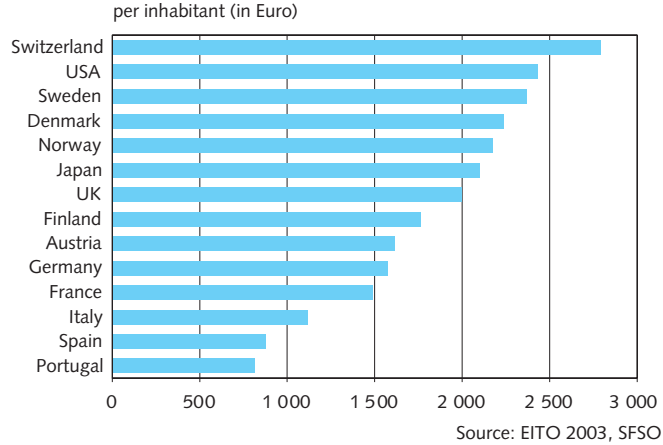
Source: OECD / Telcordia

ICT expenditure

In the OECD, Switzerland is the country which spends most per inhabitant on ICT, surpassing the United States and the Scandinavian countries.

Swiss households spent in 2001 twice as much for ICT services as for ICT goods. In 2001, telecommunications services (without Internet services) were the major ICT expenditure category in Swiss households. When it comes to ICT goods, the households invested in 2001 primarily in IT equipment. In 2001, ICT expenditure represented 3% of the households' total expenditure.

ICT expenditure, international comparison, 2002



Source: EITO 2003, SFSO

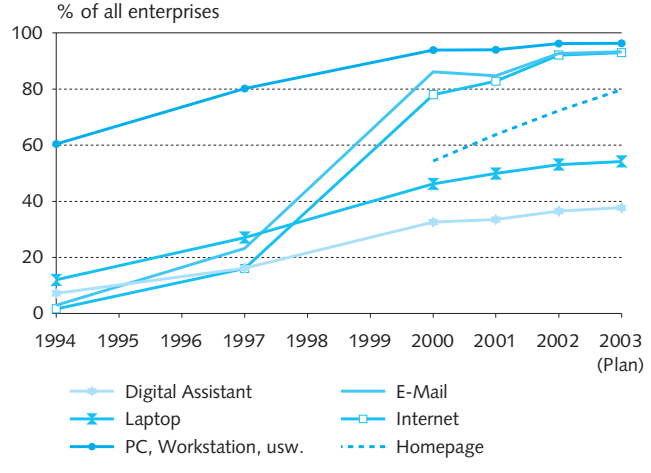
ICT in enterprises

The use of ICT in Swiss enterprises, especially e-mail and the Internet, has most strongly grown between 1997 and 2000. Since 2000, only the use of homepages has grown quite strongly, while the adoption of other ICTs has slowed down.

Various reasons are responsible for this relative slowdown of ICT adoption. Several ICTs, such as e-mail, Internet, PC and work stations are already being used by almost 100% of all enterprises. The use of other technologies, like digital assistants or laptops, is restricted to specific kinds of business activities.

Large enterprises use ICT more frequently than small enterprises. This holds especially for Intranet, Extranet, and broadband technologies. Noticeable differences are also prevalent across sectors but not between industry and service providers.

ICT adoption, development 1994-2003



Source: KOF panel survey 2002

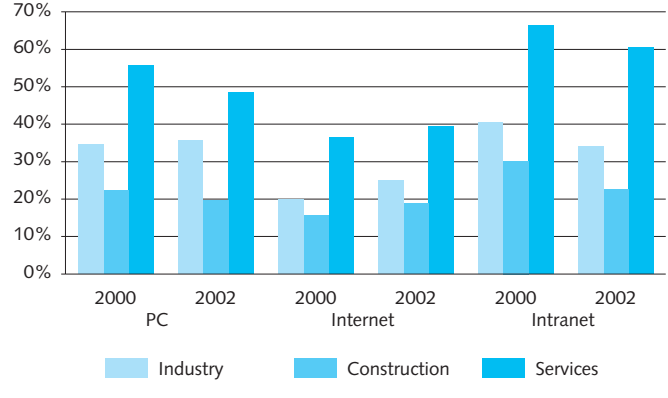
Enterprise use of ICT

PCs, Internet and Intranet are being used in Switzerland more intensely in the service sector than in the industrial and the construction sectors. The most intensive use of ICT takes place for modern services relying on e-commerce.

The intensity of Internet use has grown for all three sectors between 2000 and 2002, while Intranet use has declined for all three sectors during the same time period. The intensity of PC use has remained basically constant for the industrial and construction sectors while it has declined for the service sector.

Large enterprises (250 employees and more) and small enterprises (5–49 employees) have a higher intensity of ICT use than medium-sized enterprises (50–249 employees).

Average percentage of employees in an enterprise using different types of ICTs for different sectors



Source: KOF panel survey 2002

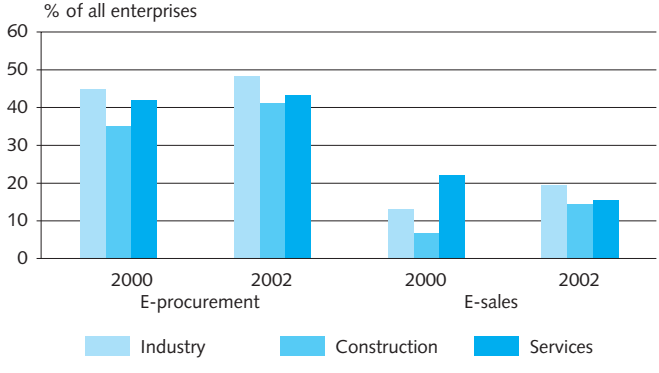
E-commerce engagement

Internet-based e-procurement in Switzerland is about twice as high as e-sales. Both types of e-commerce have not changed much over the years. E-procurement in 2002 was slightly higher in the industry sector than in the service sector.

E-procurement is highest for the modern service sector and in the high-tech industry. The growth of e-procurement between 2000 and 2002 was stronger in the industry and construction sectors than in the service sector. Larger enterprises engage more often in e-procurement than smaller companies. However, medium-sized enterprises have caught up quite a bit with respect to large enterprises.

E-sales are more prevalent in the industry service sector than in the construction sector. Obviously, Internet strategies seem to have been reversed in the service sector due to implementation problems. E-sales are more prevalent in medium-sized and large enterprises, even though the latter group has experienced a decline between 2000 and 2002.

E-Commerce engagement by sector



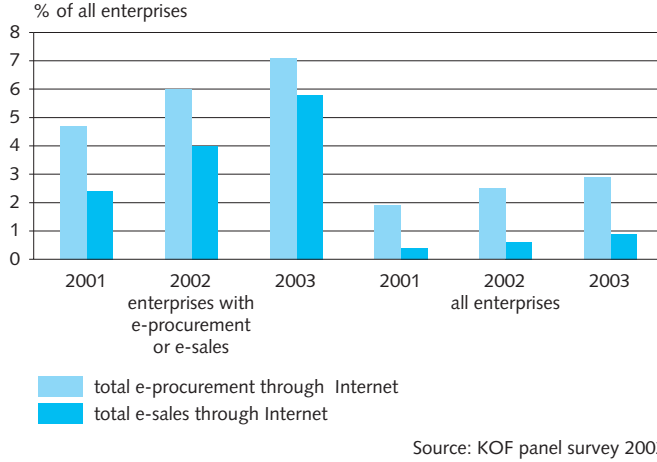
Source: KOF panel survey 2002

E-commerce transaction volume

Both the transaction volumes for Internet-based e-procurement and e-sales in Switzerland have steadily grown over the past three years. The leading sectors with respect to the transaction volume for e-procurement are ICT-research, watches, retail, textile and construction. The leading sectors with respect to the transaction volume for e-sales are hotel and restaurant industry, plastics, print/graphics, services for firms and wholesale. Obviously, there is no single sector that is leading in both e-procurement as well as in e-sales.

The two major benefits of e-procurement are a higher market transparency and an acceleration of business processes. The benefits of e-sales refer to image aspects, strengthening of customer focus and access to new markets, especially access to new customer segments and the launching of new products. Cost aspects, other than reductions of marketing costs, are of minor consideration.

Average percentage of purchase value and turnover



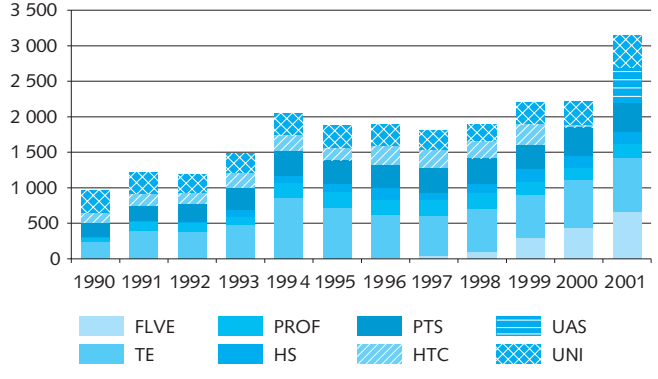
Source: KOF panel survey 2002

ICT education and training

The number of students and apprentices undergoing ICT education and training has grown dramatically since the mid-Nineties, after stagnating between 1990 and 1995.

Women are chronically underrepresented in ICT education and training, accounting for only 9% of the degrees awarded in 2001. Women represent a bigger percentage of students at higher IT management schools (16%) and at university level (25%). However, they obtain only a tiny share of awarded vocational certificates (5%), polytechnical school diplomas (3%) and universities of applied sciences diplomas (3%).

ICT degrees in Switzerland for different types of education, development 1990-2001



Source: SFSO

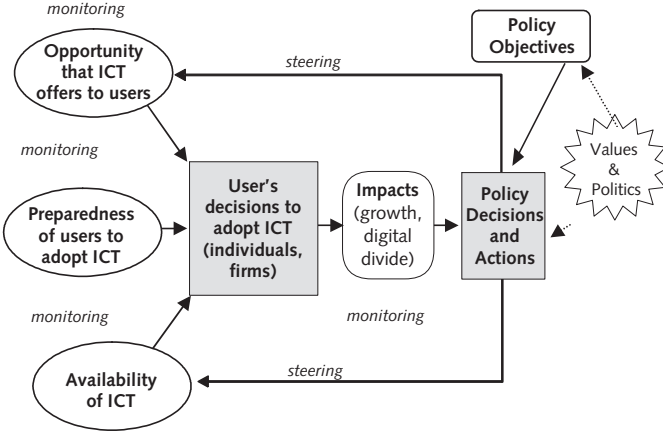
Type of Education

FLVE = apprenticeships
TE = trade examination
PROF = professional or masters' examination
HS = higher IT management schools
PTS = polytechnical schools
HTC = higher technical colleges
UAS = universities of applied sciences
UNI = universities

SEAMATE Project

The Swiss Federal Statistical Office (SFSO) is participating in the FP5 research project SEAMATE, Socio-Economic Analysis and Macro-modelling of Adapting to Information Technologies in Europe. The objective of SEAMATE is to make estimates, for the first time at a EU level, of the socio-economic impact of information and communications technologies (ICT) on the EU-15, Norway and Switzerland. The SFSO is participating in working package WP 6.1, statistical indicators and data needs.

The focus of ICT indicator definition has evolved over the years, from readiness, to intensity, to impact, and finally to outcome. We have extended this approach to include a dynamic ICT system view, that puts the decision makers at the core of the model.



Based on this system view, the SFSO has adopted an inductive, hypotheses-driven approach for the identification of relevant indicators. The crucial hypotheses (questions to be answered) and the critical issues are:

1. «Which types of ICT adoption cause which types of impacts?»
   - Impacts during ICT growth phase are less severe than when ICT has reached maturity
   - Different technologies have different saturation levels
2. «Which policy actions motivate users to adopt ICT?»
   - ICT is heavily interconnected and so are ICT decisions (interconnectivity)
   - The market leading technology is not necessarily the best one (path dependency)
3. «Which types of impacts cause users to adopt ICT?»
   - Positive experience with ICT motivates individuals and firms to adopt ICT
   - Positive results in one sector can benefit other sectors (spill-over effect)
4. «How effective are policy actions to steer impacts?»
   - Benefits of ICT grow exponentially with the number of users (network effects)
   - Intangible factors have stronger influence on the users' decision to adopt ICT than technological factors

What are the indicators for the information society?

Indicators for the information society describe the infrastructure, the production and the use of information and communication technologies (ICT) in the various areas of society (households, enterprises, education/training etc). The economic and social significance of ICT is growing in modern societies. The presentation of trends in tandem with international, structural and social comparisons provides information about the status of the information society in Switzerland.

This leaflet provides some examples of indicators for the information society presented by the SFSO on the Internet: **http://www.infosociety-stat.admin.ch**

The information society is developing so fast that certain indicators may quickly lose their relevance – a phenomenon which, among other things, makes international comparison of the latest national data difficult. To counter this problem, information society indicators are regularly updated and expanded on the SFSO website.

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Information society indicators are developed in the framework of the Information Society Coordination Group (ISCG) set up by the Swiss Government in 1998.

The project takes its lead from international initiatives on indicator development headed by the OECD and Eurostat.

Information society indicators contribute to discussions about the threats and opportunities of the information society, making it possible to evaluate the Swiss economy's ability to compete and highlighting the problem of the digital divide in the general public.