Monitoring Information Economics

5th Factual Report 2002

Management Summary

on behalf of

Bundesministerium
für Wirtschaft
und Arbeit

A secondary research study conducted by NFO Infratest (Germany)

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This Management Summary includes the results of the Factual and Chart Report of **"Monitoring Information Economics"**. On behalf of the German Federal Ministry of Economics and Technology the Factual Report is produced biannually by the Research Service InfraSearch of the market research and consulting agency NFO Infratest (Germany).

You can download the full version of the reports in German and other parts of them in English on **http://www.infrasearch.de/bmwi** .

1 Management Summary

1.1 Summary of Factual Report

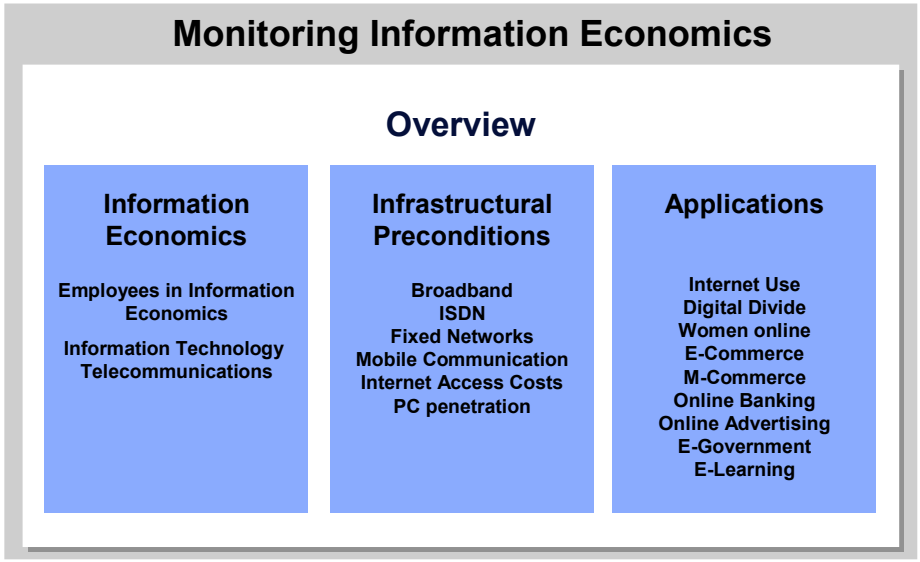
Purpose of study

The fifth Factual Report on “Monitoring Information Economics” is a systematic desk research analysis:

- of all market segments (i.e. information technology, tele-communications, and the Internet) belonging to the total market of "Information Economics" (IE) and its market volumes,
- of the dissemination and penetration of their technical and infra-structural preconditions, and
- of all types of applications and users' acceptance.

The report is an international benchmark study. It describes Germany's position in comparison with leading global regions with respect to the various market segments of Information Economics.

Fig. 1



Methodology

By means of the information service „InfraSearch“ of NFO Infratest (Information and Documentation Division, Germany), relevant data and information, concerning the above-mentioned topics from various national and international sources, were retrieved, judged, selected and analysed. This procedure

- ensures the compilation of the most possibly objective and complete data,
- allows an overview and rating of different study results generating forecasts of future trends, and
- permits solid positioning of Germany in international and global comparison, utilizing expressive charts.

Leading case studies have been identified as precedent (see attachment II, "Leitstudien"). These studies deal with various topics of Information Economics in general or in its partial aspects. Especially publications from well-known institutes, which are periodically up-dated according to standardized methodologies, belong to these studies.

Supply of Data

Information on topics concerning the sector of Information Economics is characterized by general information flow, a lack of current multinational studies, and missing comparability based on greatly varying definitions and research methods used in the various studies.
These problems were solved by compiling different research results on the same topic in the form of overview comparisons and by explaining the methodologies of the leading studies. Actual trend statements are based on these overviews and are being verified by the annual trend report.

Fig. 2

Information Economics

The chapter about the “Total Market” deals mainly with the analysis and representational development of product and service markets in information technology, telecommunications and the entire IE-labour market. The intention of this chapter is to describe and analyse the current state of the German sectorial markets of Information Economics in an international benchmarking context with the world's leading regions.

World-wide Demand for IT-professionals

Despite the declining labour market due to dot-com bankruptcy, there will be more than two million vacant positions in 2004 according to IDC, i.e. prognosed demand for such professionals in the ICT industry will still remain higher than the actual job supply.

Demand for IT-professionals in the USA

ITAA found out by means of a survey that U.S. American companies perceive the demand for IT professionals quite optimistically for the 12 months now ahead of us. In 2002 1.1 million new hires are planned. Thus, the demand for such employees would increase by 27% compared to 2001, while representing only 71% of 2000’s total of hires. Due to the lack of qualified employees U.S. American firms expect about 600,000 positions to remain vacant. Therefore, the gap in the supply of IT-professionals widens in comparison to 2001 when only 400,000 vacancies were not filled.

Demand for IT-professionals in Western Europe

EITO presently assumes demand for 13 million workers in the field of Information Economics in 2003. In 2002, 1.5 million experts will be lacking and despite the increasing supply of ICT-positions, demand will not be satisfied in the following years. In 2003 there will be a lack of 1.7 million ICT professionals.

Professionals in the ICT industry in Germany

However, according to BITKOM, employment in the field of information and communication technology (ICT) will be expected to shrink noticably for the first time since the beginning of the 90s. In 2002, the number of employees is supposed to get reduced by 34% to 791,000.

Green Card

12,309 Green Cards were issued between August 1st, 2000 and June 30th, 2002. Based on the generally worsened economic situation, enterprises temporarily demanded less Green Card employees but since June 2002 this demand increased again in comparison to previous months.

Training/ Education in Germany

Demand for traineeships in the IT-field still remains high. Currently, there are approximately 60,000 trainees in all four IT-professional categories. On the other hand, interest in academic studies in this area diminishes. Regarding the winter semester of 2001/2002, about 25,400 freshmen, i.e. 5% less than last year, have enrolled. Every year there are only 5,700 graduates since the rate of drop-outs is around 50%.

To further minimize the lack of IT-professionals in Germany, the Federal Ministry for Training & Education issued an educational decree regulating further training in the IT-field. The new decree enables IT-graduates of such traineeships as well as lateral hires in the IT market sector to take advantage of those occupational perspectives usually left to university graduates.

Information & Communi-cation Technology

Generally it is said that EITO and BITKOM had to adjust entire projections for growth and revenue within the ICT business sector in consequence of the global economic downturn for 2002. The year of 2003 is supposed to record a recovery of the market.

With its share of 5.8%, Germany is the third largest national market for Information and Communication Technology (ICT) right after the USA (2003: 33.6%) and Japan (2003: 12.2%). The gap between Europe (including Germany) with a world market share of 28.6% and the USA with an entire world market volume of 2,680 billion EUR in 2003 is slightly closing year by year (previous year: 2,442 billion EUR).

The Western European ICT-market will come to a total revenue of 731 billion EUR in 2003 (previous year: 678 billion EUR).

The entire German ICT market for 2002 will be worth 142.7 billion EUR, gaining by 4.1% compared to 2001. In 2003, the growth rate is expected to be 8.2%, equalling 154.4 billion EUR. Even in 2003, its strong market share of 21.1% makes Germany the leader within the European ICT sector, ahead of United Kingdom with 20.6% and France with 15.1%.

Compared to 2000 the share of the ICT revenue within the German gross national product rose from 5.7% to 6.8% in 2001. However, Germany continues to lag behind the Western European average of 7.5%.

Multimedia formations in Germany

In the years of 1995 and 1996 increased the number of multimedia formations by nearly 30% each. Later in 1999 and 2000 the rate of such formations amounted an above average of 35% for each individual year. It is true that no actual or current numbers are available for 2001 but the ZEW assumes that the increase will be substantially more moderate than in previous years. Eventually, there will be a slight decrease in the amounts of company formations in the East. The reason for such developments, as were mentioned by the ZEW, were expectations regarding growth of new business areas within the IT-industry that had been put a damper on.

During the 90s the number of new start-ups in the multimedia sector rose steadily by an approximate average of 25% from 1991 till 2000. However, East Germany had to experience a decline by 40% from 1990 to 1991 before moderate growth restarted.

The amount of new company formations in East Germany grew exceptionally fast by more than 50% per year from 1995 till 1996, and even during the years of 1998 to 2000 the growth rates always kept right beneath the 50% mark.

Information technology

In 2003, the USA remains the distinct market leader in information technology with a market share of 41.8%, Europe's share (including Eastern Europe) being 28.7%. In 2003 the information technology sector should produce 1,328 billion EUR world-wide (previous year 2001: 1,202 billion EUR).

According to EITO, Western Europe will account for an approximate revenue of 371 billion EUR in information technology in 2003 (previous year: 341 billion EUR). This is equivalent to a growth rate of 8.8% (compared to 5.1% from 2002).

The German revenue from information technology in 2003 will be, according to EITO estimates, about 80.0 billion EUR (previous year: 74.5) and thus, will reach a world market share of 6.0%.

Japan claims with 12.8% twice as much of a market share than Germany.

For the first time in 2002 the revenue in the German IT Services market will surpass the revenue from hardware. In addition, the share of software in the ICT market is expected to rise above the hardware share in 2003. Therefore, IT Services (41.4%) will have the larger market share before software (35.9%) and data processing hardware (22.7%).

Telecommunications

Europe dominates repeatedly in 2003 in the telecommunication market with a share of 28.5%, ahead of the USA with only 25.5%. As a whole, the world-wide telecommunication market will obtain a volume of 1,352 billion EUR in 2003 (2002: 1,240 billion EUR).

According to EITO estimates, the Western European market for telecommunication will reach a revenue of 360 billion EUR in 2003 (2002: 337 billion EUR). This corresponds to a growth rate of 6.8% in 2002/2003 (compared to 5.8% in 2002). In Western Europe as well as in Germany, three quarters of revenue gained in the telecommunications market derive from telecommunication services.

In 2003, the German market for telecommunications reaches 74.5 billion EUR in revenue according to EITO (previous year: 68.3 billion EUR). Based on EITO's analysis, Germany obtains the greatest volume of the Western European telecommunications market again in 2003 followed by the UK with 67.4 billion EUR and Italy with 46.6 billion EUR. In relation to this ranking telecommunication services own a share of 80.1% (2002: 79.8%), network equipment 10.8% (2002: 10.8%) and end tools account for 9.1% (2002: 9.4%) in 2003.

Infrastructural Preconditions

This chapter deals with a description of the current and future penetration of Internet access technologies in Germany with reference to international benchmarking. It is necessary to differentiate between new alternative ways and techniques (mobile telephony, broadband, cable television, interactive television = iTV) and traditional, i.e. up to now most commonly used access technologies (mainline telephony, ISDN, PC).

Even if the USA currently still exhibits the largest penetration rates in most sectors and areas, generally it can be confirmed that Europe is quickly catching up.

Broadband technology

The dissemination of broadband technologies continues to increase. 2002 and 2003 are expected to yield a strong European growth rate of 88.3% or rather an immense global 65.5%. Despite this strong increase in broadband use, Europe remains in terms of density far behind North America and the Asian/Pacific region.

eMarketer estimates the number of broadband-connected households world-wide to be 53.0 million in 2002. North America's share of 38.4% is only slightly bigger than the Asian/Pacific 38.0%. The European share of households using broadband amounts to a global 21.4%.

For several years now experts have agreed that the USA will remain a front runner in terms of PC-based Internet access. Still, these experts also agreed that Europeans – especially from affluent nations – will outshine Americans in turn when it comes to applying alternative technologies with the objective of Internet usage (e.g. digital TV, mobile telephony, and other appropriate possibilities of access).

According to the IDC, the number of German broadband connections will duplicate in 2002 to 2.8 million in comparison to previous year.

DSL

The most prominent broadband technologies are cable modems and DSL. In June 2001 both access devices had gained almost equal share Europe-wide: 51% for cable modems and 40% for DSL. Strategy analytics determined that cable modems dominate North America and DSL appears to be mostly spread in Europe.

7.8% of German households use DSL-cable or satellite dishes, whereby Germany ranks 3rd before Sweden and Denmark.

Europe-wide, Germany belongs to the front runners regarding broadband supply. Germany belongs to the first countries in which DSL was offered. With 21 connections per 1,000 households, Germany ranks second behind Sweden. Internationally, the USA ranks 5th with 18 connections. In 2001, the German Telecom has sold 2.2 million DSL devices of which 2 million already have been installed. Beginning with 2005, DSL will become the most used broadband platform with 37% followed by TV cable with 18% in Europe.

Cable modem

Internationally, 67 American households from 1,000 households were equipped with a cable modem in 2001. Despite the number of cross-European TV cable connections that may be the highest in Germany, 0.2% of German households are positioned below the Western European average of 1% when it comes to Internet accessibility through TV connections, only made possible by using cable modems. The 18.1 million cable connected households represent 70% of Germany's potential.

Interactive television = iTV

Interactive television could, in the long run, become the most commonly used access to the Internet. eMarketer expects 2002 to come forward with a penetration of 37% for American households. And Strategy Analytics counts on a dissemination rate of 21% for digital TV in European households.

Main line telephony and ISDN

The fixed-line infrastructure is still the most widely spread way of connecting computers to the Internet.

The most progressive telecom systems belong to North America. There exist 66 main lines per 100 inhabitants while Europe accounts for 41 and Germany for 63 in that respect.

In the end of 2001, Germany had 53 million telephony channels of that 3% of all active connections were provided by competitors of the Deutsche Telecom AG.

Moreover, in 2001 315 billion minutes were transmitted from main line connections (2000: 283 billion) in Germany, of which 88 billion (2000: 73 billion) were being connected by new providers. Thus, the share of new suppliers, being part of the total volume of connections, amounts to 28% (prev. year: 26%). Possible cause for this stagnation is the effect of substitution by mobile radio services.

According to BITKOM, almost every fifth ISDN-connection is found in either German households or enterprises.

Mobile communication world-wide

In 2001, about 15.5% of the world population (i.e. 941 million people) owned a cellular phone. This will increase to 1.6 billion people until 2003.

Western Europe owns the greatest share of the global mobile phone market with 74% ahead of North America with 38% and China with 9%.

With a penetration rate of 97% and 84% of the total population, respectively, Taiwan and Hong Kong clearly dominate the global market in terms of mobile radio use.

Mobile communication in Western Europe and Germany

Regarding the 2001 penetration through mobile radio participants Germany remains with 68% within Europe's centre field but below the West European average of 74 participants per 100 inhabitants. Still, with a growth rate of 19% Germany was able to secure the second highest rate in terms of growth right after Italy in 2001 which compares favorably to 2002.

Mobile Internet access

The increasing use of mobile telephones for Internet access finds encouragement through new technological developments (for example, GPRS and UMTS).

According to Gartner Dataquest, Europeans own world-wide the highest number of Internet-capable mobile devices. An amount of 205 million of such devices places Europe before the Asian/Pacific with 119 million and North America with 103 million devices.

Market of mobile communi-cations

World-wide, approximately 400 million mobile phones were sold in 2001. 2002 is expected to achieve sales of 400 to 420 million mobile phones while taking into consideration the current difficult market situation.

The American market research institute Instat MDR counts on a global turnover of 60 billion USD from the sales of mobile radio devices for the year 2002. The turnover is supposed to increase to 100 billion USD until 2006.

The British market research company Analysys forcasts a rise in Western Europe's mobile radio revenue by approximately 4% to 97 billion USD in 2002. In comparison, the West European growth rate equalled 12% in 2001.

Due to the increased saturation and stagnation, BITKOM calculates 5.97 billion EUR in revenue in the German mobile radio market for 2002. In terms of trade, 41 million mobile phones were exported and only 16 millions were imported in 2001. Nokia is perceived as market leader within and outside of Germany.

Internet hosts

A clear north-south division, a so-called "regional divide", is shown among European Internet host density: in the north, the Scandinavian countries display the highest density, whereas in the south, and especially in Eastern Europe, the indicator values are comparatively low.

The number of Internet hosts amounted to 200.1 million in June 2002. Being the international front runner, the USA offers 272 hosts per 1,000 inhabitants. Finland and Norway follow respectively on 2nd and 3rd place. Germany ranges with 67.7 hosts per 1,000 inhabitants right after the UK (68.8 hosts per 1,000 inhabitants). The West European average comes to 105.6 hosts per 1,000 inhabitants.

SSL Server

One of the most reliable indicators of a nation's Internet and E-Commerce infrastructure is its number of existing & active secure socket layer servers (SSL).

Thus, Iceland and the USA are market leaders with 28.67 and 28.09 SSL-servers, respectively, per 100,000 inhabitants. With a penetration rate of 6.21 SSL-servers per 100,000 inhabitants Germany ranks 7th in global comparison.

Internet access costs

An important recent development was the increasing deregulation and privatisation of the telecommunication industry sectors in past years.

Telephone fees for 20 hours of Internet use per month in the USA are still appreciably lower (20.89 USD at peak times) than in Germany (25.40 USD) or in the United Kingdom (34.21 USD). Nevertheless, Germany's international competitiveness has increased considerably after Internet access costs have decreased by 26% between 2000 and 2001. No other country is able to offer such a drastic reduction in access fees.

Internet access

54% of the North American and 45% of the West European population owned Internet access by the end of 2001.

Iceland and Scandinavia remain Europe's front runners in terms of Internet penetration in households. Germany manages with 38.4% of household penetration to lie slightly above the EU average of 37.7%.

Internet access within companies

Last year (2001), 89% of all German enterprises compared to 67% in 1999 had Internet access. In particular, SMEs were able to make enormous progress towards the connection to Internet access devices: actual numbers come close to a full company provision (1-9 employees: 77%, 10-49 employees: 87%, 50-199 employees 96%). In addition, discrepancies between old and new federal states as well as city and rural areas could be diminished. Within 59% of all enterprises, the majority of employees has access to the Internet (1999: 24%). Until 2004, 70% of all employed Europeans shall have work related Internet access.

Internet access by location

Still, the predominant location for Internet access in Western Europe is at home, followed by access at work. Even in Germany people are mostly inclined to go online while at home but the Internet use while visiting friends and relatives predominates over using it at work.

PC density

Despite a given uncertainty in estimates, a particular trend becomes clearly recognizable: wealthy regions, such as North America and Western Europe, disclose an explicitly higher PC-penetration and use than the Asia-Pacific and South and Central America.

Based on the high penetration rate in the working place, the USA remains market leader for personal computers. In accordance with Morgan Stanley, 70% of US-companies utilize PC whereas only 48% of European firms do the same (50% in Japan, 7% in Latin America).

Currently, Germany is internationally positioned in centre field with reference to its PC density (33 PCs per 100 inhabitants in 2001) right after the market leaders Scandinavia and Switzerland. 2005 is expected to be the year when every second German owns a PC.

Applications

The chapter “Applications” analyses – besides the potential and actual number of Internet users - the current Internet user typology according to socio-demographics, plus private and business use of the Internet. As the different markets of E-Commerce, the sectors of B2C, B2B and M-Commerce are analysed separately as well as the developmental status of e-business within enterprises. Particular focus will be put on online advertising, online banking, E-Learning and E-Government.

Internet

Generally, it can be stated that estimates and surveys about Internet user figures differ highly. One of the main reasons is that Internet use is not uniformly defined. This means that various age groups are either excluded or included analytically, that user frequency and intensity are differently defined (for example: weekly, daily, monthly use) or the use of Internet services may vary (all Internet services compared to solely selected services such as e-mail, etc.).

Number of Internet users world-wide

There are close to 10% of the world population that momentarily use the Internet according to Nua Internet Surveys. Thus, there were in total 580.78 million Internet users world-wide at the end of May 2002. eMarketer estimates that by 2004 the number of occasional Internet users should climb to 709 million people, reaching 11.1% of the world population.

Internet users in the USA

The dominating American presence in the Internet business will lessen steadily whereas online markets in Asia, Europe and Latin America will gain importance. Both global Internet markets, the USA and Western Europe are increasingly brought to maturity. A number of institutes already assume that North Americans have been replaced by Europeans as the Number One Internet community in the world.

As for another rating, Computer Economics still ranks North America first with its 212.6 million Internet users and a share of 37.8% in 2002 (right ahead of Europe with 163.5 million and 29.1%) and the Asia Pacific region with 151 million and 26.9%. Compared to Europe, with an expected average annual growth rate of 22% between 2000 and 2004, the USA and Canada will only show 14.3% growth. With reference to their penetration within the population, North America will continue to dominate with an Internet user penetration of 60% ahead of Europe with 27%.

Internet users in Asia

In the longterm inhabitants of the Asia Pacific area will represent the majority of Internet users. In 2003 already, this region will take over Europe’s “regime” as greatest Internet user community. Thus, the Asia Pacific area becomes the driving force for Internet development.

eMarketer estimates 182 million Internet users to derive from the Asian Pacific region in 2002, which corresponds to a 10% increase compared to previous year. The highest/ most prevalent dissemination of the Internet can be found in developed countries but according to absolute numbers most Internet users stem from China.

Internet users in Europe

In 2001, there were 144.4 million Internet users (online within the past 30 days); in 2002, there will be about 175.7 million, equalling 17.4% of the European population. Estimates of different institutions concerning the number of Internet users in Europa in 2002 vary between 149.8 million and 195.1 million people. eMarketer's estimated 221.1 Internet users for the year 2004 take into consideration the currently recessional global economy. Thus, 2004 will already claim 22.3% of all Europeans online.

Internet users in Germany

Scandinavia and the USA now as ever account for the highest Internet user density. Germany positions with 37 Internet users per 100 inhabitants slightly above the European average of 35 Internet users per 100 inhabitants.

Data from various market research institutes about the number of Internet users in Germany alternate between 12.5 and 34.4 million, depending on how "Internet use" is defined and which age groups were being considered. According to a recent study from NFO Infratest InCom, 54% of the German population (34.4 million) from the age of 14 used the Internet in June 2002 at least once within the past 12 months, which equals an increase of 12% within half a year.

The use of the Internet within the new German federal states is below average when compared to its use in the old states.

Digital Divide

The Internet is on its way to becoming a mass medium. However, this is only the case in certain parts of the world or within certain population groups. Digital divides do not solely exist because of infrastructural preconditions but also relate to sociodemographic groups such as gender, age, education, and income - even in highly developed nations.

Concerning the socio-demographic profile, the typical global Internet user is young, male, well-educated and financially better situated than the rest of the population. Still, women are strongly catching up with men in developed Internet-hosting countries. In individual cases such as the USA, Canada, and Hong Kong women have already caught up.

Digital Divide in USA/ Canada

Recently the share of women who use the Internet is larger than that of men in the USA and Canada.

Digital Divide in Asia

The share of female Internet users in Asian-Pacific countries is almost as large as that of male users.

Digital Divide in Europe

The typical European Internet user is male, young, enjoys a higher educational level and higher income than the rest of the population. Currently, 43% of European Internet users are women, 57% are men. In connection with the growing number of Internet users the dispersion of women and men will come closer and closer to the sociodemographic structure of the total population.

The Internet still is used by mostly younger age groups.
But people of upper age increasingly utilize Internet services now, too.

Digital Divide in Germany

The socio-demographic structure of Internet users will come to match the structure of the total population. Especially in disadvantaged groups of the population (such as people with low educational level, the elderly, unemployed, countryside inhabitants) the digital divide will remain the same.

The typical Internet user in Germany is male and between 25 and 44 years old. 57% of the German Internet users are male. The largest user group is 35-44 years old and women are catching up.

Regarding the Internet use within the population, younger age groups are mostly represented amongst its users. 81% of 14 to 17 year-olds and 83% of 18-24 year-olds go online.

Most of the Internet users (in absolute figures) have graduated with “Realschulabschluss” (10 years of school). User density is, however, larger in population groups with higher education as well as among people with a household income of over 2,000 EUR.

Women Online

The share of women from Internet users as well as the spreading of Internet use among the female population continues to rise steadily world-wide. Also, women become increasingly important as online consumers and represent an enormous potential for growth in the E-Commerce sector, although the average value of their online purchasing and orders still remain below the male-based average.

In comparison to the whole of German online users and in accordance with Fittkau & Maaß, women seem to foster an above average interest in fashion/cosmetics/hygiene, foods, cooking/baking, health/fitness, painting & art and people, i.e. celebrities. Other more intensified interests lie in literature, the spirit of times/lifestyle, and nature.

Even online shopping exposes obvious female preferences towards certain products: more women than average online shoppers tend to buy fashion / clothing, hygiene products / cosmetics, jewellery, dessous / underwear, and scents / perfumery. Females also purchase more often furniture, art/pictures as well as sweets, sportswear, and sports apparatus than average online surfers.

Length of Internet use

The intensity of personal Internet use differs highly from country to country and influences various online activities.

Europeans spend less time online than Americans do. In return, their use is more goal-oriented. This difference can be explained by the still higher telecommunication fees in Europe.

Eurobarometer estimates that 82.4% of the European online population visit the Internet weekly or even more frequently.

West European Internet users spend about 5:11 to 7:44 hours per month online with Germans surfing for the longest time. The USA and Japan are both international front-runners with 10:36 hours and 10:10 hours, respectively.

Purpose of Internet use

The two most important reasons for Internet use are identical in Europe and the USA: communication (for example, sending e-mails) as well as private and professional information purposes (for example, news or research on special interests). Because of the high telecommunication fees, however, Europeans use entertainment services less than Americans.

E-Commerce

According to eMarketer, the total annual volume of the global E-Commerce market amounted to 550 billion USD in 2001.

2002 is expected to bring additional growth that leads up to 1,008.3 billion USD (+83.3%) in revenue. North America holds a share of 69%. Europe's 17% share of the world market has surpassed Asia's 14% by now.

E-Commerce world-wide

In 2003 the global E-Commerce market shall gain between 963 billion USD and 4 trillion USD as total turnover.

The large differences between these estimates are at least in part based on the various definitions of E-Commerce concepts. On one hand, E-Commerce is understood as an act of purchase, which the buyer initiates or utilizes through the Internet. On the other hand, the total amount paid online is included in the predictions, i.e. the conventional payments resulted after an order issued online is also added to the total E-Commerce revenue.

Moreover, please note that most presented data has been estimated before the global economic recession. Generally all current and new prognoses have been corrected to exhibit a downward trend since only slow growth is expected at this time.

In spite of the impressive revenue which is predicted, two trends in E-Commerce are clearly visible:

The revenue from E-Commerce will grow exponentially. That is especially true for the B2B sector. The share of electronic B2B-trade in total E-Commerce revenues is estimated to equal 83.4% world-wide in 2002. This share shall amount to 86.6% until 2004. Thus, the world-wide B2B revenue will be 2,775 billion USD in 2004. Annual growth rates will come to approximately 80% by 2004.

Germany's share of the E-Commerce world market amount to 47.9 billion USD or 4.8% in 2002. Europe including Germany comes to 16.9%.

In 2002, world-wide exponential growth is said to hit home in B2B-business since the share of B2C-business from total E-Commerce will diminish from 17% (2002) to ca. 13.4% to the benefit of B2B resulting in a comparably low total value of 428 billion USD.

The currently still-excelling market position of the USA will be weakened as E-Commerce revenues in Europe and Asia will increase. At the present (2002), North and Latin America have a share of about 69% of the total revenue of 1,008.3 billion USD. By 2004 the North American share should shrink to 58.2%, according to eMarketer, while Europe's share (including Germany) will grow to 30.6%.

E-Commerce in the USA

According to eMarketer, the total volume of the North American E-Commerce turnover will rise from 206.7 billion USD to 1,798.6 billion USD between 2000 and 2004, i.e. an increase by nearly factor nine. In 2002, the volume will amount to 674.6 billion USD with B2B-business owning a share of 83.6% of the total. 89% of the North American E-Commerce volume will be generated by US-American turnovers whereas the Canadian E-Commerce contribution remains at 11%.

E-Commerce in Asia

In the Asian-Pacific region, the E-Commerce revenue for 2002 will amount to 136.0 billion USD, according to eMarketer. From this, 88.6% will most likely go to the share of B2B-business. This equals an increase to 77% versus previous year. Low income and the little dissemination of the Internet hinder further developments of consumer E-Commerce segments of E-Commerce within this region, whereby B2B-business will gain strength. Past years have shown that proceeds have increased overproportionally.

E-Commerce in Europe

In 2001, B2B and B2C revenue in Europe amounted to 68.8 billion USD. eMarketer proclaims that the total revenue in 2002 will reach 169.7 billion USD and will amount in 2004 to 979.6 billion USD. Still, these prognoses have to be corrected in accordance with the current downward trend caused by mobile Internet use, decreasing IT-investments and the economic situation.

The Western European E-Commerce revenue in the B2B sector amounted to 52.4 billion USD in 2001. This revenue will increase more than double in 2002 to 132.7 billion USD (Germany's share: 36.9 million USD) in order to reach 797.3 billion USD mark by 2004, according to another estimate by eMarketer.

The IDC expects 2002 a total revenue of 295.2 billion USD in the E-Commerce sector. 2005 will supposedly result in even 1.5 trillion USD, thus, growing annually an average of 86%.

Western Europe's share of the B2B E-Commerce turnover will constantly increase. Between 2002 and 2004 the share will rise from 15.8% to 28.7%.

The European B2C-business share amounts to 22.2% of the world's total in 2002, which shall increase to 42.7% until 2004 at the expense of North America and Asia. Nevertheless Europeans won't be able to match with the E-Commerce activities of the USA in future years, but the goal is to reach at least 61% of the American market volume in 2004.

In spite of impressive revenue figures, West European E-Commerce makes up only 1% of its gross national product. Forrester prognosticates that this share will rise to 6% until 2004.

E-Commerce in Germany

Germany is the West European market leader in E-Commerce, ahead of the United Kingdom and France. German E-Commerce sales will, as based on estimates from eMarketer, amount to 47.9 billion USD in 2002 (UK: 44.4 billion). Germany and the United Kingdom account for 54.4% of the entire West European E-Commerce revenue. According to submitted prognoses, Germany will keep its leading position in the future.

In B2B business Germany is the market leader with a 27.8% market share as part of the total European B2B revenue of 132.7 billion USD (world market share: 4.4%) in 2002 ahead of the UK with 25.8%, France with 10.5%, the Netherlands with 7.5% and Sweden with 7.1%, Finland with 6.6%, and finally Italy with 5%.

E-Business in the USA and in Europe

Concerning the introduction and spreading of traditionally PC-based E-Commerce, Europe was able to catch up with the USA so that Accenture reassessed the USA's developmental lead over Europe to only one single year – whereat an entire year still remains quite valuable within this dynamic sector. For instance, the USA integrated to an impressive extent E-Commerce within their supply chain in the past 12 months which may yield a great potential in terms of increased productivity.

It is expected that new forms of E-Commerce (TV-commerce, wireless commerce, voice commerce, silent commerce) will bring greater changes about for the next 3 years than traditional means of E-Commerce evoked in the past 3 years. These new forms of E-Commerce will allow for trade done at any location at any time and therefore called u-commerce ("ubiquitous commerce").

International E-business applications

A study, which was undertaken by Taylor Nelson Sofres in the countries of Denmark, France, Japan, Singapore, the United Kingdom, and the USA, disclosed that e-mail is the primary Internet application used by enterprises. All other "e-solutions" are being used in addition to the e-mail function, i.e. as supplementation. Companies in the above mentioned countries tend to utilize the Internet more as means to establish customer contacts than as optimizing tool for operational efficiency and internal know-how. It's true that there are only few enterprises left which do not apply the Internet in any kind or form, nevertheless there still exist differences in which Internet applications are being implemented.

In total, businesses predominantly use the Internet customer contact purposes (marketing, CRM, sales, order processing) than for internal purposes, such as further training, knowledge management, personel administration, or supply management.

E-Business in German enterprises

In the USA e-business already is more widely spread. There, five out of six American enterprises engage with more than 5,000 employees in e-business solutions.

In accordance with the „empirica" study focusing on the status and developmental perspectives of electronic business in Germany, Europe and the USA (1999 and 2001) one can observe that 62% of German enterprises are presented online in 2001 (1999: 47%). Thanks to distinct growth in the past two years Germany ranks 2nd after Finland with its 69%. Italy remains last within the national ranking.

Regarding e-business activities on the Internet many German companies stick to advertising and marketing. When it comes to online data exchange and actual business conducted online, Germany ranks last in national comparisons. The possibilities of utilizing an online presence are manifold and should be taken advantage of by German enterprises.

Internet presence dependent on company size

The Internet presence of German enterprises clearly depends on company size. Only 45% of small sized businesses own an Internet presence whereas 83% of big sized companies are accessible online.

A comparison of various countries shows that the share of businesses not taking part in E-Commerce has declined rather distinctively in all countries. In particular Germany and Italy experienced this decline since 1999. According to several prognoses, 2003 shall be the year when only 5% of German businesses will be offline.

Dependent on company size, between 17% and 27% of businesses sell goods and services by means of the Internet. In 2001 about 20% of German enterprises engaged in E-Commerce: in the UK there were 21%, in the USA 18%. Compared to 1999 Germany was definitely able to catch up with the rest (1999: 14%).

Almost 25% of German businesses that sell online, settle 5% of all sales to the end-customer (B2C) online. That makes Germany to the front runner in Europe ranking 2nd after the USA.

Regarding B2B-business, Germany is even ahead of the USA: 38% of German companies that sell online, process at least 5% of their online-sales with other enterprises.

Concerning Internet presence and e-procurement, differences could be perceived differences depending on the size of the company.

In 2003, 20% of German companies will conduct E-Commerce/business in terms of selling as well as B2B-online integration with suppliers and customers in order to position strategically on the best possible level of e-business. According to a study of TechConsult, 44% of enterprises plan to become actively involved on level 3-5, i.e. getting into e-business.

E-Procurement

Every second German and American business uses the Internet for procurement of raw material (pre-products), productional means/devices and services. In this context one can notice that smaller businesses hold back from e-procurement in all examined countries.

According to Meta Group, particularly e-procurement is the business area among only few e-business approaches that promises to yield quick returns on investment.

East & West

There are only few differences left between East and West German businesses in reference to ICT-infrastructure and Internet applications. In the East there are 57% of companies on the Internet and in the West there exist 63% online. But regarding online distribution and online procurement both, East and West, are situated on the same level.

Companies & M-Commerce

When it comes to M-Commerce offers, Germany ranks first in comparison with other countries. Corresponding online offers have already been made available by 9% of German companies.

Intranet, ICT-structure

In terms of ICT-structure backlog demand still remains: only 44% of German businesses are provided with an Intranet and solely 8% put video conferencing to good use.

Current status in Germany

The empirica study demonstrated that Germany was quite able to take advantage of its E-Commerce potential. The active formation and refinement of limits which are necessary for electronic trade and favorable to Germany legal conditions, information-political, and infrastructural contributions have contributed to this success.

E-Business in SMEs

96% of German SMEs use ICT and therefore range only 2nd after the Europe-wide leader Finland with 98%. Regarding the possibilities for Internet access, Germany has to take its final place among Finland, Sweden, Denmark, and Austria. Still, 65% of German SMEs utilize their Internet access in order to establish their own web site and therefore range 2nd - again - right after Sweden. Concerning the developmental status of E-Commerce activities, German SMEs compare as leaders to the rest of Europe: more than a third of German SMEs (35%) make purchases by means of the Internet and only the Danish slightly surpass them in this case. But with 29% of SMEs selling products and services on the web, Germany even takes up first place in Western Europe.

Generally, it can be observed that micro and small enterprises share the same reservations with medium sized companies towards Internet usage. The main reason for SMEs not to use the Internet for their own purposes is based on the firm belief that the own company or product is not suitable for online trading.

In comparison to big businesses which have already engaged in intensive Internet use, SMEs that usually cannot set foot on E-Commerce ground due to the necessity of high investments and outrageous budgets now realize their chance to thoroughly plan promising engagements and develop e-business strategies. This opportunity came about due to the currently tapered-off Internet hype.

Internet & E-Business in today's middle class

Years of euphoria have passed about the positive changes the implementation of e-business supposedly was to bring about in many business areas. Instead numerous enterprises put a damper on fostering too high expectations. The share of SMEs which are still found to be offline has continued to decrease and now only amounts to 2%.

According to a study from TechConsult, 16% of enterprises interviewed have fit out their home page with an order function, i.e. maintain an online shop. About a year ago there were only 8%. In 2001 nearly every 10th company utilized the Internet as means for data exchange with customers and suppliers. Conclusively and only one year later there already were 14%. The organization of electronic supply chains through full-automatic interlocking of organizational processes between enterprises has progressed rather slowly: only 5% of businesses (2001: 4%) run their entire organizational processes in a cross-company manner by the Internet. In total, there are 48% of enterprises to become more actively engaged in level 3-5, i.e. to get into e-business.

Virtual market places

In August 2002 there were 1,028 B2B market places world-wide in 62 countries and 32 business sectors (February 2002: 1,638). The dominant areas were North and South America with 1,158 market places (February 2002: 1,158).

In Europe Germany is well ahead of most with 222 B2B market places (February 2002: 309). Most of the offers are in the purchasing and electrical engineering industry.

For some time there have been some focal areas recognizable on the markets of B2B-portals and –market places. Market places that could not reach the necessary size or grandeur were either simply shut down or acquired by former competitors. Thus, analysts from Roland Berger Strategy Consultants expect 2005 to be the year when only every 20th B2B market place exists as compared to today.

B2C E-Commerce

The B2C sector accounts for only a small proportion of world-wide E-Commerce volume. This will reach a revenue of 167.2 billion USD in 2002 and grow to a revenue of 428.1 billion USD by 2004. In 2002, Germany will have a 6.6% market share, but this will have reached 13.5% by 2004. In the European B2C market Germany (2002: 11.0 billion USD) and United Kingdom (2002: 10.2 billion USD) are the neck-and-neck contenders for the leading position.

At 32% of Internet users, the USA can easily claim to have most online buyers; Germany's Internet users have overtaken United Kingdom and Japan, so that the country is now in third place world-wide, following the USA and South Korea (31%) with a 26% portion of online shoppers.

The Germans are trendsetters in online shopping, and in fact the leaders in Europe in terms of shopping frequency. This shows that compared with 2000 the Germans' level of acceptance has taken a definite step forward. Books, music CDs, and clothing are the products mainly bought online in Germany. After Gartner G2 German online surfers from all Europeans spent the most on online shopping.

Concerns about general and data security, inconvenient handling, and unrecognizable increase in product value versus conventional shopping methods are world-wide barriers in terms of online shopping. Anxiety concerning the inaccessible security risk inherent in electronic payment methods is the reason most payments are still made against an invoice and not online.

Mobile Commerce

Ovum expects 2002 to come forth with world-wide revenues from M-Commerce amounting to 38 billion USD. This amount shall increase to 140 billion USD until 2004.

Since all of Europe has early on agreed to an uniform mobile telecommunications standard (GSM), it is now able to claim leadership in the area of M-Commerce before the USA.

North American revenues from M-Commerce are almost going to quadruple from 8.8 to 32.4 billion USD between 2002 and 2004 but will still remain far from European monetary results. North America will reach 23% and Europe 36% of global revenues in 2004.

Analysys Research assumes that most 2002 revenues from M-Commerce in Western Europe will still be generated from mobile telecommunication whereas messaging, browsing and the use of entertainment offers will be reduced.

In order to come to the fulfillment of positive survey prognoses for M-Commerce there still exist certain obstacles that need to be dissolved, i.e. need improvement. Necessary would be the increased spreading of devices suitable for mobile Internet access and use, lower costs of mobile Internet access as well as the expansion of corresponding tenders. The most promising M-services are MMS, mobile games and location-based services.

Online Banking and Online Brokerage

While online banking has established itself in Germany, less than 10% of the USA's banking customers used online banking services in 2001 according to eMarketer. In 2002 19.3 million U.S. American customers are expected to participate in online banking, being 13.9% of all Internet users.

Thus, by contrast, online banking is more spread in Europe than in the USA. Various market research institutes estimate Europe to be the global front runner for online banking. Data Monitor expects, for example, that 75 million Europeans (i.e. approximately 30% of the population) will become online-banking customers until 2005. This considered, the amount of 23 million in 2000 would almost multiply by three within the given time frame.

According to Forrester there are currently between 11 to 16 million people in Germany who exercise Internet banking. Until 2005 the number is expected to increase to 32 miilion "online bankers" set equal to 70% of all German Internet users. This would put Germany first in online banking, ahead of the UK with 17 million and Italy with its forecasted 14 million banking customers.

In terms of online brokerage, the USA leads distinctively before Europe. Jupiter Communications estimates 29.3 million online brokerage accounts for 2002 – this equals nearly five times as many as in Europe.

Online brokerage, that is to say trading in stocks and shares via the Internet, is also growing in popularity: 22% of Internet users in Germany, United Kingdom and France monitor movements of their share portfolio, and 14% actually trade in shares. However, only 8% of the total population in Germany and only 19% of Internet users currently make use of online brokerage.

The principal barriers to this are:

- fear of misuse, doubts regarding security and the reliability of data transmission
- absence of the necessary infrastructure or the complex procedures needed to install or operate the online banking applications.

Online Advertising

The online advertising market has shrunk world-wide in 2001 due to the poor economic situation and versus previous by 4.7% from 10.1 billion to 9.6 billion USD. Nevertheless, future prognoses are optimistic. The most positive forecast stems from Data Monitor Market Research by expecting that the global online advertising market will reach a volume of over 40 billion USD in the year of 2006.

After estimates from Forrester Research expenditures on European online advertising will amount to 840 million EUR in 2002 and come to almost 6.4 billion EUR until 2007, meaning an increase by 800%.

Germany is the West European market leader concerning the number of online campaigns and claims 2nd place right after the UK when it comes to banner advertising i.e. exposures. The market volume of E-Advertising in Germany amounted to 185 million EUR in 2001 and came to rise to even 204 million EUR in 2002. Until 2005 the Prognos-Institute sees online advertising as an established media force next to TV, radio and print media.

Still, it is not foreseeable which form of online advertising will dominate in the future. The development of the online advertising market will depend on e.g. an increase of Internet reach within all target groups, a continuing standardization of online advertising formats as well as an understanding by advertisers that online marketing is a tool to aid and encourage brand awareness.

E-Government

'Electronic government' is the term used for the processing of governmental administrative acts and services by means of electronic media. The introduction of Internet technology is intended primarily to optimize the business processes, but also to ensure better internal and external cooperation in government offices. The main emphasis is on improving the services offered to citizens as well as enterprises.

UN-Index

A benchmarking study conducted by ASPA in cooperation with UNDPEPA served as developmental ground for the so-called E-Government-Index which is supposed to show the progress of E-Government activities in all 190 UN-member states.

On the occasion it was discovered that this E-Government-Index generally reflects the economic, social and democratic developmental stages of a country. North America claims the world-wide leading position in E-Government followed by Europe, South America and the Middle East. Asia, Central America and Africa rank below the global average.

The USA is the world-wide front runner with an E-Government index of 3.11 closely followed by Australia and New Zealand. Germany also positioned itself with an index value of 2.12 and therefore lies distinctively above the average of all countries as well as all examined nations in Asia and Oceania.

Accenture-Matrix

According to results from the third E-Government study led by Accenture in 23 states, Canada, Singapore and the USA are the most progressed countries with regards to E-Government.

Japan was able to better its situation , i.e. it does not belong to “Platform Builders” anymore but is perceived as “Emerging Performers”, thus being situated on the third developmental stage from a total of four in the area of E-Government.

The UK can reap the rewards of implementing a cohesive E-Government strategy, and was able to climb up by two levels to rank 6 of the international country ranking.

Accenture still ranks France as one of 23 examined countries in position 12. Nevertheless, France emerges from the group of “Emerging Performers” to become a “Visionary Challenger”.

Distinct progress in Germany

Out of 23 nations examined by Accenture, Germany was the one country to ameliorate its developmental status in the most distinct way. It was able to climb from rank 15 to rank 9 and consequently takes over rank 6 within the group of “Visionary Challengers” right after Australia, Denmark, the UK, Finland, and Hong Kong.

The improved performance resulted from the persistence in bringing public administration services online as well as the extension of comprehensive and sophisticated tax and postal services.

Regarding the online availability of services (service maturity), Germany being one of 23 countries was able to climb from rank 16 to position 4.

With regards to the CRM sector, Germany had to take a step backward to position 20 in a ranking of 11. As in other countries in the group of "Visionary Challengers", Germany focused more on the further spreading of online services in general but particularly in those sectors promising quick gains from the start. Still, Germany takes on an expanding role in customer relationship management (CRM).

Progresses in all of Europe

The most important outcome of a survey conducted by Cap Gemini Ernst & Young in 18 European countries is that the level of the availability of online public offers in Europe has increased by 10 percentage points, i.e. amounts to 55% versus 45% as measured in October 2001. This means that Europe has put halfway all transactions of public services. Considering the time span of only 6 months (October 2001 until April 2000), this development represents a considerable step forward.

E-Government on communal/ local level in Germany

The annual on "Monitoring eGovernment" 2002/2003 from the Fraunhofer eGovernment Center and the Wegweiser GmbH shows that Germany does not solely engage in E-Government activities on a federal level (Initiative BundOnline 2005). Even state and local levels are intensively incorporated in the development of online services for citizens (G2C), enterprises (G2B) and (intermediary) administrative needs (G2G, G2E). Initiatives, such as MEDIA@Komm and Digitales Ruhrgebiet help to determine and support E-Government solutions serving as "blueprints". These examples for best practice offer necessary clues for the implementation of E-Government strategies in other German cities and municipalities.

E-Learning

Until now there has been no standard definition of the term ‘E-Learning’. In this report it is therefore understood as meaning learning by way of Internet technologies. This encompasses formal learning units and additional information sources, as well as suitable sets of instruments and communication forms that support the learning process. These include the distribution of study material via Intranets, Extranets or by means of CD-ROM, provided that they make use of the customary Internet technologies and can be accessed with a web browser.

World-wide revenues

The world-wide revenue from E-Learning is estimated to be ca. 430 billion USD in 2004. At present, the global E-Learning market still remains extremely fragmental and without clear leadership.

Prognoses from 2000 for future developments of the E-Learning market will have to be corrected downward as based on the economic retardation in past years. These now incorrect prognoses counted on an average annual growth rate of 60% and expected the world market of 2004 to reach a volume of 23 billion USD.

The European market

The European market for E-Learning is now at the beginning of its full development according to the IDC. Training offers only slowly begin to additionally include E-Learning services. The use and development of E-Learning is most widely spread and progressed in the UK, the Netherlands and Scandinavia.

Dissemination in the USA

A study of 600 big U.S. American companies resulted in the findings that 60% of companies interviewed will offer digitally based training in 2002 as compared to 49.4% in previous year. The firms may experiment with E-Learning but still do not utilize it extensively. Mere 45% from the 60% of companies offering digital training use E-Learning for less than 10%. Only 8.4% of firms implementing E-Learning supply online 70% of their educational contents, that is learning material.

Demand at universities & colleges

There is an immense information deficit when it comes to concrete numbers about the demand at German universities and colleges. Qualitative statements regarding market potential and development are numerous, but quantitative surveys still represent exceptions.

In 2002 German universities and colleges are spending about 36 million EUR on the implementation of new media; this corresponds to approximately 20 EUR per student. Swiss expenditures come to 50 EUR per student.

New development: M-Learning

The third mobile telecommunications generation introduced mobile learning (M-Learning). New forms of education and training result from this which attract extremely busy professionals who have no time to physically attend classes. Still, offered learning material and contents need to get more adjusted to the demands of discontinuous learning.

Conclusively it can be said that E-Learning will develop to a well-established and increasingly important industrial branch within a promising and developing market in the are of company applications.

Management Summary: conclusion

When the results are summed up it can be seen that Monitoring Information Economics with its factual report provides a systematic analysis of the partial markets that make up the overall market, on both the supply and demand sides and including the technical and infrastructural preconditions. This task is performed for Germany as an international benchmarking process, giving special consideration to the leading regions of the world and taking into account the external trade links of the information industry.

1.2 Summary of Chart Report

The Chart Report displays the most important results of the previously shown Management Summary. The full version of the Chart Report shows the essential statements mentioned in the Summary and visualized by selected graphics. Essential statements, which in following can be read as an extremely shortened management summary, are:

Total market

- Germany's Positioning (Chart 02)
- Overview (Chart 03)

Information Economics

- Information Economics result in profound changes within the economy and society (Chart 05)
- Within the macro-economy the ICT business area is increasingly gaining significance in Germany (Chart 06)
- Only mechanical & electrical engineering sectors offer more jobs than the ICT sector (Chart 07)
- In 2002, the ICT business sector will account for reduced employment (Chart 08)
- Germany remains Western Europe‘s market leader in the ICT area (Chart 09)
- Germany remains the third-largest national ICT market sector (Chart 10)

Infrastructural Preconditions

- Germany claims top position for the dissemination of DSL in Western Europe (Chart 12)
- Every fifth of all global ISDN-connections is hooked up in Germany (Chart 13)
- Germany is internationally in mid-field regarding PC penetration (Chart 14)
- Meantime the mobile telephone systems outdistanced the fixed network in Germany (Chart 15)
- German Mobile Phone Penetration Rate lies beneath Western Europe's In terms of growth though, Germany is one of the leaders (Chart 16)
- Based on the repeated decline of costs by 26%, Germany belongs to those countries offering real low-cost Internet access in 2001 (Chart 17)

Applications

Internet Usage

- In June of 2002, 54% of the German population above the age of 14 used the Internet (Chart 19)
- In national comparison, the use of the Internet in the new German federal states is below average (Chart 20)
- The demographic profile of German, British and French Internet users becomes increasingly similar to that of the total population (Chart 21)
- The share of women from German Internet users continues to increase (Chart 22)
- In Germany, above all, people with high educational background mostly use the Internet (Chart 23)
- In Germany, the Internet is still used primarily by people with higher income (Chart 24)
- Internationally, Scandinavia and the US still have the highest Internet penetration rate (Chart 25)
- The Europeans represent the second-largest group of Internet users in the world, right after North America (Chart 26)
- In 2002, the global number of mobile Internet users will increase by five times as much as last year (Chart 27)
- Information and communication are the main Internet applications in Europe (Chart 28)

Women Online

- Female online surfers show more interest in subjects such as health, job search, and ticket reservation than their male counterparts (Chart 29)

E-Commerce

- Germany remains European market leader in E-Commerce (Chart 30)
- America remains unchallenged market leader in E-Commerce (Chart 31)

B2B E-Commerce

- In the B2B area, worldwide turnover is four times higher than from B2C E-Commerce (Chart 32)
- Globally, the number of B2B-market places has been drastically reduced (Chart 33)
- In Europe, Germany is the market leader regarding the number of virtual market places (Chart 34)

E-Business in Enterprises

- Full-servicing of Internet access can be found in Finnish companies of all sizes (Chart 35)
- In particular, German SMEs were able to progress enormously in terms of Internet connections (Chart 36)
- In 2003 only 5% of German enterprises will be offline (Chart 37)
- Financial & operational expectations from using E-Business have been put a damper on (Chart 38)
- Many enterprises object to implementing E-Business due to its high costs (Chart 39)

B2C E-Commerce

- The Germans caught up considerably in Online-Shopping in a worldwide comparison (Chart 40)
- Books and CDs continue to be products selling best via the Internet in Germany (Chart 41)

M-Commerce

- The B2C sector claims a bigger share than M-Commerce in form of B2B (Chart 42)
- Currently, German enterprises are leaders in terms of M-Commerce offers (Chart 43)
- Europe and Asia/Pacific generate the highest global revenue by means of M-Commerce (Chart 44)

Online-Banking

- As opposed to online-banking, online-brokerage is rather present in the USA than in Europe (Chart 45)

E-Government

- With regards to E-Government: from 190 UN-nations, the USA took rank 1 whereas Germany ranges tenth (Chart 46)
- Last year, Germany was able to ameliorate its position within the international E-Government-ranking: from rank 15 up to rank 9 (Chart 47)