



Federal Ministry
of Economics
and Technology

Nationaler **IT Gipfel**
Dresden 2010

**The ICT sector in Germany and
innovative applications for commerce**

**Digital infrastructures as enablers
for innovative applications**

Innovative public-sector IT services

**Trust issues, data protection and
security in the internet**

**Responsibility and protection in the
networked society**

**Education and research for the
digital future**

**Special topic: e-health/healthcare
telematics**

**Regional topic: microelectronics
and IT clusters in Saxony**

Fifth National IT Summit

Monitoring Report – Digital Germany

An International Comparison of the ICT Industry in 2010

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Contents

Welcome	7
Key findings and conclusions	8
1. Goals and methodology	24
2. An international comparison of Germany with the world's top ICT nations	26
2.1 The performance of the leading ICT nations	27
2.2 Germany's performance in the global benchmark	30
3. Germany's competitiveness in the category "Market relevance"	33
3.1 An international comparison	35
3.2 TNS benchmark "Market relevance"	38
4. Germany's competitiveness in the category "Infrastructure"	45
4.1 An international comparison	46
4.2 TNS benchmark "Infrastructure"	50
5. Germany's competitiveness in the category "Applications"	56
5.1 An international comparison	57
5.2 TNS benchmark "Applications"	61
6. Competitiveness of the top ICT nations	67
6.1 The ICT industry in France and the German ICT industry from the viewpoint of France	68
6.2 The ICT industry in India and the German ICT industry from the viewpoint of India	80
6.3 Country profiles of all 15 benchmark countries	91
7. Methodology	107
Contact	114

Welcome

Hans-Joachim Otto MdB,
Parliamentary State Secretary
for the Federal Ministry of
Economics and Technology



Information and communication technologies (ICT) are the key to the future in our knowledge-based society. ICT enables us to create growth and employment, strengthen our competitiveness and improve people's quality of life. We need ICT to face the challenges of the future, such as demographic change, energy security and climate protection.

The results of the Monitoring Report 2010 show that modern ICT is already a fixed feature in every walk of life. While we have already made good progress in individual areas in Germany, such as broadband expansion, the report also indicates that the German ICT industry cannot yet count itself among the global leaders. I find our seventh place in the ranking unsatisfactory and regard it as a direct incentive to become more pro-active in this area and to strategically bundle our strengths.

It is with this in mind that, under the leadership of the Federal Ministry of Economics and Technology, the Federal Government has drawn up a new ICT strategy entitled "Digital Germany 2015", which aims to make better use of our potential and eliminate areas of weakness. One of the key objectives of the ICT strategy is the development of intelligent networks in the energy, traffic, health, education and

administration sectors based on a well-developed broadband infrastructure. I see these new networks as a huge opportunity for all small and medium-sized IT companies. We will be further underpinning this strategy with offers of practical assistance in searching for talent and in areas of finance, internationalisation, export and research.

The Internet should be an area of freedom and legal security. Further objectives of the new ICT strategy are the protection of personal rights in the digital domain and the strengthening of self-determination and individual responsibility. They also include improving the media skills of citizens. All these measures serve to expanding the German ICT industry and ensuring its position as a future-oriented global player.

At the fifth National IT Summit on 7 December 2010 in Dresden, we will also be meeting key players from the economic and scientific arenas and discussing concrete measures and initiatives that will further strengthen the position of the German ICT industry. I believe that this task can only be addressed through the collective endeavours of players from the spheres of politics, industry and science. Such a collaboration will guarantee our success.

Hans-Joachim Otto

Key findings and conclusions



Key findings and conclusions

“Germany is currently in the middle of its transition to the mobile Internet and many other promising growth areas, such as cloud computing and intelligent networks. The aim of our economic policy is to elevate the German ICT industry – currently languishing in the middle of the ranking of the world’s leading ICT nations – to global market leader. The key factor here is to stay clearly focussed on the promising growth areas”.

Dr Sabine Graumann,
Director,
Business Intelligence
TNS Infratest Forschung GmbH



An international comparison of Germany with the world's top ICT nations

This report uses a global benchmark to compare the performance of the German ICT industry with that of 14 other top ICT nations. The latest figures on developments for 24 key indicators areas were used for this purpose. Leading foreign experts were also asked for their assessments of a direct comparison between Germany and France, as well as between Germany and the aspiring ICT nation India. A workshop held in May 2010 was used to identify key points for the German ICT strategy “Digital Germany 2015”. This strategy has determined that the ICT industry and national economic policy needs to be more proactive if Germany is to take up a permanent pole position in global ICT developments.

By 2010 Germany had recovered more quickly and effectively from the economic and financial crisis than other countries, which should have a positive impact on the positioning of the German ICT industry in 2011.

1. The performance of the German ICT industry is mediocre compared to that of the world's top 14 ICT nations.

The information and communication economy (ICT) accounts for five percent of Gross Value Added (GVA) of the European economy. However, this indicator shows the importance of the information and communication industry as it is the driving force for innovation and revenue generator in many application industries. The aim of the ICT strategy “Digital Germany 2015” is to make Germany a global market leader with cutting-edge technologies in as many areas as possible. The “Monitoring Report – Digital

Germany 2010” measures the progress made by the German ICT industry towards this objective.

ICT industry ranked seventh in the TNS benchmark

Germany and the Netherlands have remained in joint seventh place in the ranking of the most important ICT nations, each with 59 index points. Unlike the previous year, Germany failed to place first or second in any of the key performance indicators. Its top ranking was third place, which it achieved in “Mobile Internet use in the population” and “Maturity of the telecommunications market”. By contrast, the Netherlands is global market leader in the “Computer penetration in households” and “SSL server penetration per 100,000 inhabitants”.

While the global recession in Germany has led to an unusually high five percent fall in GDP, according to EITO, the turnover of the ICT industry (excluding consumer electronics) only fell by 3.7 percent (2009: 127.2 billion euro, 2008: 133.2 billion euro). By comparison, the mechanical engineering sector suffered a 22.5 percent drop in revenues. The fact that Germany was able to hold on to seventh place in the ranking in 2009 must be regarded as a success and as evidence of how well the German ICT industry withstood the economic crisis.

According to BITKOM, the turnover of the ICT industry will rise by 1.4 percent in 2010.

The French experts consulted within the framework of “Monitoring Report – Digital Germany 2010” confirmed these results by acknowledging that they did not consider the German ICT industry to hold a leading position in the world’s ICT markets. In the years ahead, the German ICT industry will also face increasing competition from East Asia.

South Korea takes over as global market leader

In 2009, the USA fell to second place in the ranking of the top 15 ICT nations, outflanked by South Korea with an index value of 72 points. South Korea achieved first place in seven of the 24 key performance indicators included in this study.

As the “Monitoring Report – Digital Germany” showed in 2010, the USA has now clearly relinquished its previous position as global market leader. The USA remained market leader in three performance indicators and with 69 points was only marginally behind South Korea. Japan followed in third place, six index points behind the USA. However, the monopoly once held by the USA on leading positions has not been replaced by a different monopoly; rather it has been replaced with a multicentric ICT world that includes rising European countries. This also includes other German-speaking countries, i. e. Switzerland and Austria.

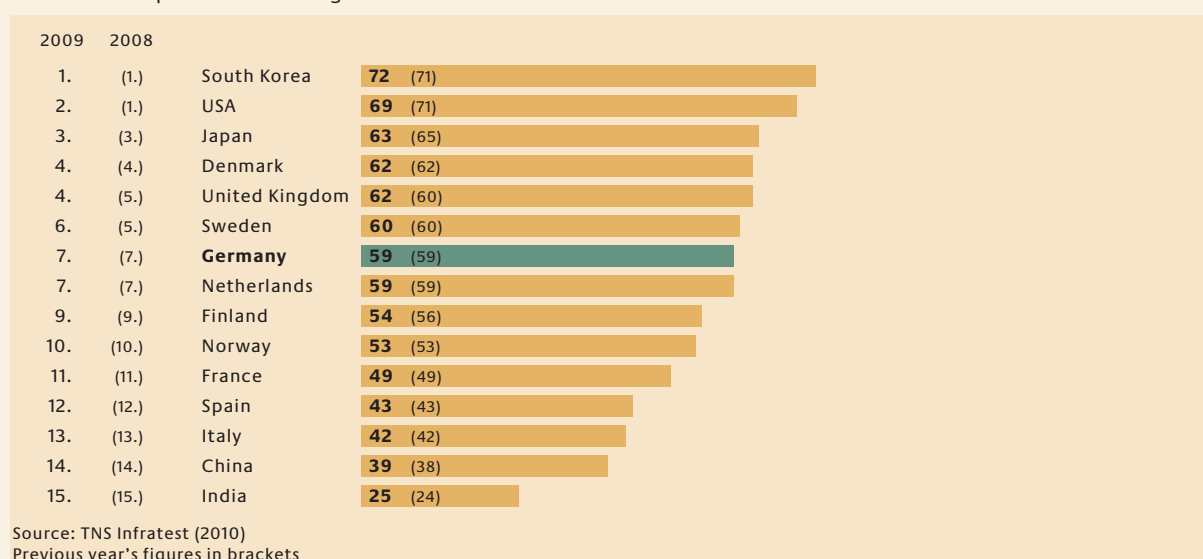
It also shows the dramatic rise of Asia: China, India and South Korea have all achieved improvements in the TNS benchmark, each gaining one index point over the previous year. Bringing up the rear in the benchmark was India with 25 points. Outsourcing to Asia has led to dramatic changes in the ICT industry in terms of ICT company strategies and activities.

Germany: Clear improvements in infrastructure conditions. Strong use of ICT. Downward trend in market development.

Dividing the 24 key performance indicators as a whole into the categories “Market relevance”, “Infrastructure” and “Applications” produces the following picture:

- ▶ In the category “Infrastructure”, the German ICT industry achieved 76 index points, placing it eleven index points above the average value of all 15 ICT nations. As in the previous year, this placed Germany sixth in the TNS benchmark.
- ▶ In 2009, Germany achieved 61 percent of the best possible performance in the category “Applications”. This saw the German ICT industry sharing fourth place with Norway, its best ranking in a category of the TNS benchmark.
- ▶ In the category “Market relevance”, Germany achieved a performance of 41 index points, thus falling from sixth to seventh place in the ranking, and below the average for the 15 ICT nations of 41.5 points.

Fig. a: TNS benchmark – Average performance by country, 2009
South Korea replaces the USA as global market leader



2. Market development of the German ICT industry shows downward trend in 2009

The “Monitoring Report – Digital Germany 2010” analyses **market developments** based on a range of key performance indicators. From a **supplier perspective** the results are as follows:

- ▶ The German “**Market share of ICT turnover in the global market**” (excluding consumer electronics) fell one point, to twenty index points. German ICT sales in 2009 totalled 127.2 billion euro. This corresponds to a 5.7 percent share of the world market and makes Germany the ICT country with the fourth best performance. In the previous year, Germany was in third place with a sales volume of 133.2 billion euro. However, in 2009 it was ousted from this position by China with a performance of 23 points and a global market share of 6.6 percent. In Europe, Germany is the largest ICT market, ahead of the United Kingdom. The USA remains global market leader with a market share of 27.9 percent, followed by Japan with a share of nine percent.
- ▶ “**Export of ICT goods as a proportion of total exports**” fell two points, to 25 index points. Germany ranked ninth with 6.9 percent. In absolute terms, the export of ICT goods (excluding software and IT services) as a proportion of total exports also fell by one percentage point. However, production of hardware and telecom devices was largely outsourced abroad. Market leaders in this key indicator were China and South Korea.
- ▶ In the key indicator “**ICT companies as a proportion of all companies**” Germany had a constant index value of 82 points ranking it sixth as in the previous year. Nevertheless, the stable average positioning in the ranking shows that a number of countries in this indicator achieved a good performance relative to the respective global market leader. Insufficient venture capital and high bureaucratic hurdles mean that business start-ups in the ICT industry in Germany are often faced with unfavourable conditions. According to the BDI and the German Telekom, Germany is ranked ninth among 27 countries in terms of creating favourable conditions for company start-ups. Obtaining credit is often a critical factor in the current financial crisis.

▶ In “**Growth in IT turnover**” the German ICT industry fell eight points, to 14 index points – the lowest index value achieved by Germany across all 24 performance indicators. In the recent year of economic crisis, global revenues for information technology fell by 4.6 percent, while sales for the IT industry in Germany fell by 5.4 percent, to 63.5 billion euro. This saw Germany ranking eleventh alongside the USA in the benchmark of the top 15 ICT nations. While growth rates fell in emerging nations, such as Brazil, China and India, they remained high in China at 9.8 percent and India at 7.7 percent.

▶ The “**Maturity of the telecommunications market**” fell by twelve points, to 72 index points. However, Germany still ranked third among the ICT nations. Telecommunications expenditure as a proportion of GDP (excluding Pay TV) fell from 2.48 to 2.35 percent in Germany, while rising from 4.07 to 4.62 percent for global market leader, South Korea. This was enough for South Korea to oust the previous “best-in-class”, the United Kingdom, from its pole position. Unlike the saturated markets in the West, Asian countries still have enormous growth potential in the landline and mobile voice telephony market. A growth in revenues for data services was unable to compensate for revenue losses in the voice telephony market. Sales for voice telephony services in Germany in 2009 fell by 6.6 percent, to 31.2 billion euro, while sales for data services rose by 4.1 percent, to 10.1 billion euro. In Germany, landline penetration fell from 62.1 percent to 59.3 percent.

▶ In “**Mobile telephony penetration in the population**” the German ICT industry fell two points, to 84 index points. In 2008, Germany reached a mobile telephony penetration of 128.3 percent. In 2009, this fell by 0.5 percentage points to 127.8 percent, which is the equivalent of 107.2 million contracts. By contrast, mobile telephony penetration in the higher ranking countries rose, in Italy by 2.8 percentage points, in Finland by 16 percentage points, in Denmark by 9.8 percentage points and in the United Kingdom by 7.2 percentage points.

The individual results on the **demand side** were as follows:

► The **“Per-capita expenditure for ICT”** fell one point, to 72 index points. Per-capita expenditure for information and communication technology in Germany in 2009 was 1,551 euro. This was 4.5 percent less than the previous year and left Germany languishing in tenth place in the ranking, behind France with a per-capita expenditure of 1,622 euro and Japan with 1,573 euro.

► **“ICT expenditure as a proportion of GDP”** (excluding consumer electronics) fell four points, to 64 index points, whereby expenditure for information and communication technology rose 0.2 percentage points to 5.3 percent. This expenditure was only marginally below the EU25 average of 5.5 percent. This put Germany in joint seventh place, together with France, India and Denmark.

There are signs of a downward trend on both the supply and demand markets. There are several reasons for this:

Negative impact of economic and financial crisis on information technology

The slowdown in investment caused by the economic and financial crisis has led to losses of revenue in the information and communication industry. However, the situation seems to be stabilising gradually. According to Gartner, global IT expenditure will rise by 2.9 percent in the current year. In the first quarter of 2010, sales of hardware leapt by 9.1 percent appearing to confirm forecasts that the slowdown in investment would soon be over.

Germany is also expected to see further growth in IT sales soon. After the previous year's slump of 11.7 percent, the German market for IT hardware has stabilised with a growth of 5.1 percent. While the manufacturing sector continues to suffer the effects of the economic downturn, the financial sector is returning as investor. Energy suppliers and the Government are also increasing levels of investment.

The increase in demand among private consumers in the previous year was unable to compensate for the decline in sales in the B2B sector.

However, private consumption continues to grow, which is a sign that the economic upturn is reaching the population. In 2010, the demand for smart phones is predicted to increase by 33 percent. In 2011, providers of software will achieve a four percent growth in turnover and providers of IT service a five percent growth. Cloud computing is a promising growth area, with an expected average annual growth of 48 percent by 2015.

Telecommunications market in a state of upheaval

Providers of services in the mobile and landline sector continue to be under considerable competitive and price pressure, not least due to the roaming regulation imposed by the European Commission. In order not to be relegated to a mere “data carrier” or “bit pipe”, telecommunications companies need to develop products and services with added value that customers can recognise. For example, by offering to record activities and invoice services for energy suppliers and providing “intelligent energy networks”, telecommunications companies can move into lucrative new markets. Sales in the German telecommunications sector are expected to fall by 0.2 percent, to 63.3 billion euro, in 2010.

Exploit opportunities, build on strengths and eliminate weaknesses

The middle-of-field position of the German ICT industry compared to the other top 14 ICT nations is regarded as unsatisfactory by both the German information and communication industry and the German national economic policy. In order to elevate the German ICT industry to world leader, the ICT industry strategy “Digital Germany 2015” focuses on the appropriate goals and courses of action. This would involve reducing the proven weaknesses of the German ICT industry, utilising promising new application areas to drive growth, building on existing strengths and minimising current risks.

In order to expedite the German ICT industry's route to global market leader, it is necessary to focus on growth areas. The following section deals with these points based on current studies and the results of workshops.

3. Broadband as the basis and driver of economic growth

Broadband networks have become an integral part of modern infrastructures and now arguably have the same commercial relevance as roads, public transport networks and water or power supplies. Many member countries of the EU have submitted programmes with a view to achieving the mutual goal of providing nationwide coverage of high-speed broadband networks. In Finland access to a broadband connection has now been declared a basic right.

The following covers the availability and usage of fixed and mobile broadband based on a range of indicators.

► **“Broadband access in the population”.** In the case of fixed broadband penetration in the population, the German ICT industry achieved 30.4 percent, placing it in sixth place, ahead of France, with a penetration rate of 30.3 percent. This was 80 percent of Denmark’s world’s best performance of 38 percent. In Europe, Germany has the fifth highest penetration of broadband connections with download speeds of more than 100 Mbps. By the end of 2010, it expects the technical availability of broadband connections with speeds of at least one Mbps to reach 98.5 percent.

The first broadband monitoring report rated the Federal Government’s implementation of its broadband strategy a success. By the end of 2014, 75 percent of all households are expected to have broadband connections with speeds of 50 Mbps.

Data traffic will rise dramatically in the years ahead. This applies to both landline and mobile networks. In the medium-term, it is essential to introduce next generation networks (NGA) in order to enable provision of connections with speeds of 100 Mbps or higher for new applications. In 2009, glass-fibre penetration in German households was a mere 0.4 percent – in Europe it is one percent.

► **“Internet access in households”.** Germany improved 4.2 percentage points to a penetration of 79.1 percent. This placed Germany sixth in the TNS benchmark and 14 percentage points above the

European average of the EU27 of 65 percent. The increase in broadband penetration also creates favourable conditions for more intensive use of the Internet in households.

► **“Mobile Internet use in the population”.** With a penetration rate of 21 percent, Germany was placed third, trailing significantly behind South Korea (85 percent) and Japan (77 percent). By 2014, penetration is expected to rise 20 percent and exceed 40 percent. In 2009, global sales for mobile Internet access generated 42 billion euro. This volume is expected to rise to 79 billion euro by 2014.

The introduction and implementation of “Long Term Evolution” (LTE) mobile telephony standards and networks have significantly paved the way for the mobile Internet of the next generation. LTE is the ideal radio technology for wireless network access in rural areas. LTE is the trailblazer for the mobile digital lifestyle of tomorrow and is already becoming an integral and indispensable part of the infrastructure of an ICT and knowledge-based society.

Germany was global forerunner with its “digital dividends” auction. The frequencies being made available due to the digitisation of the radio will help promote the further expansion of mobile broadband networks.

Sales for mobile data services in Germany increased by eight percent, to 5.8 billion euro, in 2010. The number of mobile Internet users is expected to increase from 17.4 million in 2009 to 35 million in 2014. By 2019, three quarters of German mobile phone users will access the Internet via their mobile phones on a daily basis.

More than five million Germans spend an average of at least one hour per day surfing the Internet on their mobile phone. In Europe it is 71 million. This represents a weekly usage rate of seven hours for Germans and 6.4 hours for Europeans. This is significantly more time than Western Europeans now spend reading newspapers (Germany: 4.6 hours, Europe: 4.8 hours).

Although the mobile use of the Internet away from home and work is not yet a daily occurrence, this is set to change. According to Gartner, by 2013,

mobile phones will have overtaken the PC as the most common device for Internet access. By then, the number of computers around the globe will have risen to 1.78 billion, and the number of Internet-capable mobile phones to 1.82 billion.

Conclusions

Rapid implementation of broadband strategy

The aims of the broadband strategy can only be achieved through the collective endeavours of business, Federal Government and regional and local authorities. 15 measures have been derived from the broadband strategy based on the following principles:

1. Harness synergies during development of the infrastructure through deployment of a current user-friendly broadband atlas and the formulation of binding regulations concerning the use of public infrastructures;
2. Continuous control of telecommunications companies to ensure, that by 1 January 2016, 90 per cent of the population in rural areas will have high-speed Internet access;
3. Continuation and increase of public funding by the Federal Government and the Länder from 2010 onwards;
4. Regulation that encourages growth: approval of basic regulations by the European Commission, which permit funding for the expansion of high-speed networks in under-supplied areas without requiring each individual case to be reviewed by the European Commission;
5. Improvement of public relations: establishment of a broadband centre of competence, initiation of flagship projects, information offensive in under-supplied areas.

Already close to full provision of one Mbps Internet access

Provided the measures for network expansion are implemented without delay, full provision of Internet access at speeds of one Mbps can be achieved in 2011.

Provide incentives for expediting expansion of fibre-optic

Experts are demanding that governments and regulatory authorities provide greater support for the expansion of fibre-optic networks through to households (Fibre to the Home – FTTH). In France, the Government has set up a fund of two billion euro to boost financing for the expansion of fibre-optic networks. The expansion of high-speed Internet should be promoted. Cutting-edge, energy-efficient high-speed networks are considered crucial to the future success of Germany as a business location. The expansion of nationwide FTTN / VDSL requires 41 billion euro.

Expedite the development of mobile broadband access

In 2009, the increasing popularity of smart phones, boosted by the falling data tariffs offered by mobile phone providers, meant that mobile Internet use could no longer be considered a niche market. In 2010, one in five mobile phones sold was a smart phone. That is the equivalent of 5.6 million phones for mobile Internet use.

Guarantee free access to networks

The quality of access to the Internet must not be impaired by bottlenecks, such as those caused by a lack of bandwidth. The auction of “digital dividends” helped create the conditions that will enable improvement of broadband provision, in rural areas in particular. Almost one in two Germans is a broadband Internet user (fixed / mobile). The Government needs to create service and provider-independent conditions for a demand for high bandwidths, which will also encourage the development of innovative services and applications.

Within the period covered by this report, the question of network neutrality was cause for hot debate. The Enquete Commission “Internet and Digital Society” initiated by the Federal Government was given the task of drawing up solutions to “ensure free and unrestricted access to the Internet for all users and information providers”. The principle of network neutrality can only prevail if dealt with using a multi-lateral approach.

4. Focus on central cross-industry growth areas and intelligent networks

The main challenges of the future, such as the ageing population, climate control, energy efficiency, mobility, health, environmental protection and safety, cannot be mastered without information and communication technology.

Key cross-industry growth areas include cloud computing, embedded systems, IT security and green IT, which all have growth rates upwards of ten percent.

1. Cloud Computing: One of the most important growth markets is the provision of IT services via the World Wide Web, otherwise known as “cloud computing”. According to the BITKOM /Experton Group, 436 million euro revenues were generated via cloud computing in Germany in 2009. In 2010, turnover will total at 1.14 billion euro. This volume is expected to rise to 8.2 billion euro by 2015. This represents an average annual growth of 48 percent and means that in five years roughly ten percent of total IT expenditure will be generated by these solutions.

The Federal Ministry of Economics and Technology has already initiated the “Cloud Computing Action Programme”, which defines four courses of action that need to be undertaken collectively by players from the political, economic and scientific arena. One aim is to exploit innovation and market potential by means of best-practice projects. Secondly, it clarifies questions of security, confidentiality and the regulatory framework. Thirdly, it specifies participation in the determination of international standards for the necessary interoperability. And fourthly, users are to be provided with critical information on the use of the Internet by means of guidelines and web portals. 30 million euro will be invested over the next three years to promote pilot projects.

2. Embedded Systems: The integration of ICT in products and services is already indispensable in many application industries. “Embedded ICT systems” are drivers for innovations in the automotive industry and in the mechanical engineering and medical technology sectors. BITKOM estimated this year’s turnover for embedded systems in all industries at 19 billion euro. Four billion of this turnover is

generated by ICT providers and 15 billion euro by the application industries. In the years ahead, BITKOM expects an average annual growth of 8.5 percent and predicts that sales will reach 42.5 billion euro by 2020.

The development of components and modules requires system-oriented expertise, of which the German ICT industry and training facilities have a rich. The demand for qualified resource engineers will increase in the coming years. The further development of “Embedded Systems” through to “Embedded Networks” in the future Internet of things as a core of ICT systems in all areas of the economy and administration opens up a whole new world of potential growth for the German ICT industry.

Embedded Systems create favourable conditions for innovations in many industries and are of key strategic importance for the success of the German ICT industry. However, applications are extremely fragmented. Multidisciplinary research promotions are planned with a view to encouraging the establishment of clusters.

3. IT security: In 2008, Germany generated 2.5 billion euro turnover with IT security products and services. This represented a 7.5 percent market share of the global IT security market and a 23 percent share of the European market. Booz & Company predicts an annual growth of ten percent for the German market for IT security. According to IDC, in 2012, the German market will generate sales of five billion euro.

4. Green IT: According to Experton, as a measure for improving climate protection, “Green IT” is growing annually by 39 percent in Germany and is expected to generate sales of 15.3 billion euro in 2011. Solutions that optimise ecological resource efficiency are increasingly prevalent.

5. Intelligent networks: The nationwide provision of broadband connections requires the cross-industry networking of all important business sectors. The strengths of the ICT industry must be linked to the innovative strength of successful German industries, such as the automotive industry, the electrical and mechanical engineering sectors and the energy sector.

The “Future Initiative of Intelligent Networks” incorporates five initiatives.

► **Smart Grids:** According to McKinsey, the turnover in Germany in the category “Smart Grids”, the intelligent networks and peripheral devices designed to reduce energy consumption, will increase from one billion to ten billion euro by 2020. This represents an annual growth rate of 21 percent.

► **Green “through ICT solutions”:** According to BITKOM / Experton, in 2020 “Green through ICT solutions” will generate sales of 84 billion euro. The promising submarkets are “smart buildings” with an annual turnover of between 27 and 38 billion euro, “smart logistics” with an annual turnover of between twelve and 24 billion euro, and “dematerialisation” (video and web conferencing solutions) with an annual turnover of between eleven and twelve billion euro, smart motors with a maximum turnover of 5.2 billion euro, and smart grids with a maximum of 4.7 billion euro.

► **Intelligent networks in the health sector:** The introduction of intelligent networks in the health sector has generated annual savings of one billion euro through the prevention of card abuse, of 200 million euro through the introduction of electronic prescriptions and 500 million euro thanks to lower treatment costs. This has to be seen alongside the one-off investment costs of 1.7 billion euro incurred through the introduction of the electronic health insurance card. According to McKinsey’s estimates, the integration of ICT solutions and medical technology is predicted to generate sales of one billion euro in 2015.

► **Intelligent networks in the e-Mobility sector:** The Federal Ministry of Economics and Technology (BMWi) has founded a “National Platform for e-Mobility (NPE)” and drawn up a public funding programme, “ICT for e-Mobility”. The aim of the platform is to make Germany the lead market and leading provider for electric mobility by 2020.

► **Intelligent networks in the traffic telematics sector:** McKinsey estimates that the market for traffic guidance systems will generate sales of five billion euro in 2020 and predicts an annual growth rate of 14 percent.

Conclusions

Co-operation between suppliers, users, policy makers and scientists

There needs to be greater collaboration between providers and users in the industrial sector, such as the energy sector and its respective providers. It is simply not possible to fully exploit the digital opportunities provided by an increasingly interconnected world without the collective endeavours of players from the political, economic and scientific arena.

Standardisation as the prerequisite for the success of intelligent networks

The “Digital Agenda for Europe” proposes a catalogue of comprehensive measures for standardisation designed to support interoperability. The flexible use of industry standards is an essential basic requirement for economic growth in the intelligent network sector.

Export map for the detection of profitable business areas and opportunities

The export activities of German companies are a key determinant for economic growth and the creation of jobs. 49 percent of Gross Value Added (GVA) of the German ICT industry is generated by SMEs. The foreign trade offensive started by the Federal Ministry of Economics and Technology (BMWi) in March 2010 offers SMEs support on foreign markets with high future potential and will be continued in 2011 with funding of 200 million euro. The medium-sized ICT companies need to become more “internationalised”. The experts recommend the creation of a global “map” of profitable business areas and opportunities.

5. Research funding – an investment in the future of the German ICT industry

The economic success of the German ICT industry is based primarily on the performance of its research and development. State research funding in strategic future-oriented fields with high relevance for many application areas can improve the performance and efficiency of German R&D on a long-term basis.

- ▶ With R & D expenditure for ICT as a proportion of GDP at 0.29 percent in 2008, the German ICT industry lags some way behind market leader Finland with an R&D quota of 1.33 percent. In the ranking of the top ICT nations, Germany was ranked ninth in 2008. However, it must be pointed out that the German ICT industry has a high level of research efficiency. With the exceptions of the USA and Sweden, no other major industrial nation is capable of producing such economically viable results from a given research input. German companies and research facilities achieve more patents per euro than many other nations.
- ▶ In 2009, the German ICT industry gained a full eleven points in “ICT patent applications per one million inhabitants”, rising to 33 index points. While it is true that the number of ICT patent applications per one million inhabitants fell from 51 to 46, the drops in performance of the nations ahead of Germany in 2008 – Japan, the Netherlands and Finland – were greater. In the TNS benchmark, Germany moved up one position to fifth place.

Conclusions

R & D funding needs greater focus

In a range of workshops, the experts indicated that the ICT research funding needed “the courage to focus”, i. e. to concentrate on strategic areas of growth and innovation.

Tax deductibility of R & D expenses required

There has long been a demand for the research expenditure of German companies to be tax deductible in the same way as in other OECD countries. In accordance with the Lisbon objective, German R & D expenditure is to be increased from its current 2.64 percent to at least three percent of GDP by 2015.

Special support for SMEs

The experts recommend that funding policy measures allocate quotas for SMEs based in Germany. German ICT companies must play a greater role in global R & D networks, particularly as these are often extremely innovative. The support that is so crucial for medium-sized ICT companies should be continued within the framework of the central innovation programme for SMEs (ZIM).

Close invention / innovation gaps

A particular weakness of the German ICT industry continues to be the “gap” between invention, research, development and application, and its failure to adopt innovations in markets quickly enough. This is a problem throughout Europe. Research and development projects should be more realisation-orientated. They should be expanded to include aspects such as technical feasibility, assessment of commercial prospects and promotion of market entry. Development projects should include systematic checks to ensure that sufficient attention is being paid to all implementation aspects.

6. Trust in network and information security as a prerequisite for the evolvement of ICT potential

IDC estimates that the global volume of digital data for 2009 was 487 billion gigabytes. In order to store these data, one hundred billion standard DVDs would be required, which would cover the stretch between the earth and the moon two and a half times over. The data volume is expected to double every 18 months. The contents of these documents and data, and the end devices of users, are at constant risk from a wide range of continually changing threats. Protection against these threats and the improvement of security for citizens and consumers, as well as for both the private and public sector, is a task that must be tackled jointly by players from both the business and political sectors.

Protection of personal data in the face of new challenges. The right to privacy and the protection of personal data is seen by the German Federal Constitutional Court as a fundamental right. Considering the ever growing global network, the voluntary integration of private data in online applications and social networks and mounting commercial interest in these data (for purposes such as personalised advertising), there is an urgent need to update the data protection act. In 2010, 80 percent of all German web users were users of social networks. At a Geodata Summit attended by representatives from the industry and consumers and data protection activists, the Minister of the Interior, de Maizière set the Internet industry a deadline of December 2010 to submit its own provisions to protect the privacy of citizens.

Companies and State need to increase security awareness. The “Secure Socket Layer” (SSL) is an indicator of adherence to security standards. Germany’s performance in “SSL server penetration” fell by two points, to 45 index points. This placed Germany in ninth place in 2009. Market leader was the Netherlands with 142 SSL servers, ahead of the USA with 123 SSL servers per 100,000 inhabitants. Germany achieved 64 SSL servers per 100,000 inhabitants.

Data loss has greater negative impact than IT operation failure. Company security departments primarily see problems in Web 2.0 and in the increase of mobile end devices that have access to company networks. The main risk for companies today is in the loss of data, rather than in the failure of IT operation.

Conclusions

National endeavours need to be bundled and harmonised

Prerequisites for adequate use of all opportunities offered by the Internet are the acceptance and trust of those using information and communication technologies. However, although desirable, it is not possible for individuals to have complete and ultimate control over the use of their personal data on the Internet. It is therefore crucial to harmonise the data protection law within Europe.

The security of critical infrastructures must be ensured

Bearing in mind the constant exposure to the risk of terrorist and cyber attacks, ensuring and maintaining the security of critical infrastructures has become a primary task of Germany’s security policy. It is crucial to ensure international co-operation, particularly with the USA.

Alignment of copyright laws

National legislation alone is not sufficient to prevent the illegal distribution of goods protected by copyright. Technical development results in a constant flow of new solutions onto the market able to elude current statutory requirements. Amendments to the copyright law are made at regular intervals in order to keep temporarily abreast of these technical developments.

Businesses seek to protect their copyrights through digital rights management systems and need to develop business models that are better tailored to digital products.

The “Digital Agenda for Europe” emphasises the need to establish a uniform copyright management system across the European Union. The range of different licensing systems in 27 European countries inhibits innovation and market development.

7. Training and immigration policy to counteract structure-related skills shortage

The current shortage of skilled employees for the ICT industry jeopardises the innovative strength and performance of the German ICT industry. Greater endeavours need to be made to promote basic technical knowledge at schools and to re-orientate training and further education in the technical and natural science fields towards the requirements of businesses.

Training and further education

Expenditure for training below OECD level. In 2009, Germany spent 4.7 percent of GDP on training, while member countries of the OECD spent an average of 5.7 percent.

Need for improvement in the quality of training in the ICT sector. According to the innovation indicator, the quality of Germany's training in mathematics and technical science placed it in 45th place among 133 nations in 2009.

Conclusion: Increased expenditure required for training in ICT.

According to BITKOM, training expenditure in the next four years must be increased from 5.1 percent of GDP to 6.1 percent, whereby a greater proportion should be invested in mathematics and technical science education.

At the monitoring workshop, the theory was put forward that investment in training and education is more important than any investment in networks of the future. "Skilled workers are the most important resource for the German high-tech industry. Only those already investing in new recruits and skilled workers for the ICT sector will be able to attract investment in the medium-term and retain skilled professionals in Germany" (BWMi, 2007).

Skills shortage

Structure-related skills shortage leads to heavy losses in added value. According to BITKOM / VDMA, the information technology and telecommunication industry (including consumer electronics) is one of the largest employers in the German industry, second only to the machinery and plant engineering sector. The information technology and telecommunications industry is also primarily responsible for the creation of new and skilled jobs.

As in the previous year, 846,000 persons were employed in the ICT industry in 2009 (835,000 employees, excluding consumer electronics). The proportion of jobs with intensive ICT utilisation was 22 percent. This put Germany in eighth place in the OECD ranking.

The demographic change has hit the job market. The skills shortage as a structural problem has continued to deteriorate with the effect that it is increasingly dampening growth and innovation. In 2014, the structurally-related shortage of workers with ICT skills will increase to 220,000. By 2020 the German ICT industry will have a shortfall of 425,000 skilled workers. This leads to heavy losses in added value. IW Köln puts the drop in economic wealth for the crisis year 2009 at 15 billion euro.

The six Indian ICT experts consulted confirmed that they would choose other countries than Germany as the location for a company start-up. Switzerland was regarded favourably due to its tax advantages and more flexible labour market regulations.

Conclusions

Players from politics, industry and society have to develop and implement a joint strategy to eliminate the skills shortage. On the one hand, the domestic potential needs to be expanded by improving the quality of the education and further training in ICT. On the other, we need to develop an "intelligent" immigration policy that will encourage "high potentials" from other countries to bring their skills to Germany.

8. Eliminate barriers

The applications of the new technologies and media in the information and communication industry are broken down by means of a range of indicators into private use, corporate use and public authority use.

Corporate use

► “Purchases by companies via the Internet”.

Germany’s performance fell by 19 points to 79 index points. In Germany, the proportion of companies that made purchases via the Internet in 2009 was 43 percent. However, a methodological correction by data supplier Eurostat has caused wide variations in the comparison with the previous year.

► “Internet use in companies” fell by five points to 90 index points. Within the framework of an annual survey, the World Economic Forum (WEF) determines the degree to which companies use the Internet for the purpose of e-Procurement, for the sales of products and services, and for communication / data exchange within companies and between business partners (B2B). Germany is the only country in the TNS benchmark whose WEF index value fell, dropping from 5.91 points to 5.79 points, causing Germany’s ranking to fall from fifth to tenth place.

Conclusions

Dismantling barriers

Key barriers, that prevent the further expansion of the use of e-Business, are the reluctance of suppliers and customers to increase their usage of e-Business and the difficulties in convincing SMEs of the advantages of e-Business. The “Network of Electronic Business Transactions”, an initiative of the Federal Ministry of Economics and Technology (BMWi), which has been helping SMEs set up e-Business solutions since 1998, is to be continued.

Setting international standards

A condition for successful e-Business is the availability of standards. At the Monitoring workshop, experts believed that, in some cases, Germany had opted out of the standardisation process. While interesting standards were developed with flagship projects, Germany failed to follow through and promote them internationally. Clear political initiatives are required, that enable a supranational co-ordination of central standardisation processes.

Private use

► In 2009, in “Internet use in the population” Germany’s performance was the same as in the previous year, achieving 86 index points and a 79 percent penetration rate, which placed it eighth according to ITU. Around a fifth of Germans are “offliners” and are largely excluded from the digital society and industry.

► In “e-Commerce users in the population”, Germany’s performance fell by four points, to 80 index points. 56 percent of Germans made at least one online purchase in 2009. That is three percentage points more than in 2008 and put Germany in eighth place in the TNS benchmark. In Norway, the global market leader, the proportion of online buyers rose by seven percentage points, to 70 percent.

► In the performance indicator “e-Commerce turnover per Internet user” (excluding online travel bookings and products paid for offline, even if they were ordered online), the performance of the German ICT industry fell by one point, to 17 index points. With e-Commerce turnover per Internet user of 207 euro, Germany is ranked eleventh. Finland is market leader with 1,227 euro.

Conclusions

Further reduce digital gap

Germany is still far away from a digital society with nationwide coverage. This must remain as a task on the political agenda to be urgently addressed.

Create rules for cross-border e-Commerce

We need to further boost public faith in the security of online transactions. Public fears about payment security, data protection and data security in the case of cross-border transactions must be addressed through the implementation of appropriate regulations at European level. In its “Digital Agenda for Europe”, the EU commission is pushing for the completion of the Single Euro Payments Area (SEPA) and the implementation of secure and efficient payment methods.

Utilisation / provision of digital services in the public sector

► In the key indicator “**Maturity of e-Participation**”, the German ICT industry gained 45 points, rising to 61 index points. There is increasing use of e-consultations, which give citizens the opportunity to comment on political proposals. More than 4,000 unique visitors were registered per action. Germany’s performance ranked seventh in the TNS benchmark in 2009.

► “**Quality of e-Government services**”. The United Nations regularly checks government web sites for the availability of services, the degree of expansion, from the simple provision of information through to the complete processing of administration processes, as well as assessing user friendliness and accessibility. In spite of dropping three index points, from 58 to 55 points, Germany moved up two places to tenth place.

Conclusions

The National e-Government strategy sets an important course for high-quality e-Government services in Germany, with a mission statement taking it up to 2015.

► In September, the Council for IT planning named the following goal areas: orientation for use by the population, companies and the public sector; cost-effectiveness and efficiency; transparency, data protection and data security; social participation; future viability, sustainability and strong IT support.

► The introduction of the new identity card and the legally secure “De-Mail” will fundamentally change e-Government services in Germany.

► Additional measures designed to further promote e-Participation include the creation of suitable legal frameworks for the approval and use of electronic participation forms in formal processes, the long-term management of technical services and process consulting services for participation projects. A national citizen information portal will report on current projects at federal, regional and local level. Ideally, e-Participation also ensures the development

of “citizen-generated content” as an important stimulus and communication partner for government and businesses. Successful flagship projects at federal and state level must be documented and suitable user and business models must be developed for e-Participation.

9. New action programme “Digital Germany 2015”

Immediately before this report went to print, the Federal cabinet approved the “German Federal Government’s ICT Strategy – Digital Germany 2015”. Objectives were specified and measures approved for six areas: 1. New growth and jobs through digitisation; 2. Digital networks of the future; 3. Trust and security in the digital world; 4. Research and development for a digital future; 5. Education, media skills and integration; 6. Digital solutions for social challenges and citizen-oriented administration.

The Federal Government’s ICT strategy “Digital Germany 2015” and the “Monitoring Report – Digital Germany – an International Comparison of the ICT Industry 2010” are both an integral part of the IT Summit process. In several respects, the “Monitoring Report – Digital Germany” serves as the empirical and analytical basis for the Federal Government’s ICT strategy “Digital Germany”. It is therefore hardly surprising that both reports reach the same conclusions, even if they are taken from a different perspective and have different immediate objectives – i. e. to serve as the empirical and analytical basis for an ICT policy, and as a means for deriving and determining economic targets and concrete measures. The “Monitoring Report” also contains assessments from decision-makers of the ICT industry that have not been adopted 1 : 1 in economic policy.

The performance of the German ICT industry is mediocre compared to that of the world’s top 14 ICT nations. In order to make the German ICT industry world leader, we need to focus on goals and the relevant courses of action. This would involve: 1. Building on existing strengths of the German ICT industry, 2. Utilising promising new application areas to drive growth, 3. Eliminating weaknesses and 4. Minimising current risks.

The following illustrates in which of these points the “Monitoring” results and the “ICT Strategy” agree, complement each other or differ from one another.

1. Areas that are complementary

Building on existing strengths is dealt with similarly in the Monitoring Report and the ICT Strategy. The “Monitoring Report” and the “ICT Strategy” have both established that building on the strengths of the German ICT industry is an absolute priority if Germany is to become global market leader. To build on these strengths, the first chapter of the ICT strategy “New growth and jobs through digitisation” defines growth and labour market objectives designed to improve Germany’s unsatisfactory mid-field ranking.

- ▶ create 30,000 new jobs by 2015;
- ▶ increase the number of ICT-based company start-ups (no quantification);
- ▶ support SMEs in the ICT industry by means of an “export offensive” and the provision of start-up support programmes and additional supportive measures geared towards SMEs;
- ▶ help German ICT companies contribute towards the specification of international standards.

2. Areas of agreement

Expand the opportunities of digital networks of the future. Business and politics agree that the provision of nationwide access to high-speed networks must become an integral part of the ICT infrastructure. Rapid implementation of the broadband strategy is essential (see chapter 2 of the ICT Strategy: “Digital networks of the future”). Priority must be given to planning and legal security during expansion of high-speed networks. The experts of the “Monitoring Report” demand incentives to expedite the expansion of fibre-optic cables.

Trust in network and information security as a prerequisite for the evolvement of ICT potentials. Business and politics agree that effective data protection is a key factor in the acceptance and development of an information and knowledge-based society.

The aim of the measures in the ICT strategy, as demanded by experts in the “Monitoring Report”, is to increase trust in the technologies and services of the Internet in order to minimise risks in the ICT sector (see chapter 3 of the ICT Strategy: “Trust and security in the digital world”).

Training and immigration policy to counteract structure-related skills shortage. Business and politics agree that appropriate measures must be implemented to reduce the current shortage of new recruits, and endeavours made to re-orientate training and further education in the technical and natural sciences fields (see chapter 5 of the ICT Strategy: “Education, media skills and integration”). In addition, the experts of the “Monitoring Report” demand the development of an “intelligent” immigration policy that will encourage to recruit “high potentials” from other countries to bring their skills to Germany. This will enable the biggest disadvantage of the ICT industry to be countered quickly and effectively.

Utilising opportunities of digital solutions for social challenges and citizen-oriented administration. Economic policy and experts of the “Monitoring Report” confirm how important it is to expedite the further expansion of e-Government services, to participate in the expansion of the e-Justice portal at European level and to promote the nationwide use of telemedicine and telemonitoring (see chapter 6 of the ICT Strategy: “Digital solutions for social challenges and citizen-oriented administration”).

3. Areas of deviation

No prioritisation of growth areas in “ICT Strategy”. The ICT Strategy defines action programmes and objectives for the most promising growth areas (see chapter 4 of the ICT Strategy: “Research and development for a digital future” and chapter 6: “Digital solutions for social challenges and citizen-oriented administration”). There was no prioritisation as recommended by the experts in the “Monitoring Report”. A prioritisation on the basis of growth potential of the “Monitoring Report” produces the following focus:

Fig. b: Growth sectors and potentials

Sector	Growth potential	Key measures of the ICT Strategy
Cloud computing	Annual growth of 48 %	Implement cloud computing action programme.
Green IT	Annual growth of 39 %	40 % reduction of ICT energy consumption through use of ICT by 2013.
ICT and energy – Smart Grids	Annual growth of 21 %	Renewable energies and use of ICT to achieve 30 % reduction in power consumption by 2020.
ICT for traffic – traffic telematics	Annual growth of 14 %	Expedite introduction of intelligent traffic guidance systems.
IT security	Annual growth of 10 %	Measures defined in “Trust and security in the digital world” for the protection of businesses, Government, science and citizens.
Embedded Systems	Annual growth of 9 %	Implement “embedded systems” road map.

Measures proposed by experts for the promotion of research and development. Not all aspects of the conclusions and recommended actions for economic policy in the “Monitoring Report” and the “ICT Strategy” are in agreement. The greatest discrepancy was in the recommendations of the experts with regard to chapter 4 of the ICT Strategy “Research and Development for a digital future”. The following recommendations have not yet been taken into account:

- ▶ The research expenditures of German countries should be tax deductible as is the case in other OECD countries.
- ▶ Funding policy measures of the Federal Government should allocate quotas for SMEs based in Germany.
- ▶ Above all, the German ICT industry still has gaps between invention, research and development and in the application and adoption of innovations. These gaps need to be closed through suitable economic policy measures.

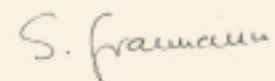
And in the future...

A key task of the “Monitoring” project after the fifth IT Summit will comprise continuous monitoring of the degree to which measures defined in the Federal Government’s ICT Strategy “Digital Germany 2015” have been implemented, and using the TNS benchmark to gauge how far these measures have already improved the performance of the German ICT industry in the ranking.

Appraisals and assessments of the German ICT industry should continue to form the basis for a continuous dialogue between players from the spheres of politics, industry and science. The Fifth National IT Summit will provide the opportunity for discussions on the results presented in this report.

I would like to extend my warm thanks to the experts who made such a huge contribution to this report and decisively influenced its overall content!

Kind Regards



Sabine Graumann

1.

Goals and methodology



1. Goals and methodology

From a general economic perspective, the information and communication industry (ICT) plays a key role. The aim is to make Germany a global market leader with cutting-edge technologies in as many areas as possible.

The key objectives of the Federal Government's ICT strategy "Digital Germany 2015" are to expedite the digital networking of the economy and promote the use of ICT to overcome urgent social challenges, such as climate and environmental protection or energy security.

Objectives

In the years ahead, the goal is for the German ICT industry to establish itself as a global leader on the international market. The annual "Monitoring Report – Digital Germany" will contribute to this by answering the following questions:

- 1. An international comparison of the German ICT industry:** How is the German ICT industry developing compared to its major competitors? What have the German ICT industry and economic policy achieved in recent years compared to its competitors? What are the current key trends and likely developments in the years ahead, and what is the strategic growth potential in the medium-term?
- 2. Assessment of the global benchmark from an expert perspective:** What is the significance of the results depicted in 1. in terms of the competitiveness of the domestic ICT industry? And what are the consequences of adapting the strategy for the German ICT industry to meet current challenges? To what degree can the benchmark results be confirmed, qualified or supplemented by the decision-makers of the German information and communication industry?
- 3. Conclusions and recommendations for Government action:** What must the German ICT industry and economic policy do to actively promote its ascendancy to world leader? What do these results mean for the ICT policy of the Federal Government and for the IT Summit process in particular?

The "Monitoring Report – Digital Germany" analyses the performance of the German information and communication industry and compares it with Germany's main competitive countries in Europe and Asia and with the USA.

Methodology

In order to calculate the performance of all 15 countries in a comparable manner, "key indicators" were used to position Germany in relation to 14 other countries in a "status report". A quantitative global comparison of the performance of the German ICT industry was carried out on the basis of 24 key indicators. The 15 ICT nations were then ranked according to performance, and the leading country in each class was awarded 100 index points. The other countries were then positioned relative to the global market leader.

This purely quantitative performance measurement is then supplemented by means of an "industry assessment", which is achieved by incorporating the opinions of top ICT experts. The results obtained from this status report were then investigated and updated in a workshop by the decision-makers of the German information and communication industry.

In addition, international experts were also consulted on selected ICT nations (France and India) and a qualified comparison was made with the German ICT industry. These expert interviews were conducted in France and India.

Industry positioning and industry assessment data provide a strengths/weaknesses profile of the German ICT industry. These data allow identifying fields of action for politics and the economy that are relevant to the German ICT strategy.

To download, please visit our website at www.tns-infratest.com/monitoring_report_digital_germany.

2.

An international comparison of Germany with the world's top ICT nations



2.1 The performance of the leading ICT nations

How competitive is the German ICT industry? What is its position on the global markets in comparison to other ICT nations? Is the domestic market providing the right conditions for the ICT industry to establish itself as global market leader? To what degree and with what level of competency are products and services being utilised by companies, public bodies and private households?

Are there sufficient professional interactions on the Internet, i. e. between companies, or between companies and public administration?

These questions and more are answered in the annually updated TNS benchmark. The industry positioning of the German ICT industry was performed using the three categories “Market relevance”, “Infrastructure” and “Applications”.

USA relinquishes position as global market leader

In 2000, the USA’s position as leader in the global benchmark was virtually unchallenged, followed by Japan and various European countries (the United Kingdom, Germany, the Scandinavian countries and, to a lesser degree, the Netherlands and France). In the years that followed, the “Monitoring Report” documented the inexorable rise of the East Asian countries, represented by South Korea. Not only did this have a detrimental impact on the positioning of the European countries, it also put the dominance of the USA into perspective.

As the “Monitoring Report – Digital Germany” shows in 2010, the USA has now even had to relinquish its position as global market leader. Other studies, such as “The World Competitiveness Scoreboard 2010”, have also confirmed that East Asian countries, such as Singapore and Hong Kong, have now overtaken the USA. However, the monopoly once held by the USA has not been replaced by a different monopoly, rather it has been replaced with a multicentric ICT world that includes rising European countries, in particular, Switzerland and Austria. It also includes the dramatic rise of China.

Germany in seventh place in the overall ranking of the top 15 ICT nations

In 2009, South Korea outflanked the USA to take pole position in the ranking of the top 15 ICT nations. South Korea achieved first place in seven of the 24 key indicators:

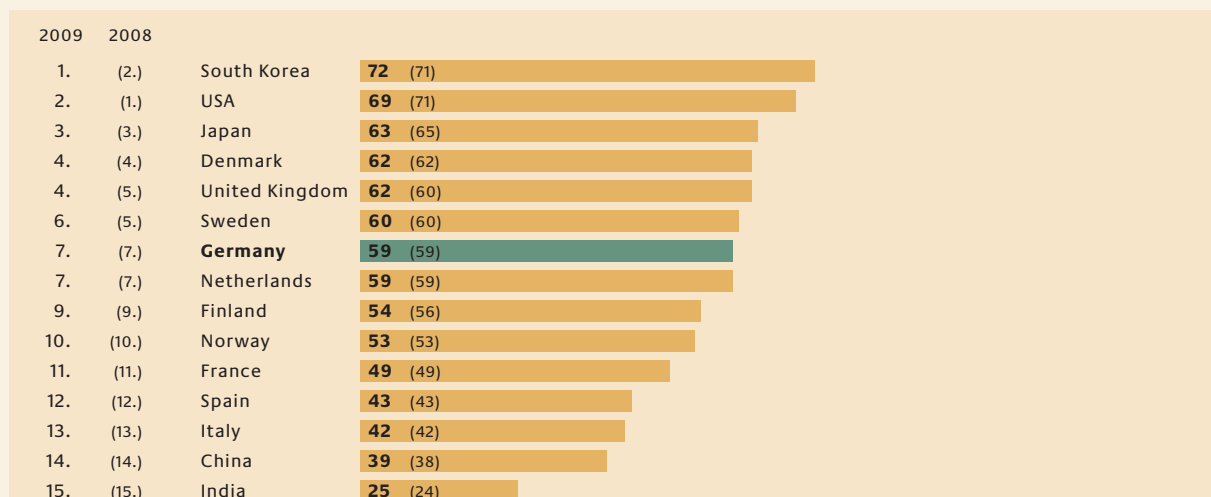
► This included three times in the category “Market relevance”: in “ICT expenditure as a proportion of GDP”, “Maturity of telecommunications market” and “Internet advertising as a proportion of overall advertising market revenue”.

► It also achieved three first places in the category “Applications”: “Mobile Internet use in the population”, “Quality of e-Government services” and “Maturity of e-Participation”.

► In the category “Infrastructure”, South Korea was global market leader in “Internet access in households”.

South Korea improved its performance in 2009 by one point, rising to 72 index points.

Fig. 2.1a: TNS benchmark – Average Performance by Country, 2009
Germany remains at seventh place in the TNS benchmark



Source: TNS Infratest (2010)
Previous year's figures in brackets

The USA took second place behind South Korea with 69 points, a drop of two index points. The TNS benchmark shows that the USA was the most important ICT industry in the category “Market share of ICT turnover in the global market”. The USA also remained global market leader in “Number of Internet hosts per 100 inhabitants” and “Purchases by companies via the Internet”.

Japan followed in third place, six index points behind the USA. It took first place in “ICT companies as a proportion of all companies”. Japan’s performance dropped two points compared to the previous year, falling to 63 index points.

Fourth place in the TNS benchmark was held jointly by the United Kingdom and Denmark, each with 62 index points. Having gained two index points compared to the previous year, the United Kingdom showed the greatest improvement, while Denmark’s performance was unchanged. The United Kingdom is the leading ICT industry in “Internet advertising as a proportion of overall advertising market revenue”. Denmark was global market leader in both “ICT expenditure per capita” and “Broadband connections in the population”.

With an unchanged 60 index points, Sweden took sixth place. Sweden was placed first in “ICT patent applications per one million inhabitants” (jointly with Finland) and “Internet use in companies”.

Germany and the Netherlands have remained in joint seventh place in the ranking of the most important ICT nations, each with 59 index points. Germany no longer placed first or second in any of the performance indicators. Its best position was third place, which it achieved twice, in “Maturity of the telecommunications market” and “Mobile Internet use”. The Netherlands reached pole position twice, in “Computer penetration in households” and “SSL server penetration per 100,000 inhabitants”.

Compared to the previous year, Finland fell two points, dropping to 54 index points and placing ninth. Finland was global market leader in “ICT patent applications per one million inhabitants” (jointly with Sweden) and “e-Commerce turnover per Internet user”.

Norway ranked tenth with 53 index points. The TNS benchmark placed Norway first in “Internet use in the population” and “e-Commerce users in the population”.

France was positioned eleventh with 49 index points. Like Germany, France did not achieve first place in any of the performance indicators.

Spain placed twelfth with 43 index points and Italy placed thirteenth with 42 index points. Spain’s best performance was in the key indicators “Quality of e-Government services” and “Maturity of e-Participation”. Italy was global market leader in “Mobile telephony penetration in the population”.

Fig. 2.1b: TNS benchmark – Ranking of ICT Nations, 2008 / 2009

Rise of virtually all Asian industries continues unchecked

Country	2009 ranking	2008 ranking	Change in index
South Korea	1	2	+1
USA	2	1	-2
Japan	3	3	-2
Denmark	4	4	±0
United Kingdom	4	5	+2
Sweden	6	5	±0
Germany	7	7	±0
Netherlands	7	7	±0
Finland	9	9	-2
Norway	10	10	±0
France	11	11	±0
Spain	12	12	±0
Italy	13	13	±0
China	14	14	+1
India	15	15	+1

Source: TNS Infratest (2010)

China gained one point compared to the previous year, and placed fourteenth with 39 index points. It was global market leader in three key indicators: “ICT exports as a proportion of all exports”, “Growth in IT turnover” and “Use of social networks by Internet users”.

India remained at the bottom of the ranking in spite of improving its index by one point, rising to 25 index points. It achieved its best performance in the key indicator “Growth in IT turnover”, achieving second place.

South Korea takes over as global market leader. The United Kingdom rises to fourth place.

Twelve of the 15 nations included in the benchmark retained the same ranking as the previous year. The USA was ousted from pole position by South Korea.

With an improvement of two index points, the United Kingdom rose to fourth place (shared with Denmark) and registered wins in all three categories: “Market relevance”, Infrastructure” and “Applications”, thus forcing Sweden down into sixth place.

The rise of Asia appears unstoppable: South Korea, China and India all improved their performance by one index point.

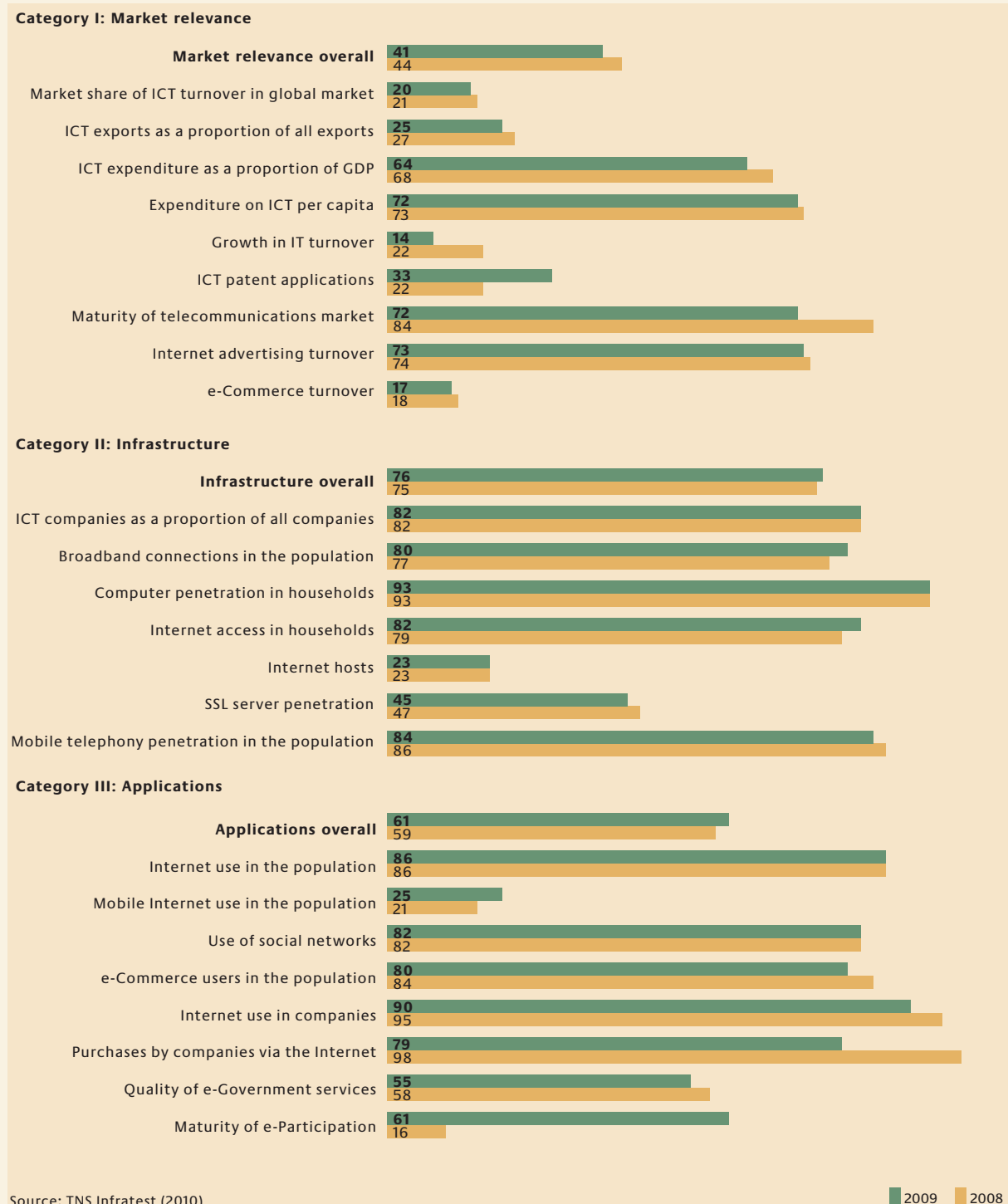
The performance of Germany and the Netherlands was unchanged and they remained in joint seventh place in the ranking of the 15 ICT nations, each with 59 index points.

The performances of the USA, Japan and Finland fell by two index points each respectively.

2.2 Germany's performance in the global benchmark

Germany ranked seventh in the TNS benchmark. In the category "Market relevance", Germany also placed seventh, in the category "Infrastructure" it placed sixth and its best ranking was in the category "Applications", where it achieved fourth place.

Fig. 2.2a: Digital performance of the German ICT economy, 2009
Significant progress in e-Participation and Patent Applications



“The German ICT industry may be subject to some restrictions in its attempts to improve its global ‘Market relevance’; however, when it comes to the distribution and use of digital ‘Applications’ for the private and business purposes, and the quality of digital services offered by the public sector, Germany has made a considerable leap forward in its development over the previous year. This can be the stepping stone that helps Germany establish itself as global market leader in the overall benchmark.”

Anselm Speich,
Project Manager of Monitoring
Report – Digital Germany,
TNS Infratest Forschung GmbH



Germany’s rankings were as follows:

- ▶ Third place: “Maturity of the telecommunications market”, measured by means of landline / mobile telephony penetration and telecommunications expenditure as a proportion of GDP and “Mobile Internet use in the population”;
- ▶ Fourth place: “Market share of ICT turnover in the global market” and “Purchases by companies via the Internet”;
- ▶ Fifth place: “ICT patent applications” and “Mobile telephony penetration in the population”;
- ▶ Sixth place: “Internet advertising as a proportion of overall advertising market revenue”, “ICT companies as a proportion of all companies”, “Broadband connections in the population”, “Computer penetration in households”, “Internet access in households” and “Use of social networks”;
- ▶ Seventh place: “ICT expenditure as a proportion of GDP” and “Maturity of e-Participation”, which means e-Information, e-Consultation and electronic participation in decision-making;
- ▶ Eighth place: “Internet use in the population” and “e-Commerce users in the population”;
- ▶ Ninth place: “ICT exports as a proportion of all exports”, “Internet hosts” and “SSL server penetration”;
- ▶ Tenth place: “ICT expenditure per capita”, “Internet use in companies” and “Quality of e-Government services”.
- ▶ Eleventh place: “Growth in IT turnover” and “e-Commerce turnover per Internet user”.

Germany’s performance deteriorated in 14 key indicators and improved in five key indicators.

The performance of the German ICT industry deteriorated in 14 of 24 key indicators.

The performance of the German ICT industry deteriorated in 14 of 24 key indicators.

It was ranked third, fourth and fifth twice, sixth six times, seventh and eighth twice, ninth and tenth three times and eleventh twice.

The performance of the German ICT industry was unchanged in five key indicators. It also improved its performance in five key indicators. In “Maturity of e-Participation” it achieved a growth of a full 45 index points. This was the third largest improvement of all ICT nations in 2009.

Germany also registered considerable successes with **improvements** of eight index points and more in two key indicators:

- ▶ “Maturity of e-Participation” rising 45 points, to 61 index points;
- ▶ “ICT patent applications” rising eleven points, to 33 index points.

Improvements of between one and four index points were registered in three key indicators:

- ▶ “Mobile Internet use in the population” rising four points, to 25 index points;
- ▶ “Internet access in households” rising three points, to 82 index points;
- ▶ “Broadband connections in the population” rising three points, to 80 index points;

And its performance remained **unchanged** in five key indicators:

- ▶ “Computer penetration in households” with 93 index points;
- ▶ “Internet use in the population” with 86 index points;
- ▶ “Use of social networks” with 82 index points;

▶ “ICT companies as a proportion of all companies” with 82 index points and

▶ “Internet hosts per 100 inhabitants” with 23 index points.

Germany’s performance **deteriorated** in 14 key indicators. There was a **dramatic deterioration** of eight index points and more in three key indicators:

- ▶ “Purchases by companies via the Internet” dropping 19 points, to 79 index points – which also saw Germany lose its position as global market leader, but which was blamed on a change in the method of data collection;
- ▶ “Maturity of the telecommunications market” dropping twelve points, to 72 index points;
- ▶ “Growth in IT turnover” dropping eight points, to 14 index points.

Germany’s performance showed a **significant deterioration** of four or five index points in four key indicators:

- ▶ “Internet use in companies” dropping five points, to 90 index points;

▶ “ICT expenditure as a proportion of GDP” dropping four points, to 64 index points;

▶ “e-Commerce users in the population” dropping four points, to 80 index points;

▶ “Quality of e-Government services” dropping three points, to 55 index points.

There was a **deterioration** of two index points respectively in three key indicators:

▶ “Mobile telephony penetration in the population” dropping two points, to 84 index points;

▶ “SSL server penetration” dropping two points, to 45 index points;

▶ “ICT exports as a proportion of all exports” dropping two points, to 25 index points.

And there was a **minor deterioration** in four key indicators. The index value fell by one point in the following key indicators:

▶ “Internet advertising as a proportion of overall advertising market revenue” dropping one point, to 73 index points;

▶ “Per-capita expenditure for ICT” dropping one point, to 72 index points;

▶ “Market share of ICT turnover in the global market” dropping one point, to 20 index points;

▶ “e-Commerce turnover per Internet user” dropping one point, to 17 index points.

3.

Germany's competitiveness in the category “Market relevance”



3.1 An international comparison

Information and communication technologies are key drivers for increased productivity, growth and employment. As key technologies in an increasingly knowledge-based economy, ICT acts as a catalyst for growth in almost all industries.

The indicators for performance measurement in the category "Market relevance"

The performance of the top 15 ICT nations in the category "Market relevance" is measured on the basis of nine key indicators. On the supply side: "Market share of ICT turnover in the global market", "ICT exports as a proportion of all exports", "ICT expenditure as a proportion of GDP", "Growth in IT turnover", "Number of patent applications", "Maturity of the telecommunications market" and "Internet advertising as a proportion of overall advertising market revenue". On the demand side: "ICT expenditure per capita" and "e-Commerce turnover per Internet user".

Furthermore, qualitative analyses were performed to show the current developments in the areas "job market and development of skilled employees" and "training and further education" for the German ICT industry (see full version, chapters 3.1.1 and 3.1.2 – only available in German).

Germany drops from sixth to seventh place in overall ranking

The following section measures the average performance of the top 15 ICT nations in the category "Market relevance". For further details of the methodology used, please refer to chapter 7.

In the category "Market relevance" the average index value of all countries deteriorated significantly in 2009 compared to the previous year. Whereas in 2008 the ICT markets achieved an average of 43 index points, this fell to 41 index points in 2009. This makes it the worst area of performance compared to the other two categories "Infrastructure" (65 points) and "Applications" (56 points).

The most significant improvements were achieved by **the United Kingdom and Sweden**, each gaining two index points. This saw the United Kingdom and Sweden achieve 53 and 39 index points respectively. This put the United Kingdom in second and Sweden in eighth place.

Fig. 3.1a: Mean values in the category "Market relevance", 2008/2009

The United Kingdom and Sweden gain two index points compared to the previous year

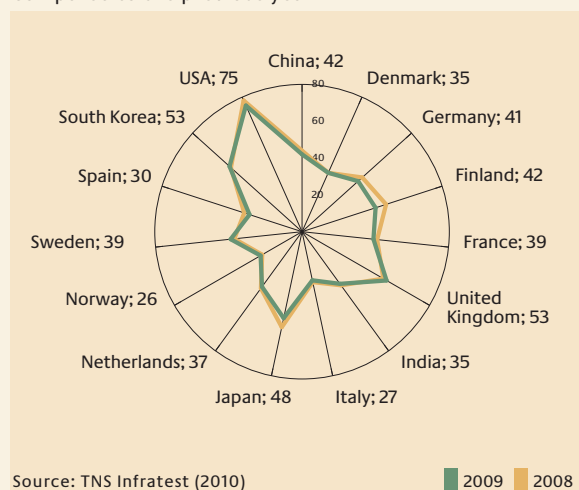
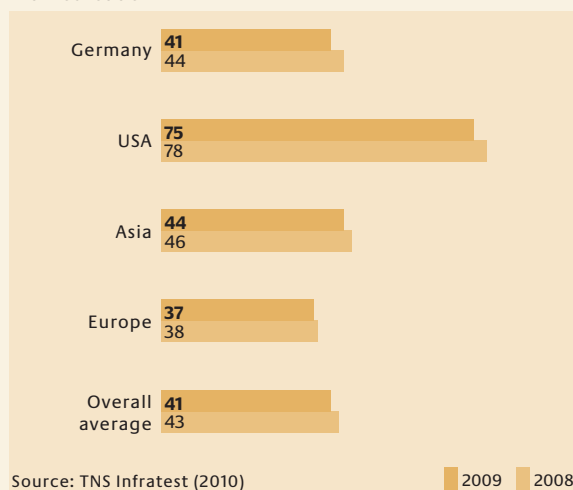


Fig. 3.1b: Region index in the category "Market relevance", 2008/2009

Despite a decline, the USA remains the undisputed global market leader



South Korea (second place) and **Norway** both improved by one index point, to 53 and 26 index points respectively. Norway was bottom of the ranking in fifteenth place.

Denmark remained at 35 index points but still rose from twelfth to eleventh place. **Finland** dropped six points to 42 index points, but still held on to fifth place. **Japan** dropped five points, to 48 index points, which saw it fall from second to fourth place.

Spain dropped three index points, giving it an index value of 30, and stayed in thirteenth place. Even category leader, the **USA**, dropped three index points (from 78 to 75 index points), but was able to hold on to the leading position.

Germany dropped three points, to 41 index points, falling from sixth to seventh place in the ranking.

China dropped two points, to 42 index points, but was able to improve its position from sixth to fifth place. **France** also dropped two index points, placing it in eighth place with 39 index points.

The performances of the **Netherlands** (from 38 to 37 index points), **India** (from 36 to 35 index points) and **Italy** (from 28 to 27 index points) each deteriorated by one point respectively.

USA way ahead of the other ICT nations in regional comparison

After dropping three points to 41 index points, **Germany's** performance fell below the average overall performance of the 15 ICT nations, standing at 41.47 points.

After dropping one point, all the **European countries** included in the benchmark achieved an average 37 index points. That was less than half the points achieved by the USA. Just four points ahead of this average, the German performance was marginally better.

Even the performance of the **Asian countries** deteriorated over the previous year in the regional comparison. The average relative performance of the Asian countries fell from 46 to 44 index points. This placed Asia three index points above the average performance of all the countries included in the TNS benchmark. Despite falling three points, to 75 index points, the **USA** remained global market leader by a substantial margin.

Germany and China change places

The **USA** achieved 75 of the maximum possible performance of one hundred points. That places it a full 22 points ahead of the **United Kingdom** and **South Korea** in joint second place, each with 53 points. In 2008, the USA achieved 78 index points. The United Kingdom gained two index points and South Korea gained one point (both now have 53 points), compared to the previous year.

Fig. 3.1c: Rankings in the category "Market relevance", 2008/2009

Japan falls two places, while the United Kingdom and Sweden both gain two places

Country	2009 ranking	2008 ranking	Change in index
USA	1	1	-3
South Korea	2	3	+1
United Kingdom	2	4	+2
Japan	4	2	-5
Finland	5	5	-6
China	5	6	-2
Germany	7	6	-3
France	8	8	-2
Sweden	8	10	+2
Netherlands	10	9	-1
India	11	11	-1
Denmark	11	12	± 0
Spain	13	13	-3
Italy	14	14	-1
Norway	15	15	+1

Source: TNS Infratest (2010)

Japan fell five index points, dropping to fourth place. **China** fell two index points, but went up one place in the ranking, achieving joint fifth place with **Finland**, which dropped six index points.

Germany fell three index points, dropping from sixth to seventh place.

France fell two index points, while **Sweden** gained two index points, placing the two countries in joint eighth position. The **Netherlands** fell one index point, dropping one position in the ranking to tenth place.

India fell one index point but maintained its position in eleventh place. Although its index ranking was unchanged, **Denmark** went up one place in the ranking to share eleventh place with India.

Spain dropped three index points and stayed in thirteenth place, **Italy** fell one index point. **Norway** gained one index point but remained at the bottom of the ranking as in the previous year.

Germany leads in two key indicators in the regional comparison

Germany is market leader in two key indicators: In "Internet advertising as a proportion of overall advertising market revenue" with 73 index points and "Maturity of the telecommunications market" with 72 index points.

The **USA** leads in four categories: In "Market share of ICT turnover in the global market", "ICT expenditure per capita", "ICT expenditure as a pro-

portion of GDP" and in "e-Commerce turnover per Internet user".

The **Asian countries** included in the benchmark were market leaders in the categories "ICT exports" with 63 index points and "Growth in IT turnover" with 55 index points.

With 39 index points in "ICT patent applications", the **European countries** included in the TNS benchmark are ahead of Germany with 33, the USA with 22 and Asia with 18 index points.

Germany's performance deteriorates in eight out of nine key indicators

The average performance of the German ICT industry deteriorated in eight out of nine performance indicators. It only improved its performance in "ICT patent applications", where it gained eleven points, rising to 33 index points.

The German ICT industry achieved 60 index points or more in four key indicators. These were "Internet advertising as a proportion of overall advertising market revenue" with 73 points, "ICT expenditure per capita" and "Maturity of the telecommunications market", each with 72 index points, and "ICT expenditure as a proportion of GDP" with 64 index points.

The biggest decline in performance was 22 points, down to 14 index points for the category "Growth in IT turnover". In the key indicator

Fig. 3.1d: Average performance of key indicators in the category "Market relevance", 2009
Germany's strengths are "Internet advertising turnover" and "Maturity of the telecommunications markets"

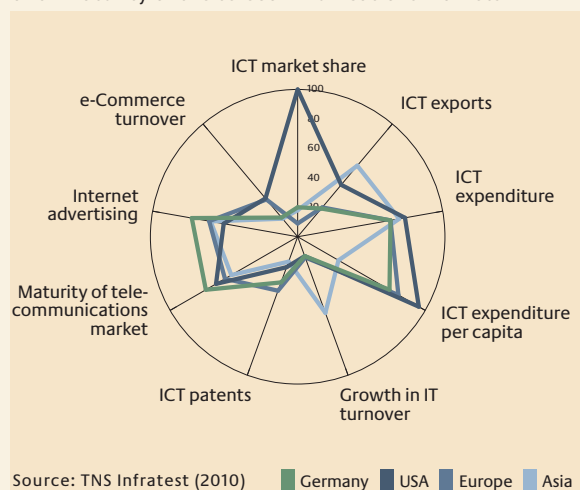
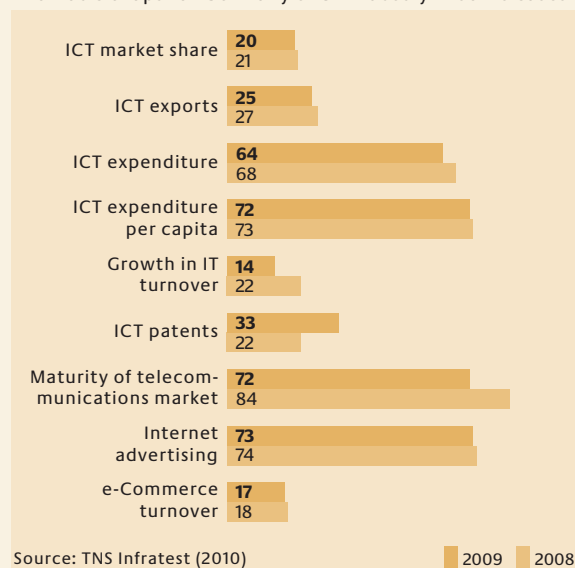


Fig. 3.1e: Germany: Changes in performance of key indicators in the category "Market relevance", 2008/2009

Dramatic drops for Germany's ICT industry in some cases



“Maturity of the telecommunications market”, Germany’s performance fell by twelve points, down to 72 index points. The performance of the German ICT industry in “ICT expenditure as a proportion of GDP” fell by four points, to 64 index points. In “Internet advertising as a proportion of overall advertising market revenue”, the German ICT industry fell by one point, to 73 index points. In the key indicator “ICT expenditure per capita”, Germany’s performance fell by one point, to 72 index points.

With exceptions, Germany’s performance in lower midrange

International comparison shows German telecommunications market to be highly developed. Here with a third place Germany achieved its best ranking of all the nine performance indicators. According to the generated sales volume, Germany is the fourth largest ICT nation. The German ICT industry is still innovative, confirmed by its fifth place in “ICT patent applications”.

The German ICT industry ranked sixth in “Internet advertising as a proportion of the overall advertising market revenue” and seventh in “ICT expenditure as a proportion of GDP”.

The German ICT industry achieved below-average performances in “ICT exports as a proportion of all exports” where it ranked ninth, in “ICT expendi-

ture per capita” where it ranked tenth and in “Growth in IT turnover” and “e-Commerce turnover per Internet user” where it ranked eleventh in each respectively.

Summary: Germany’s performance in the category “Market relevance”

► Germany dropped one position, falling from sixth to seventh place in 2009. With a performance of 41 points, Germany was just marginally below the average performance across all 15 ICT nations of 41.5 points.

► The average German performance of 41 points in the category “Market relevance” was by far its worst compared to the other two categories “Infrastructure” (76 points) and “Applications” (61 points).

► In the regional index, Germany’s performance of 41 points fell below the performance of all the Asian countries included in the TNS benchmark, which achieved 44 points. Compared to the European countries included in the TNS benchmark, Germany was four points ahead. However, Germany trailed a full 31 points behind the market leader, the USA, with 75 points – a marked difference.

► Germany was unable to achieve “best-in-class country” in any of the key indicators.

► The best ranking achieved by Germany, was third place in the category “Maturity of the telecommunications market”.

► It was also unable to achieve good index rankings of 80 index points and more in any of the key indicators.

► Its particular weaknesses were in “ICT exports as a proportion of all exports” where it ranked ninth, in “ICT expenditure per capita” where it ranked tenth and in “Growth in IT turnover” and “e-Commerce turnover per Internet user” where it ranked eleventh in each respectively.

Fig. 3.1f: Germany’s performance compared with the leader in the category “Market relevance”, 2009

We are growing too slowly, especially in areas of innovation

ICT market share	USA is market leader, Germany is in fourth place
ICT exports	China is market leader, Germany is in ninth place
ICT expenditure	South Korea is market leader, Germany is in seventh place
ICT expenditure per capita	Denmark is market leader, Germany is in tenth place
Growth in IT turnover	China is market leader, Germany is in eleventh place
ICT patents	Finland is market leader, Germany is in fifth place
Maturity of telecommunications market	South Korea is market leader, Germany is in third place
Internet advertising	UK is market leader, Germany is in sixth place
e-Commerce turnover	Finland is market leader, Germany is in eleventh place

Source: TNS Infratest (2010)

3.2

TNS benchmark "Market relevance"



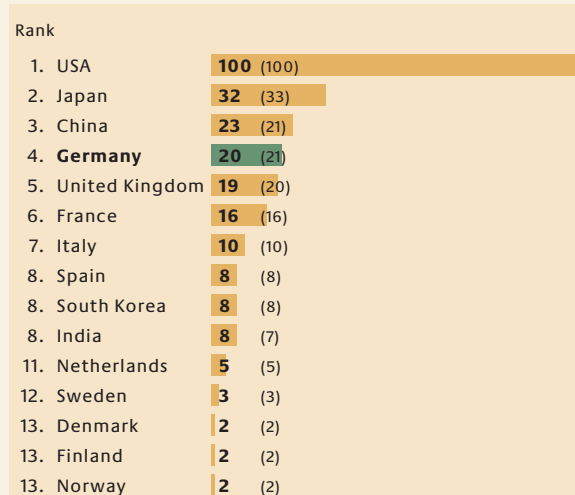
Market share of ICT turnover in the global market / ICT exports as a proportion of all exports

TNS benchmark: Market share of ICT sales on the global market

With an ICT turnover of 624.6 billion euro and a global ICT market share of 27.9 percent, the USA is the undisputed number one. With one hundred index points, it is top of the index ranking and way ahead of all the other ICT nations. With a world trade turnover of 200.7 billion euro and a nine percent share of the global market, Japan follows in second place with 32 index points. China is third in the world ranking with an ICT turnover of 146.7 billion. This corresponds to a global market share of 6.6 percent and an index value of 23 points.

Germany's ICT sales in 2009 totalled 127.2 billion euro (previous year: 133.2 billion euro). This corresponds to a global market share of 5.7 percent and makes Germany the fourth largest country among the top 15 ICT nations in terms of sales. In the previous year, Germany had held third place before being forced to make way for the seemingly inexorable expansion of the Chinese economy. In Europe, Germany is the largest ICT market, ahead of the United Kingdom. The United Kingdom follows in fifth place with 19 index points and a global market share of 5.4 percent.

Fig. 3.2a: TNS benchmark – Market share of ICT turnover in the global market, 2009
Germany drops back to fourth place



Source: TNS Infratest own calculations based on EITO (2010)
Previous year's figures in brackets; sales excluding consumer electronics

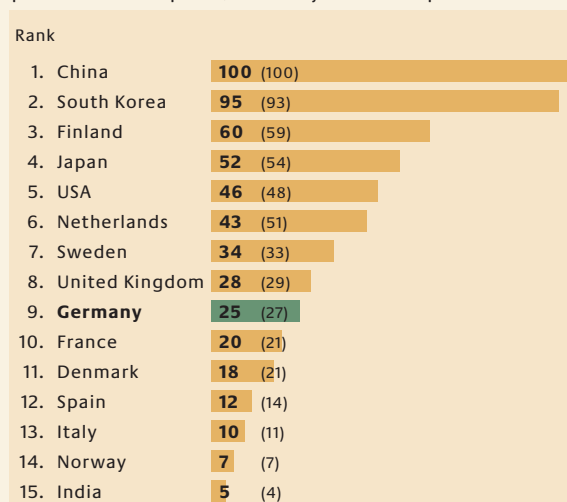
TNS benchmark: ICT exports as a proportion of all exports

Among the 15 ICT nations included in the benchmark, China is market leader in ICT goods exports*, with the ICT sector accounting for 27.5 percent of all Chinese exports. However, in spite of an eleven percent increase in ICT export sales, to 302 billion euro in 2008, the proportion of ICT exports in relation to total exports fell by 1.7 percentage points compared to the previous year. South Korea achieved second place in ICT exports as a proportion of all exports with 26.2 percent. Third to eighth place in the rankings were achieved by Finland with 16.5 percent, Japan with 14.3 percent, the USA with 12.8 percent, the Netherlands with 11.8 percent, followed by Sweden with 9.5 percent and the United Kingdom with 7.7 percent.

Germany ranked ninth with 6.9 percent. Compared to the previous year, the export of ICT goods (without software and services) as a proportion of Germany's total exports fell by one percentage point taking Germany to an all-time low in 2008. Placed tenth to fifteenth were France with 5.4 percent, Denmark with 5.0 percent, Spain with 3.2 percent, Italy with 2.8 percent, Norway with 2.0 percent and India with 1.3 percent.

Fig. 3.2b: TNS benchmark – ICT exports as a proportion of all exports*, 2008

With exports of ICT products representing barely seven percent of all exports, Germany is in ninth place



Source: TNS Infratest based on World Bank (2010)
Previous year's figures in brackets; basis: export sales of ICT products; *Telecommunications, audio and video devices and equipment, computers and associated electronic components and other information and communications products, excluding software and ICT services

ICT expenditure as a proportion of GDP / ICT expenditure per capita

TNS benchmark: ICT expenditure as a proportion of GDP

With ICT expenditure representing 8.3 percent of its GDP (excluding consumer electronics) in 2009, South Korea is market leader in this category compared to other key ICT nations. In the previous year, this proportion was 7.4 percent. South Korea generated a total turnover of 49.5 billion euro, which represented a drop of 0.4 percent over the previous year. The United Kingdom's ICT expenditure as a proportion of GDP was 7.7 percent, placing it second. In 2008, this proportion of turnover was 6.5 percent. Turnover fell by 3.8 percent, to 120.7 billion euro. The USA was ranked third with ICT expenditure representing 6.1 percent of GDP (2008: 6.2 percent). Turnover fell by 2.8 percent, to 624.7 billion euro.

In Germany, ICT expenditure is 5.3 percent of GDP, compared to 5.1 percent over the previous year. This falls slightly short of the EU25 average of 5.5 percent. With a performance of 64 index points, Germany shares seventh place with France, India and Denmark.

TNS benchmark: ICT expenditure per capita

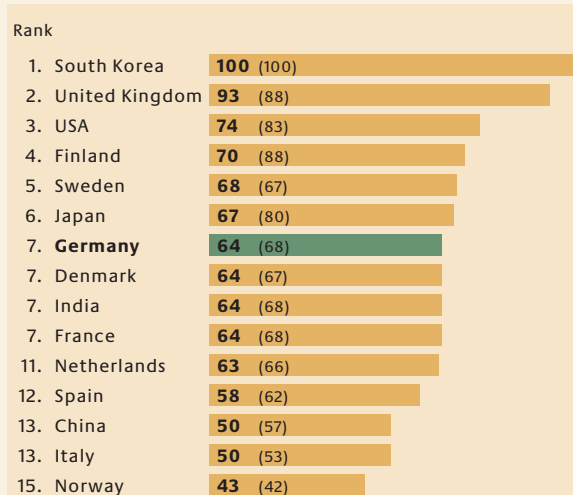
Denmark spent 3.3 percent less on information and communication technology (excluding consumer electronics) per capita in 2009, which was the equivalent of 2,140 euro. In spite of this the TNS benchmark shows that Denmark has retained its leading position compared to the other top 15 ICT nations.

In spite of per-capita expenditure in Norway falling by 4.6 percent, to 2,043 euro, Norway remained in second place. The USA and the United Kingdom followed in third and fourth place respectively. While the per-capita expenditure fell by 3.7 percent in the USA, to 2,032 euro, in the United Kingdom it fell by five percent to 1,953 euro.

Per-capita expenditure for information and communication technology in Germany was 1,551 euro. This was 4.5 percent less than the previous year and left Germany languishing in tenth place in the ranking, behind France with a per-capita expenditure of 1,622 euro and Japan with 1,573 euro.

Fig. 3.2c: TNS benchmark – ICT expenditure as a proportion of GDP, 2009

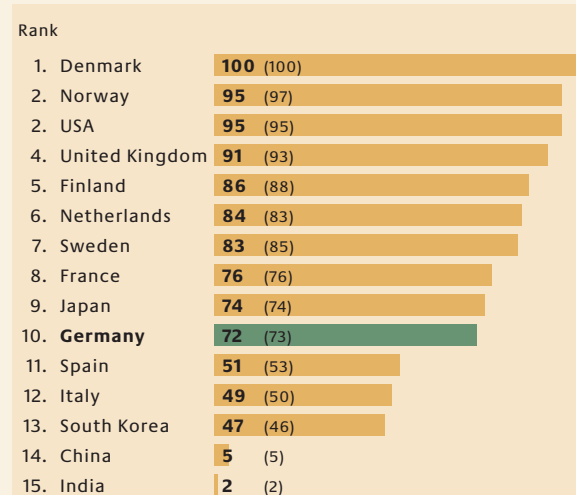
In Germany, ICT expenditure as a proportion of GDP is below the EU25 average



Source: TNS Infratest Based on EITO, IMF (2010)
Previous year's figures in brackets; sales excluding consumer electronics

Fig. 3.2d: TNS benchmark – ICT expenditure per capita, 2009

4.5 percent less spent on ICT in Germany – still in tenth place



Source: TNS Infratest Based on EITO, IMF (2010)
Previous year's figures in brackets; sales excluding consumer electronics

Growth in IT turnover / ICT patent applications

TNS benchmark: Growth in IT turnover

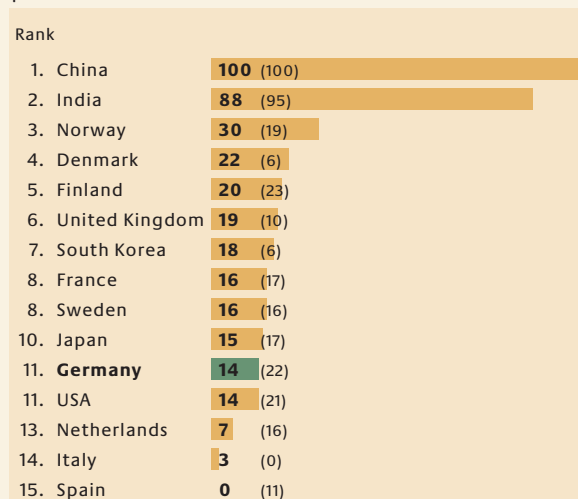
While the global IT market declined by 4.6 percent in 2009, emerging markets, such as Brazil, China and India, still achieved a growth in turnover – although they were unable to match their growth performances of the previous year. In China, growth rates for information technology sales fell from 16.5 percent to 9.8 percent and in India, from 15.6 percent to 7.7 percent. This placed China and India at the top of the global ranking.

All other ICT nations experienced a decline in IT revenues. Norway had the smallest drop in sales with minus 2.5 percent.

IT industry sales in Germany fell by 5.4 percent, to 63.5 billion euro. This saw Germany ranking eleventh alongside the USA in the benchmark of the top 15 IT countries. Not only was it the lowest index value achieved by Germany across all key indicators, representing a drop of seven places, it was also the highest fall in ranking.

Fig. 3.2e: TNS benchmark – Growth in IT turnover, 2009

Germany's IT turnover falls in 2009 – country drops seven places



Source: TNS Infratest based on EITO (2010), Korea Information Society Development Institute (KISDI) (2010)
Previous year's figures in brackets

TNS benchmark: ICT patent applications

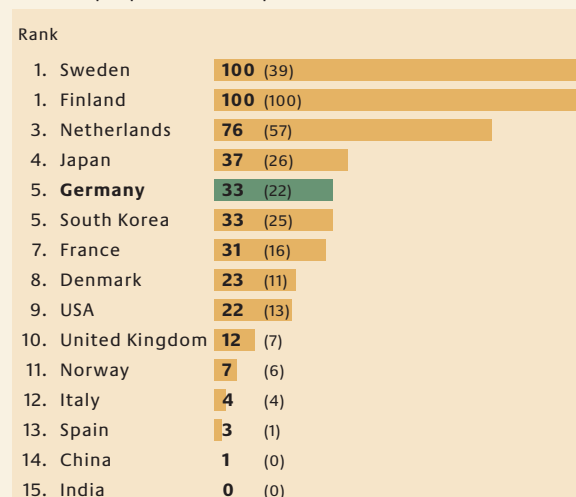
In 2008, Sweden registered 92 ICT patent applications per one million inhabitants with the European Patent Office compared to 138.8 patents in 2009. In Finland, the number of patent applications per one million inhabitants fell to 138.6 ICT patents compared to 2008 (235). This represents 100 index points for both countries in the performance ranking of the 15 ICT nations, enabling them to share the leading position. 106 ICT patent applications per one million inhabitants put the Netherlands in third place (2008: 133). With 51 ICT patents per one million inhabitants, Japan was able to position itself in fourth place (2008: 62).

Germany achieved fifth place, with 46 ICT patent applications per one million inhabitants. This compares with 51 ICT patents per one million inhabitants in 2008. However, with the exception of Sweden, this decline in applications compares favourably with other countries ranked higher than Germany.

Following were South Korea with 45, France with 42, Denmark with 31 and the USA with 30 ICT patent applications per one million inhabitants respectively.

Fig. 3.2f: TNS benchmark – ICT patent applications per million inhabitants, 2009

Based on the number of patent applications, Germany moves up a place to fifth place



Source: TNS Infratest based on European Patent Office (2010)
Previous year's figures of 2007 in brackets

Maturity of telecommunications market / Internet advertising as a proportion of overall advertising market revenue

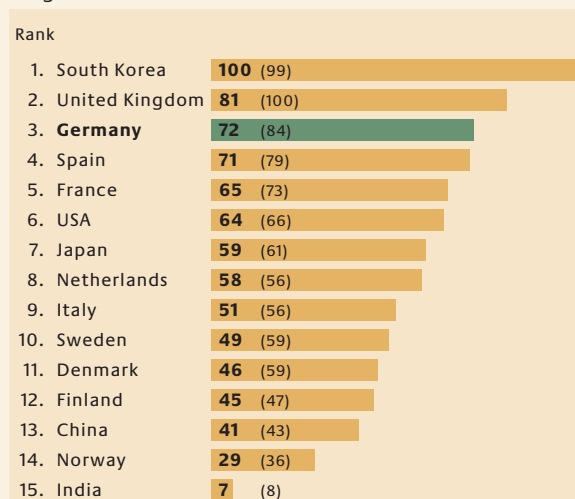
TNS benchmark: Maturity of telecommunications market

The key indicator "Maturity of telecommunications market" covers the categories landline/mobile telephony penetration and telecommunications expenditure as a proportion of GDP. South Korea achieves a mobile telephony penetration of 99.2 percent, a landline penetration of 39.9 percent and, at 4.62 percent, the highest telecommunications expenditure (excluding Pay TV) as a proportion of GDP of all the nations included in the benchmark. This puts South Korea in pole position among the top 15 ICT countries. The United Kingdom trails by 19 index points to take second place.

Germany is in third place with 72 index points. This represented a drop of twelve index points over the previous year. Compared to the other countries included in this benchmark, this ranking was achieved as a result of the highest level of landline penetration, at 59.3 percent, a mobile telephony penetration of 127.8 percent and a telecommunications expenditure representing 2.35 percent of GDP. In fourth and fifth place were Spain with 71 index points and France with 65 index points. The USA (64 index points), Japan (59), the Netherlands (58), Italy (51) and Sweden (49) were all middle of the field.

Fig. 3.2g: TNS benchmark – Maturity of telecommunications market, 2009

Germany in third place after South Korea and the United Kingdom



Source: TNS Infratest based on ITU (2010), EITO (2010)
Previous year's figures in brackets

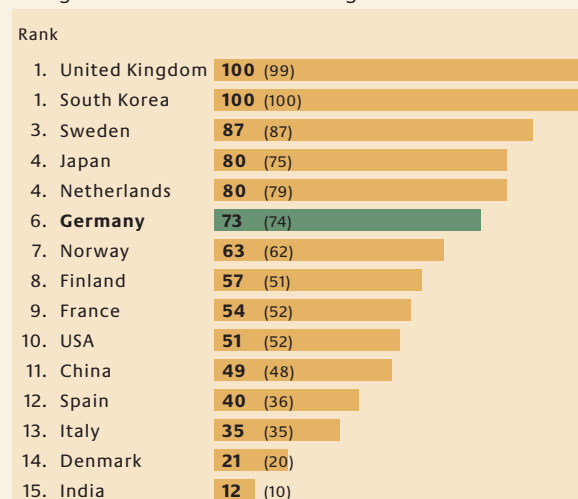
TNS benchmark: Internet advertising as a proportion of overall advertising market revenue

In the United Kingdom and South Korea, 26.9 percent of the overall advertising market expenditure was spent on Internet advertising in 2009. In concrete figures, that represents four billion euro in the United Kingdom and 778 million euro in South Korea. In third to fifth place was Sweden with Internet advertising representing 23.3 percent of the overall advertising market revenue, followed by Japan with 21.6 percent and the Netherlands with 21.5 percent.

With Internet revenue representing 19.8 percent of the overall advertising market, Germany is in sixth place among the 15 countries included in the benchmark. In concrete figures, Internet advertising revenue was 3.2 billion euro. Germany is followed by Norway with Internet advertising expenditure of 17.0 percent, by Finland with 15.4 and France with 14.5 percent. The USA is in tenth place with a proportion of 13.8 percent. With a total of 16.5 billion euro, the USA has by far the highest Internet advertising revenue in the world. It is followed by China with Internet advertising representing 13.2 percent, Spain with 10.9 percent, Italy with 9.4, Denmark with 5.5 and India with 3.2 percent.

Fig. 3.2h: TNS benchmark – Internet advertising as a proportion of overall advertising market revenue, 2009

The United Kingdom and South Korea show the strongest swing towards Internet advertising



Source: TNS Infratest based on PwC (2010)
Previous year's figures in brackets

E-Commerce turnover per Internet user

TNS benchmark: E-Commerce turnover per Internet user

Finland is market leader with an e-Commerce turnover of 1,227 euro per Internet user (excluding expenditure for online travel). In second place, Denmark can only manage just over half of that figure with an e-Commerce turnover of 620 euro. This is followed by the United Kingdom with an e-Commerce turnover per Internet user of 433 euro, ahead of the USA with 420 euro, Japan with 416 euro and France with 403 euro.

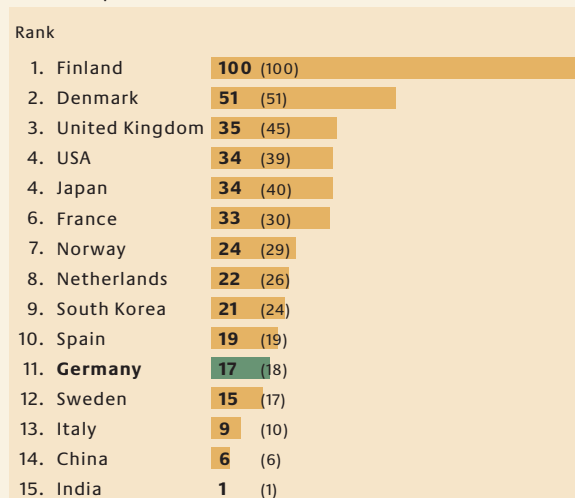
In Norway, e-Commerce turnover per Internet user is 300 euro, followed by the Netherlands with 269 euro, South Korea with 260 euro and Spain with 228 euro.

With an e-Commerce turnover per Internet user of 207 euro, Germany is ranked eleventh, followed by Sweden with 185, Italy with 106, China with 77 and India with an e-Commerce turnover of seven euro.

In the United Kingdom, e-Commerce turnover per Internet user fell from 459 euro to 433 euro in 2009. All other countries included in the benchmark saw an increase in their average expenditure for e-Commerce.

Fig. 3.2i: TNS benchmark – e-Commerce turnover, 2009

Finland leads by a considerable margin – Germany is in eleventh place



Source: TNS Infratest based on GroupM (2009), bda (2010), UNECE (2010), Research and Markets (2010), ETC (2010), PhoCusWright.com (2010); Previous year's figures in brackets; e-Commerce turnover excluding expenditure on online travel bookings

Expert opinion on "Market relevance"



"Compared to other export-intensive sectors, the German ICT industry concentrates too strongly on the domestic market. SMEs in particular should gear themselves more strongly towards international business. We should use the experiences and partnerships of global players and should offer ICT services and solutions with or for them."

Rainer Glatz, Managing Director "Electrical Automation", Verein Deutscher Maschinen- und Anlagenbau e. V.



"The German ICT economy suffers because of the low acceptance of new technologies in Germany. Network-based technologies in particular are discussed extremely critically, sometimes even destructively. Politics need to assume a leadership function in discussions on technology. The IT Summit is the ideal platform for creating positive impetus."

Dr Sven Hischke, Vice President, Deutsche Telekom AG



"These days, ICT technologies are innovation drivers for the application industries. Our expertise in intelligent processes is considered among the best in the world. Sustainable economic management is a growth area offering a wealth of opportunities to German companies. We need to place greater emphasis on these skills in order to be perceived as the world's top ICT industry."

Otmar F. Winzig, Head of Corporate Communication, Software AG



"From a user standpoint, we need to provide sufficient bandwidth to ensure the efficient operation of business applications and to enable the further development of more flexible working models, which is also one of the basic requirements for all developments pertaining to cloud services, mobile services and enterprise service computing."

Klaus Straub, CIO, Audi AG



"The Internet changes the roles of all participants: brands communicate directly with consumers. Retailers develop their own online brands and marketing. Customers act as advertisers or multipliers for brands on the basis of their own experiences. Offerings are increasingly individualised and there are a growing number of opportunities for customer participation, so that consumers are finding the Internet more and more attractive."

Hartmut Scheffler, Managing Director, TNS Infratest GmbH



"German exports are to be promoted through a marketing campaign 'ICT Made & Applied in Germany'. Exporting companies will be able to build up their marketing under this 'umbrella campaign'. We must have the courage to draw up an 'export map for ICT'. This would be used to define promising business opportunities in order to focus investments on key growth areas."

Gisela Strnad, Senior Director Marketing, Communication and Public Affairs Germany, Fujitsu Technology Solutions GmbH



"Even if they do not actively contribute, fast networks – currently a topic hotly debated – are crucial to the global export of ICT. We need to look for opportunities in the process and application sectors and be far more precise: where are the hundreds of millions of people who will buy the products that are developed in Germany?"

Harald Preiml, Board of Directors, HEITEC AG, Chairman of Board of Directors, FV Software VDMA



"Innovation is the key to the competitiveness and growth of a company – but it also presents a risk, which is why, as well as systematic innovation management, there is a need for bold managerial decisions. This particularly applies to ICT, a sector where companies need to consistently break new ground."

Klaus Fuest, Manager Business Content, Roland Berger Strategy Consultants GmbH



"Online marketing can supplement classic media as an additional channel in the marketing mix, thus expanding its scope, in particular with target groups that are hard to reach via classic media. Thanks to a wealth of targeting options, there is considerably less coverage waste compared to classic target group focussing."

Jörg Eugster, General Manager, NetBusiness Consulting AG

4.

Germany's competitiveness in the category “Infrastructure“



4.1 An international comparison

The infrastructure for the transmission and use of digital content is one of the key determining factors for the development of our networked knowledge society.

The European Commission points out the particular significance of this "Critical Information Infrastructure" for innovations and economic growth and demands a guarantee for global computer and network security.

The indicators for performance measurement in the category "Infrastructure"

The performance of the top 15 ICT nations in the category "Infrastructure" is measured on the basis of seven key indicators. "ICT companies as a proportion of all companies" is a key indicator for the assessment of the relative economic significance of the information and communication industry. The indicators "Broadband connections in the population", "Computer penetration in households", "Internet access in households", "Internet hosts", "SSL server penetration" and "Mobile telephony penetration in the population" serve to measure the current state of the infrastructure.

Germany gains one index point but still ranks sixth among top ICT nations

The following section measures the average performance of the 15 ICT nations in the category "Infrastructure". For further details of the methodology used, please refer to chapter 7.

In the category "Infrastructure" the average index value of all countries improved marginally in 2009 compared to the previous year. In 2008, the 15 ICT nations included in the benchmark achieved an average 64.5 points in seven key indicators. This rose to 65.5 points in 2009. This figure is higher than the average index value in the categories "Market relevance" (41.5 points) and "Applications" (56 points). Furthermore, there are also fewer differences in the infrastructures of the 15 ICT nations.

Compared to the previous year, ten of the 15 ICT nations improved their performance. According to this measurement, the performance of four nations stayed the same.

Denmark gains one point, rising to 90 index points and remaining global market leader, as in the previous year. **Sweden** follows in second place with 82 points, one point less than the previous year. The **Netherlands** places third with a two point gain, rising to 81 index points. **South Korea** ranks fourth, gaining one point and achieving a total of 80 index

Fig. 4.1a: Mean values in the category "Infrastructure", 2008/2009
China gains three index points in 2009

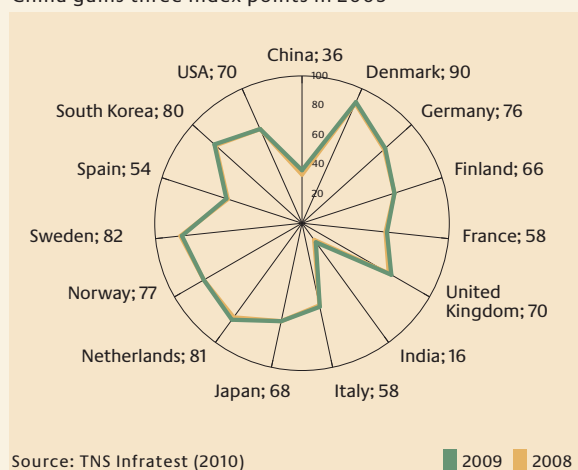
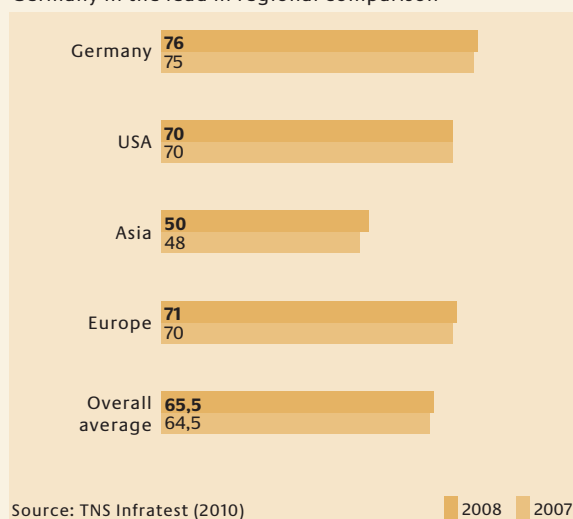


Fig. 4.1b: Region index in the category "Infrastructure", 2008/2009
Germany in the lead in regional comparison



points. **Norway** stays in fifth place with a stable 77 index points.

Germany gained one index point in 2009, which means the ICT industry now has 76 index points. This is ten index points higher than the average value of all 15 ICT nations.

The United Kingdom improves its previous year's performance by two points, rising to 70 index points, which placed it in joint seventh place with the USA. The **USA** has had 70 index points since 2008. Remaining in ninth and tenth place were **Japan** and **Finland**, with 68 and 66 index points respectively.

From eleventh place onwards, the index values fall below the average value of the 15 ICT nations, which is 65.5 points. **France** and **Italy** are in joint eleventh place, each with 58 index points and each with a one-point gain over the previous year. Compared to the previous year, **Spain** also gained one point, rising to 54 index points and staying in thirteenth place. **China** and **India** remained in fourteenth and fifteenth place respectively. However, with a gain of three points, rising to 36 index points, China showed the greatest improvement of all the ICT nations. India improved its performance by two points, rising to 16 index points.

Germany builds on its leading position in regional comparison

Germany is in the lead in the regional comparison and was even able to increase its lead by one point, rising to 76 index points.

Apart from the **USA** all ICT markets made gains over the previous year from a regional viewpoint. The **USA** kept the same index value, remaining at 70 points. This means that the **USA** actually fell below the average index value (71 points) of all the **European ICT nations** included in the benchmark.

The **Asian ICT nations** included in the benchmark improved by two points, rising to 50 index points, which left them languishing below the average value of all the ICT nations included in the study. The average value rose marginally, from just under 64.5 to just over 65.5 index points.

Rankings virtually unchanged from previous year

Compared to the previous year, the United Kingdom moved up one place in the ranking (from eighth to seventh place). However, South Korea (third to fourth place) and Japan (eighth to ninth place) both lost one place. The ranking of all other nations included in the benchmark remained the same.

With a gain of three index points over the previous year, China showed the greatest improvement of all 15 nations included in the benchmark study. The United Kingdom, India and the Netherlands were each able to improve their infrastructure performance by two index points respectively.

Germany still ranks sixth in spite of gaining one index point. This same applied to Denmark, South Korea, France, Italy and Spain. In the category

Fig. 4.1c: Rankings in the category "Infrastructure", 2008/2009

China makes the greatest gains in infrastructure

Country	2009 ranking	2008 ranking	Change in index
Denmark	1	1	+1
Sweden	2	2	-1
Netherlands	3	3	+2
South Korea	4	3	+1
Norway	5	5	±0
Germany	6	6	+1
United Kingdom	7	8	+2
USA	7	7	±0
Japan	9	8	±0
Finland	10	10	±0
France	11	11	+1
Italy	11	11	+1
Spain	13	13	+1
China	14	14	+3
India	15	15	+2

Source: TNS Infratest (2010)

"Infrastructure", the average performance of Norway, the USA, Japan and Finland was unchanged.

Germany leads in four key indicators in regional comparison

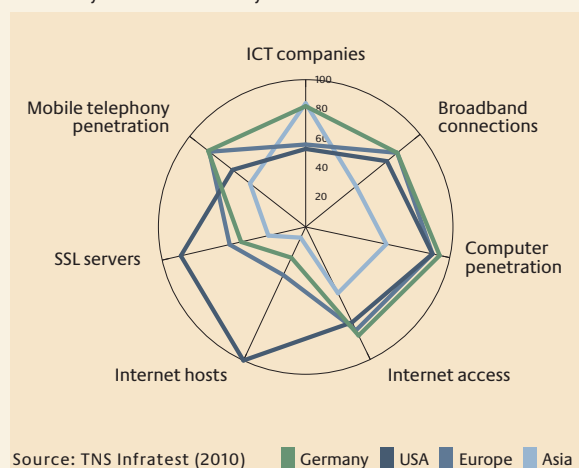
In a regional comparison, **Germany** achieved the most points in four infrastructural key indicators. These were: 93 index points in "Computer penetration in households", 84 points in "Mobile telephony penetration", 82 points in "Internet access in households" and, on a par with the European index value, 80 points in "Broadband penetration".

The **USA** had a very decisive lead as global market leader in two key indicators – in the number of "Internet hosts per 100 inhabitants" and the number of "SSL servers per 100,000 inhabitants" with 87 index points.

In one key indicator – "ICT companies as a proportion of all companies" (84 index points) – the **Asian countries** included in the benchmark were ahead of Germany (82 index points).

Compared to all the **European nations** included in the benchmark, only Germany's performance in the category "SSL server penetration per 100,000 inhabitants" (45 points) fell below the European performance of 53 points. With 80 index points in "Broadband connections in the population", Germany was able to match the average of all European nations included in the benchmark.

Fig. 4.1d: Average performance of key indicators in the category "Infrastructure", 2009
Germany leads in four key indicators



Germany maintains ranking three times, improves twice, drops twice

The index values for Germany stayed the same in three of the seven infrastructural indicators: "ICT companies as a proportion of all companies", "Computer penetration in households" and the number of "Internet hosts per 100 inhabitants".

Otherwise, the index values for Germany improved in two indicators and fell in two indicators. The index values improved by three points each in "Broadband connections in the population" and "Internet access in households", to 80 and 82 points respectively. Thus, Germany achieved above average index values of at least 80 points in five out of seven indicators.

In the key indicators "SSL server penetration per 100,000 inhabitants" and "Mobile telephony penetration in the population", the index values fell by two points each, to 45 and 84 points respectively.

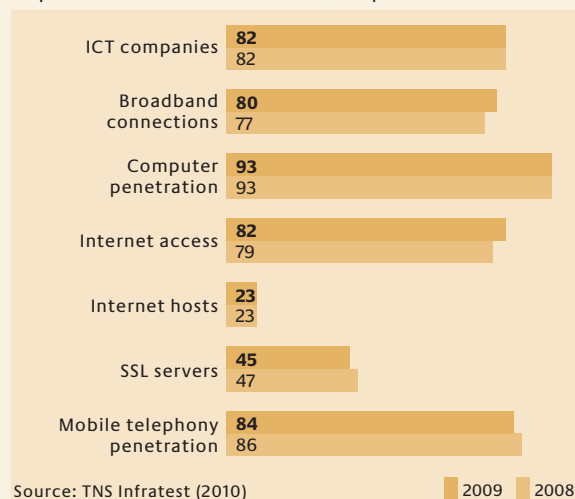
Germany firmly middle of the range

Germany's positions show it to be firmly middle of the range without any obvious strengths or weaknesses.

Germany ranked sixth in "ICT companies as a proportion of all companies", in the provision of households with broadband and Internet connections and "Computer penetration in households".

Fig. 4.1e: Germany: changes in performance of key indicators in the category "Infrastructure", 2008/2009

No change in three out of seven key indicators. Improvements in two indicators, drops in another two



The German ICT industry is comparatively strong in mobile telephony penetration, where it ranked fifth, i.e. in the top third of the 15 nations included in the benchmark. According to the latest figures of the Federal Network Agency, mobile telephony penetration will continue to show a relatively strong upward trend.

Germany's greatest weaknesses were revealed in its ninth place for the provision of both Internet hosts and SSL servers. These are oligopolistic markets and hard to open up in a medium-sized industry such as Germany.

Summary: Germany's performance in the category "Infrastructure"

- ▶ Germany's ranking in the category "Infrastructure" remained unchanged in 2009. In spite of gaining one index point and rising to 76 points, Germany stayed in sixth place.
- ▶ Germany's performance was a full ten index points better than the average index value of the 15 ICT nations overall (65.5 points) and 26 index points better than the Asian nations included in the benchmark. It has five index points more than the average value of all the European nations included in the benchmark and is six index points better than the USA.
- ▶ Germany was unable to achieve "best-in-class country" in any of the key indicators in the category "Infrastructure".

▶ Germany's best position in the ranking was fifth place in "mobile telephony penetration in the population".

▶ Germany achieved very good index values of more than 80 points in five of seven performance indicators. In the category "Infrastructure" overall, Germany achieved its highest indicator value in "Computer penetration in households", gaining 93 index points.

▶ Germany showed weaknesses in the indicators "Internet hosts" (23 points) and "SSL servers" (45 points). Bearing in mind the ever growing range of products available on the Internet and the increasing number of financial and data transactions carried out online, Germany urgently needs to improve its performance in the SSL server penetration.

Fig. 4.1f: Germany's performance compared with the front-runners in the category "Infrastructure", 2009
Germany ranked between fifth and ninth places

ICT companies	Japan is market leader, Germany is in sixth place
Broadband connections	Denmark is market leader, Germany is in sixth place
Computer penetration	Netherlands is market leader, Germany is in sixth place
Internet access	South Korea is market leader, Germany is in sixth place
Internet hosts	USA is market leader, Germany is in ninth place
SSL servers	Netherlands is market leader, Germany is in ninth place
Mobile telephony penetration	Italy is market leader, Germany is in fifth place

Source: TNS Infratest (2010)

4.2

TNS benchmark "Infrastructure"



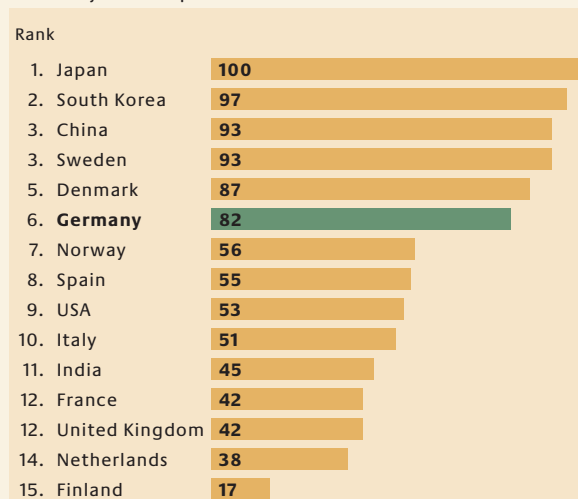
ICT companies as a proportion of all companies / Broadband connections in the population

TNS benchmark: ICT companies as a proportion of all companies

East Asia, Sweden, Denmark, Norway and Germany all have a high proportion of information and communication companies (\geq ten employees). Japan has the highest proportion worldwide, where 4.84 percent of all companies are ICT companies (\geq ten employees). Japan is followed by South Korea with 4.71 percent and China with 4.51 percent, ahead of Sweden with 4.48 percent and Denmark with 4.21 percent.

In Germany, 3.98 percent of all companies with ten employees or more are in the ICT sector. That is 15,907 out of 399,564 companies. With an index value of 82 points, this placed Germany sixth. Norway follows in seventh place, with 2.73 percent of all companies, ahead of Spain with 2.67 percent, the USA with 2.54 percent, Italy with 2.47 percent, India with 2.18 percent, France with 2.04 percent, the United Kingdom with 2.03 percent and the Netherlands with 1.86 percent. Finland is in last place with a mere 0.8 percent of all companies in the ICT sector.

Fig. 4.2a: TNS benchmark – ICT companies as a proportion of all companies, 2009
Germany in sixth place



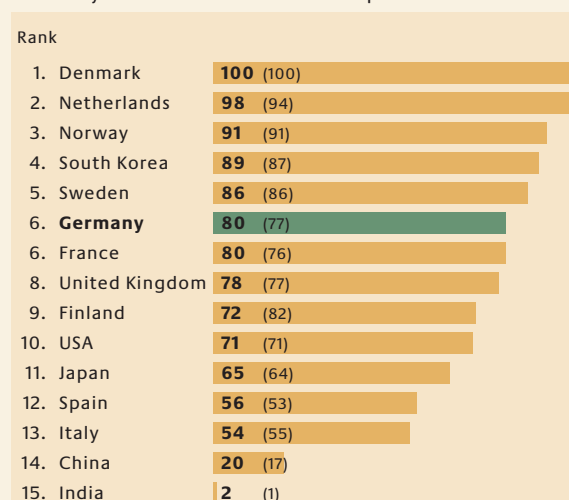
Source: TNS Infratest based on D & B (2010)
Previous year's figures not available, companies with ten or more employees

TNS benchmark: Broadband connections in the population

Measured as a percentage of broadband contracts within the entire population, broadband penetration has risen steadily in the majority of countries included in this benchmark for many years. Once again, Denmark is market leader registering a slight growth from 37.0 (2008) to 37.9 percent (2009), followed by the Netherlands in second place with 37.1 and Norway ranking third with broadband penetration in the population at 34.6 percent. Fourth and fifth place are taken by South Korea and Sweden with broadband penetration of 33.5 and 32.4 percent respectively. In the "neck-and-neck" race between Germany (30.4) and France (30.3 percent) in broadband penetration, Germany was just able to pip France to the post and take sixth place. Both countries achieved 80 index points. In Germany, the number of connections rose by 10.6 percent compared to 2008, to 25 million. Compared to international competition, the growth of the German broadband market is above average. In the last five years, Germany has had the second highest broadband growth in the EU. More than 25 million households now have broadband connection, the equivalent to approx. 60 percent of all German households. Germany has the fifth highest penetration of broadband connections in Europe with download speeds of more than ten Mbps. Germany is followed by the United Kingdom with 29.5, Finland with 27.3, the USA with 26.9, Japan with 24.8 and Spain with 21.3 percent broadband penetration. Bringing up the rear are Italy with 20.6 percent (thirteenth place), China with 7.7 percent (fourteenth place), and India in last place with a broadband penetration of 0.7 percent.

Fig. 4.2b: TNS benchmark – Broadband connections in the population, 2009

Germany ranked sixth in broadband penetration



Source: TNS Infratest based on ITU (2010), European Commission (2010), OECD (2010), Previous year's figures in brackets

Computer penetration in households / Internet access in households

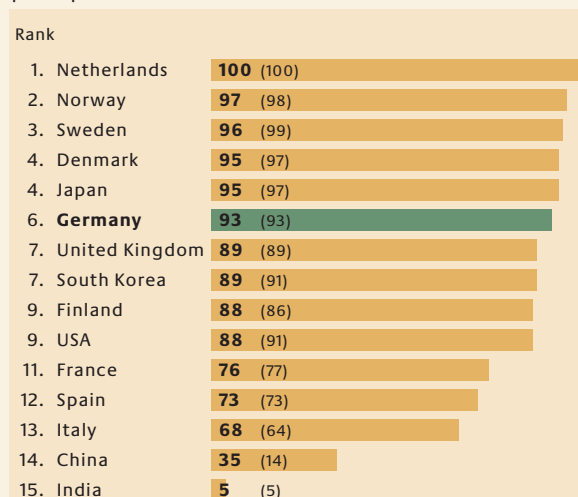
TNS benchmark: Computer penetration in households

In 2009, 90.8 percent of households in the Netherlands owned a PC, which is 2.8 percentage points more than 2008. In Norway, computer penetration rose from 86 percent to 87.6 percent. This saw Sweden ceding second place to Norway. In Sweden, computer penetration in households rose from 87 percent to 87.5 percent. As in the previous year, Denmark was in fourth place with computer penetration of 86.2 percent and Japan was in fifth place with 85.9 percent.

Germany ranked sixth with PC penetration in households reaching 84.1 percent, which was 2.1 percentage points more than the previous year. Following behind Germany are the United Kingdom in seventh place with 81.2 percent, South Korea in eighth place with 80.9 percent, Finland and the USA in joint ninth place, each with 80.1 percent, France in eleventh place with 69.2 percent and Spain took twelfth place with 66.3 percent. The last three places are taken by Italy with 61.3 percent, China with 31.8 percent and India with 4.4 percent computer penetration in households.

Fig. 4.2c: TNS benchmark – Computer penetration in households, 2009

Germany in the middle of the field in sixth place in computer penetration



Source: TNS Infratest based on ITU (2010), eMarketer (2008)
Previous year's figures in brackets

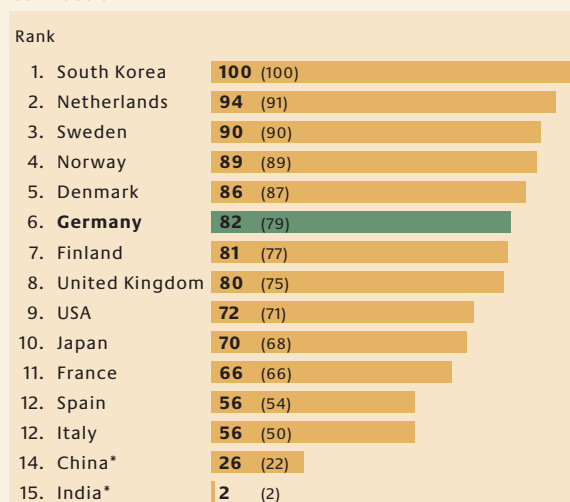
TNS benchmark: Internet access in households

South Korea is global market leader in the category "Internet access in households" with 95.9 percent of all households having Internet access. This compares with 84 percent of all households in the previous year. The Netherlands were in second place with 89.7 percent of all households having Internet access (previous year: 86 percent) ahead of Sweden with 86 percent (84.4 percent), Norway with 85.6 percent (84.0 percent) and Denmark with 82.5 percent (81.9 percent).

Germany improved by 4.2 percentage points to 79.1 percent. This ranked Germany sixth among the top 15 ICT countries with an index value of 82 points (previous year: 79). Finland followed in seventh place with computer penetration of 77.8 percent (previous year: 72.4) ahead of the United Kingdom with 76.7 percent (previous year: 71.1), the USA with 68.7 percent (previous year: 66.8), Japan with 67.1 percent (previous year: 63.9) France with 63.0 percent (previous year: 62.3) and Spain with 54.0 percent (previous year: 51.0). While Italy achieved an impressive 6.6 percentage point increase, rising to 53.5 percent, it was unable to improve on thirteenth place. China achieved 24.9 percent Internet access, (previous year: 20.6), India 2.3 percent (previous year: 1.8).

Fig. 4.2d: TNS benchmark – Internet access in households, 2009

Eight out of ten German households have an Internet connection



Source: TNS Infratest based on eMarketer (2010), OECD (2010)
Previous year's figures in brackets; * Values for China and India broadband penetration in households, as Internet access not available

Internet host penetration / SSL server penetration

TNS benchmark: Internet host penetration

Internet hosts describe computers that are directly connected to the Internet, which are therefore generally the computers of Internet Service Providers (ISPs). An international comparison of the number of Internet hosts in the top 15 ICT countries showed that in 2009 the USA was market leader with 124.6 hosts per 100 inhabitants. Finland trailed some way behind with 78.6 hosts per 100 inhabitants. In third to sixth place were the Netherlands (75.2 hosts) and the remaining Scandinavian countries; Denmark with 72.4 Internet hosts, Norway with 66 Internet hosts and Sweden with 42.2 Internet hosts per 100 inhabitants. Italy and Japan both achieved 30 index points, even though Italy's level of Internet host penetration (37.1 hosts per 100 inhabitants) was marginally higher than that of Japan (37.0).

With 29 Internet hosts per 100 inhabitants, Germany ranked ninth, ahead of France with 22.9 hosts per 100 inhabitants. In eleventh to fifteenth place were the United Kingdom, with Internet host penetration of 15.1, Spain with 7.7, China with 1.1, South Korea with 0.6 and India with 0.3 Internet hosts per 100 inhabitants.

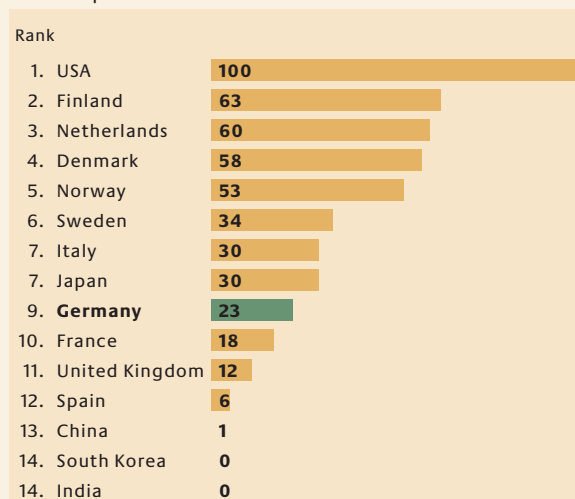
TNS benchmark: SSL server penetration

SSL creates secure connections taking into account three factors: all content sent over the network is encrypted, the identity of the server is known and algorithms check and verify the integrity and completeness of data reaching the recipient. SSL serves the encrypted transmission of information based on the TCP/IP protocol. The Netherlands ranked first among the top 15 ICT countries in 2009, with 142 SSL servers per 100,000 inhabitants. Compared to the previous year, this was sufficient to relegate the USA to second place, even though the USA were able to achieve a slight increase in SSL server penetration, to 123 SSL servers per 100,000 inhabitants. Achieving 64 SSL servers per 100,000 inhabitants, in 2009, Germany ranked ninth.

The only Asian country included in the benchmark to achieve a comparably high SSL server penetration was South Korea, gaining sixth place, with 93 servers per 100,000 inhabitants. India and China were placed last.

Fig. 4.2e: TNS benchmark – Internet hosts, 2009

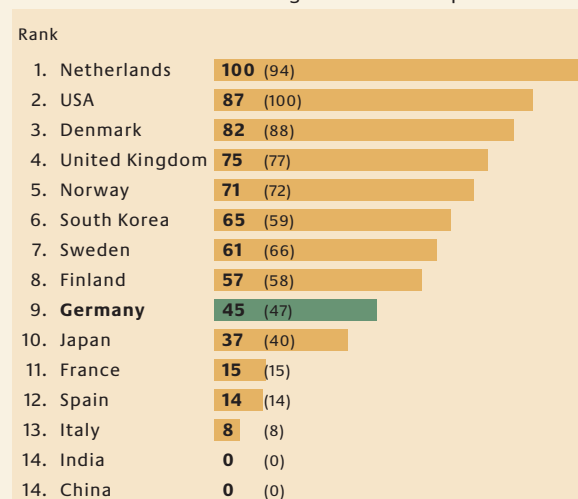
USA well ahead in Internet host penetration – Germany in ninth place



Source: TNS Infratest based on CIA (2010), IMF (2010)
Previous year's figures not available

Fig. 4.2f: TNS benchmark – SSL server penetration per 100,000 inhabitants, 2009

The Netherlands have the highest SSL server penetration



Source: TNS Infratest based on World Bank, Netcraft (2010)
Previous year's figures in brackets

Mobile telephony penetration in the population

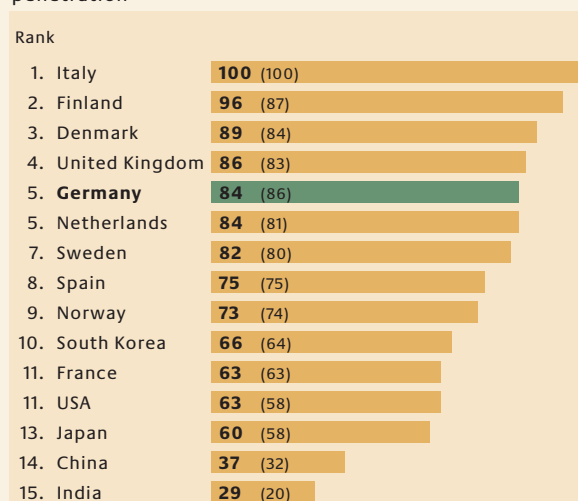
TNS benchmark: Mobile telephony penetration in the population

In 2009, Italy was able to defend its position as global market leader in the category "Mobile telephony penetration", improving 2.8 percentage points to 151.4 percent. Of the 15 ICT nations included in the benchmark, Finland registered the strongest growth, rising 16 percentage points in 2009 to achieve mobile telephony penetration of 144.6 percent, placing it second. With a growth of 9.8 percentage points, to 135.4 percent, Denmark ranked third, followed by the United Kingdom with mobile telephony penetration of 130.6 percent. According to ITU, Germany remained stable with mobile telephony penetration of 128.3 percent in 2008, thus retaining its previous high standard. In 2009, ITU registered a penetration rate of 127.8 percent, thus placing Germany fifth among the top ICT countries, with 84 index points.

While Federal Network Agency figures confirmed this stagnation, its latest published figures showed mobile telephony penetration at 130.7 in 2009. In terms of absolute figures, the Federal Network Agency counted 107 million connections. Following in the rankings were the Netherlands with 127.7 percent, Sweden with 123.5, Spain with 113.6, Norway with 110.9, South Korea with 99.2, France with 95.5, the USA with 94.8, Japan with 90.4, China with 55.5 and India with 43.8 percent mobile telephony penetration.

Fig. 4.2g: TNS benchmark – Mobile telephony penetration* in the population, 2009

Germany drops to fifth place in mobile telephony penetration



Source: TNS Infratest based on ITU (2010)

Previous year's figures in brackets

* Based on the number of mobile phone contracts

Expert opinion on “Infrastructure”



“We need to give serious consideration as to how we can develop more global groups from the many successful SMEs. Many founders are too easily satisfied with the size of company achieved. The German ICT industry has enough substance for 100 companies with more than 100 million euro turnover. To achieve this, however, we need to see a change in company philosophy and attitudes, including within the universities.”

Prof. Dr. Oliver Günther, Director, Department of Information Systems, Humboldt-University Berlin and “Gesellschaft für Informatik”



“High-speed broadband networks for the fast exchange of information and knowledge are crucial to the economic growth and the establishment of the “gigabyte society”. Availability of cutting-edge broadband infrastructure is the basis for the expansion of intelligent networks in the traffic, energy, education and administration sectors”.

Dr. Wolfgang Kubink, Political Lobbyist for Germany, Commissioner for Association Matters, Deutsche Telekom AG



“Even if we were actually to succeed in providing virtually all households with Internet access in the years ahead, we are still far from being a digital society. In reality, it is only a very small proportion of the population that deals competently, and on a daily basis, with information and communication technologies”.

Hannes Schwaderer, President of the D21 Initiative, CEO, Intel GmbH



“Mobile data services have hit the mass market. With UMTS and HSDPA, infrastructures are already available for broadband Internet – an essential condition for the fast transmission of digital content on high-performance smart phones. In Europe, 20 percent of mobile phones are already being sold with innovative operating systems, such as Android. We expect market shares to rise to 70 percent in the next two years”.

Frank Rosenberger, Chief Marketing Executive and Member of Managing Board, Vodafone D2 GmbH



“The digitisation of TV transmission channels offers considerable advantages. New services, such as HDTV, and time-independent television, such as video on demand, are drivers for digital use. They enhance the quality of the digital connection. In order to get these advantages across to customers, all market partners need to communicate the added value.”

Marja von Oppenkowski, Manager Public and Regulatory Affairs, Kabel Deutschland AG



““One laptop per child” is a well known slogan, particularly in the third world. As the world’s third largest economy, Germany should undertake its own initiative, combined with a training offensive for teachers in order to increase the level of education, regardless of social background. In this way we can train the workforce of tomorrow and foster in them the creativity and ICT skills so crucial for innovation and growth”.

Anke Domscheit-Berg, Director Government Relations, Microsoft Deutschland GmbH



““Security made in Germany” would be a product that we could market worldwide because we are widely regarded to have these skills. We are already successfully combining our traditional understanding of security with our innovative strength to create new concepts and secure solutions”.

Max Peter, Chairman of the Board of Directors / CEO, Econet AG



“The German Data Protection Act (BDSG) regulates the use of scalable, virtually structured resources and promotes cutting-edge encryption methods. German providers, such as T-Systems, who offer these products therefore, have a considerable advantage in the global cloud computing competition. This is confirmed by the positive response of customers at home and abroad who are able to retain control of their data”.

Peter Arbitter, Director Cloud Computing Programme, T-Systems Deutsche Telekom AG

5.

Germany's competitiveness in the category "Applications"



5.1 An international comparison

Whether at home, at work, or interacting with public bodies, it is now hard to imagine life without the Internet as information, communication and transaction medium.

With its initiative “Experiencing Internet” and competition “Wege ins Netz 2010” (“Getting onto the Net”) the Federal Ministry of Economics and Technology (BMWi) sought to help and encourage those with little experience or knowledge of the Internet.

The indicators for performance measurement in the category “Applications”

The performance of the top 15 ICT nations in the category “Applications” is measured on the basis of eight indicators.

- ▶ The key indicators “Internet use in the population”, “Mobile Internet use in the population”, “Use of social networks” and “e-Commerce users in the population” serve the analysis of private applications of digital media.
- ▶ The key indicators “Internet use in companies” and “Purchases by companies via the Internet” measure the status of Internet applications and the maturity of e-Business in companies.
- ▶ The integration of the Internet in people’s interaction with public bodies is analysed on the basis of the key indicators “Quality of e-Government services” and “Maturity of e-Participation”.

Germany improves two index points to place fourth in the ranking of top ICT countries

The following section measures the performance of the top 15 ICT nations in the category “Applications”.

In the category “Applications” the average index value of all countries improved in 2009 by one point, to 56 index points. This indicates that in various application categories the ICT nations have caught up slightly with the respective market leaders.

Of the 15 ICT nations, ten have improved their performance, while two have lost ground. The performance of three of the ICT nations was unchanged.

As the leading ICT nation in the category “Applications”, **South Korea** did outstandingly well, achieving 94 of a possible one hundred points.

In second place was **Japan** with 84 points, an in-

Fig. 5.1a: Mean values in the category “Applications”, 2008/2009
China, Spain and South Korea each gain three index points. Germany rises to fourth place

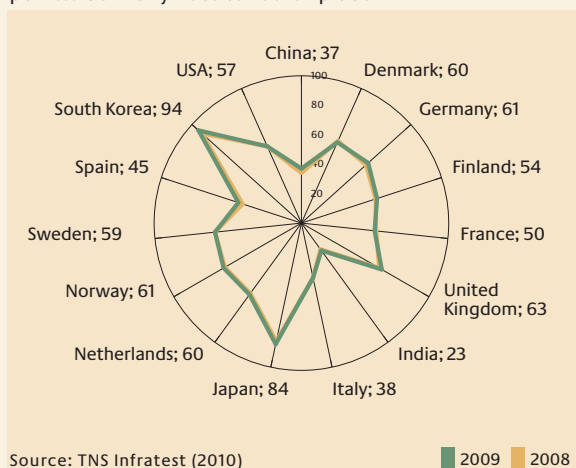
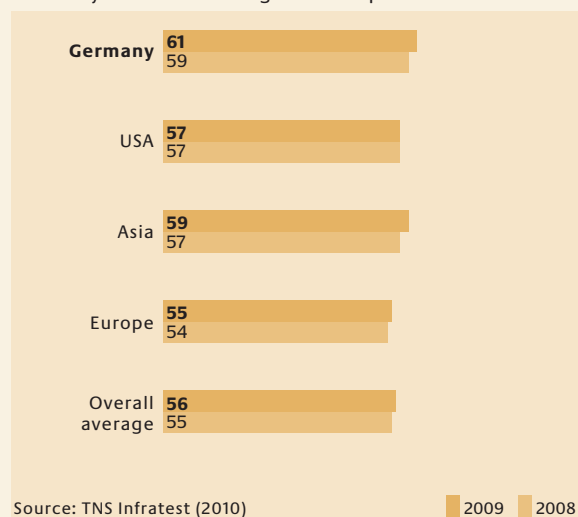


Fig. 5.1b: Region index in the category “Applications”, 2008/2009
Germany in the lead in regional comparison



crease of two index points. Lagging some way behind with a difference of 21 index points was the **United Kingdom** in third place with 63 points.

With 61 index points, **Germany** and **Norway** were in joint fourth place. Germany improved its performance by two points and Norway by one point over the previous year.

The Netherlands and **Denmark** followed in joint sixth place, each with 60 index points respectively. The Netherlands improved its performance by one index point while Denmark's performance fell by one index point. In spite of matching its previous year's index ranking of 59 points, **Sweden** fell two places to eighth position.

Positions nine to 15 remained the same as the previous year. The **USA** once again achieved 57 index points and remained in ninth place. **Finland** was in tenth place with 54 index points. With 50 index points, **France** achieved 50 percent of the maximum possible performance, placing it eleventh in the ranking. While **Spain** rose three points, to 45 index points, it remained in twelfth place. Italy stayed in 13th place, with 38 index points. In spite of rising three points, to 37 index points, **China** stayed in 14th place but was able to close the gap on **Italy**. Bringing up the rear was **India**, improving by just one point, to 23 index points.

Germany builds on its leading position in regional comparison

Germany gained two points, rising to 61 index points, thus expanding on its above-average position in the regional comparison. The **USA's** position was unchanged over the previous year, with 57 index points.

The **European ICT nations** included in the benchmark improved by one point, rising to 55 index points. The **Asian ICT nations** included in the benchmark improved by two points, rising to 59 index points.

Germany and Norway improve ranking, climbing to joint fourth place. Strong improvements in South Korea, Spain and China

Germany rose two places and **Norway** one place to take joint fourth place. **Denmark** fell one index point over the previous year and dropped three places to sixth position. That is the worst drop in performance across all the countries. **Sweden** dropped two places to eighth position.

Compared to the previous year, there was no change in the top three ICT nations or in the rankings in ninth position and below. In spite of dropping one index point, **France** was able to hold on to eleventh place.

Fig. 5.1c: Rankings in the category "Applications", 2008/2009

Germany joins the top group, rising to fourth place

Country	2009 ranking	2008 ranking	Change in index
South Korea	1	1	+3
Japan	2	2	+2
United Kingdom	3	3	+2
Norway	4	5	+1
Germany	4	6	+2
Denmark	6	3	-1
Netherlands	6	6	+1
Sweden	8	6	±0
USA	9	9	±0
Finland	10	10	+1
France	11	11	-1
Spain	12	12	+3
Italy	13	13	±0
China	14	14	+3
India	15	15	+1

Source: TNS Infratest (2010)

The biggest improvements in performance were achieved by **South Korea, Spain and China**, each with an increase of three points, ahead of **Japan, the United Kingdom and Germany**, each with an increase of two index points.

Germany leads in two key indicators in regional comparison

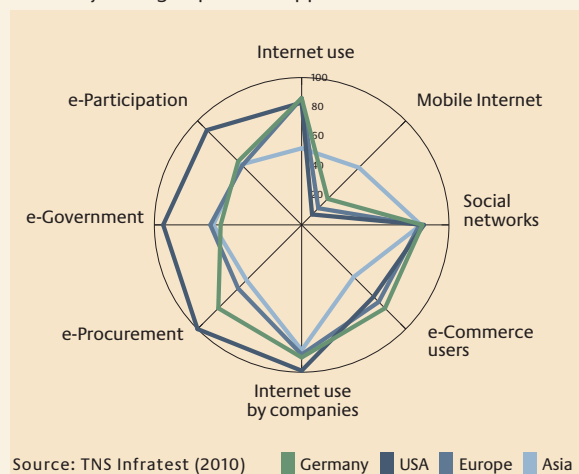
In a regional comparison, **Germany** achieved the most points in two key indicators: 86 index points in “Internet use in the population” and 80 index points in “e-Commerce users in the population”.

With an average index value of 61 points, Germany has six index points more than the average value of the European countries included in the TNS benchmark. It is also ahead of the USA and the Asian countries included in the TNS benchmark.

The **USA** is market leader in five key indicators. These are the categories “Purchases by companies via the Internet” with 100 points, “Internet use by companies” with 99 points, “Quality of e-Government services” with 94 points, “Maturity of e-Participation” with 91 points and “Use of social networks” with 83 index points.

The **Asian nations** included in the TNS benchmark only lead in one category, “Mobile Internet use” with an index value of 55.

Fig. 5.1d: Average performance of key indicators in the category “Applications”, 2008/2009
Germany strong in private “Applications”



Germany maintains ranking twice, improves twice, drops four times

The performance of the German ICT industry improved in two application areas in 2009. The biggest growth was in “Maturity of e-Participation”, rising 45 points to a total of 61 index points. In “Mobile Internet use in the population” it gained four points rising to 25 index points.

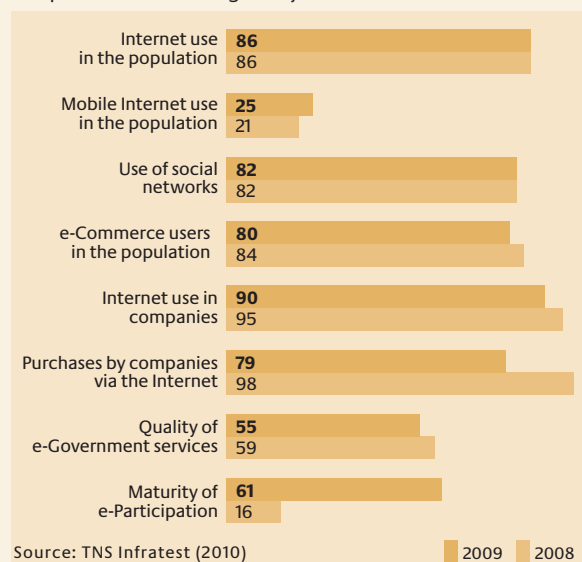
Germany’s development in the rankings stalled at a high level in two categories; “Internet use in the population” with 86 index points and “Use of social networks” with 82 index points.

Germany’s performance deteriorated in four key indicators: In the category “Purchases by companies via the Internet”, it fell 19 points, to 79 index points.

In the category “Internet use in companies”, its performance fell five points, to 90 index points. In the category “e-Commerce users in the population”, Germany’s performance fell four points, to 80 index points.

And in the category “Quality of e-Government services” it dropped four points, falling to 55 index points.

Fig. 5.1e: Germany: Changes in performance of key indicators in the category “Applications”, 2008/2009
Drops in four out of eight key indicators



Germany fails to make market leader in any key indicator

An international comparison of Germany's performance in the category "Applications" showed it ranked once among the top three, once in fourth place, mid-range four times and twice in tenth place.

In "Mobile Internet use in the population", Germany achieved third place behind the market leaders South Korea and Japan, and its highest ranking in the category "Applications".

In "Purchases by companies via the Internet" Germany dropped to fourth place. The top positions are now occupied by Norway and the USA.

In "Use of social networks", Germany ranked sixth. The market leader in this category was China.

In "Maturity of e-Participation", Germany ranked seventh, behind market leader South Korea.

In each of the categories "Internet use in the population" and "e-Commerce users in the population", Germany ranked eighth. Norway was market leader in both categories.

For the third year running South Korea was the unchallenged global market leader in the category "Quality of e-Government services". Germany ranked tenth. Sweden was market leader in the category "Internet use in companies" (Germany came tenth).

Fig. 5.1f: Germany's performance compared with the front-runners in the category "Applications", 2009
Germany loses its leadership in "Purchases by companies via the Internet"

Internet use in the population	Norway is market leader Germany is in eighth place
Mobile Internet use in the population	South Korea is market leader Germany is in third place
Use of social networks	China is market leader Germany is in sixth place
e-Commerce users in the population	Norway is market leader Germany is in eighth place
Internet use in companies	Sweden is market leader Germany is in tenth place
Purchases by companies via the Internet	Norway/ USA is market leader Germany is in fourth place
Quality of e-Government services	South Korea is market leader Germany is in tenth place
Maturity of e-Participation	South Korea is market leader Germany is in seventh place

Source: TNS Infratest (2010)

Summary: Germany's performance in the category "Applications"

► In 2009, Germany's performance improved two places in the category "Applications", rising to fourth place, which it shared with Norway. Compared to the previous year this was an improvement of two points for Germany and one point for Norway, which saw both rise to 61 index points.

► With 61 index points in "Applications", Germany's performance fell short of its performance in "Infrastructure" with a category ranking of 76 index points, but was ahead of its performance in "Market relevance" with a category ranking of 41 index points.

► With 61 points, Germany's performance was five index points better than the average index value of the 15 ICT nations overall, two index points better than the Asian nations included in the benchmark, six index points better than the average index value of the European countries included in the TNS benchmark and four index points better than the USA.

► However, Germany was unable to achieve "best-in-class country" in any of the key indicators.

► Germany's best position in the ranking was third place in "Mobile Internet use". In "Purchases by companies via the Internet", Germany's performance deteriorated by 19 points, forcing it back into fourth position. This performance also meant that Germany lost the market leadership of the previous year.

► Germany achieved very good index values of more than 80 points in four of eight performance indicators. Germany attained its highest index ranking in the category "Applications" in "Internet use in companies", achieving 90 index points.

5.2

TNS benchmark “Applications”



Internet use in the population / Mobile Internet use

TNS benchmark: Internet use in the population

With Internet usage of 92.1 percent, Norway was once again global market leader in the ranking of the top 15 ICT nations in 2009, followed closely by Sweden with 90.8 percent and the Netherlands with 89.6 percent. As in the previous year, Denmark ranked fourth with 86.8 percent. Finland with 84.1 percent and the United Kingdom with 83.6 percent shared fifth place, each with 91 index points.

As in 2008, Germany was placed eighth in the TNS benchmark ranking, remaining at an index value of 86. According to ITU, the overall Internet usage in Germany is 79.3 percent.

As in the previous years, Italy, China and India continued to bring up the rear in the global comparison. However, Italy was able to improve its performance by 4 points, to 53 index points (Internet usage: 48.5 percent) and China by six points to 31 index points (Internet usage: 28.5 percent). In spite of a slight improvement in Internet usage, India still ranked last with 5.1 percent.

TNS benchmark: Mobile Internet use

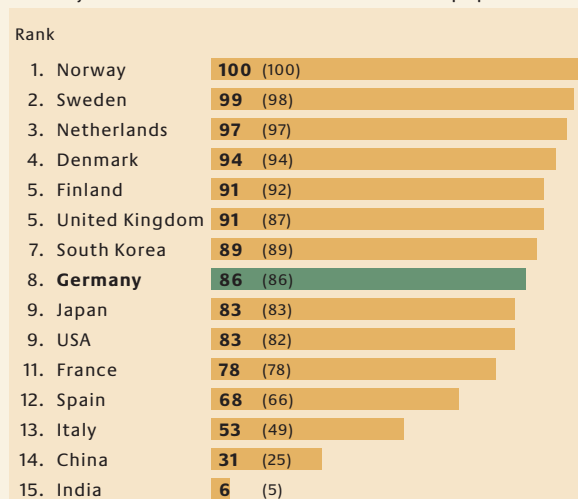
In "Mobile Internet use in the population", two East Asian countries were in the lead: South Korea was market leader with 85.4 percent, followed by Japan with 77.3 percent. According to PwC, both countries were able to build on a sophisticated wireless infrastructure. For example, Japan was one of the first countries to introduce mobile Internet access.

In South Korea, smart phones already dominate the mobile phone market. In spite of placing third, with a penetration rate of 21.3 percent, Germany clearly still has some way to go to catch up with the "best-in-class country", South Korea. According to PwC, however, Germany's market for mobile Internet access still had the strongest turnover (2009: 1.8 billion euro).

Furthermore, after the auctioning of additional frequencies this year, the German market's turnover is expected to rise to 3.8 billion euro. With a penetration rate of 20.3 percent, China was in fourth place, followed by Italy with 19.2 percent and the United Kingdom with 17.7 percent. In spite of their leading positions in the category "Internet usage", Sweden (7.8 percent) and Norway (5.6 percent) were almost last in the ranking – only India's performance was worse, with 3.7 percent.

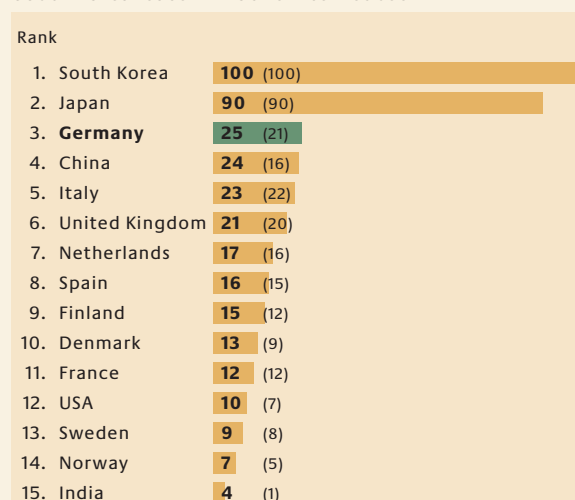
Fig. 5.2a: TNS benchmark – Internet use in the population*, 2009

Norway still in the lead in Internet use in the population



Source: TNS Infratest based on ITU (2010)
Previous year's figures in brackets; * Information based on national household surveys

Fig. 5.2b: TNS benchmark – Mobile Internet use, 2009
South Korea leads in mobile Internet use



Source: TNS Infratest based on PwC (2010)
Previous year's figures in brackets

Use of social networks / E-Commerce users

TNS benchmark: Use of social networks

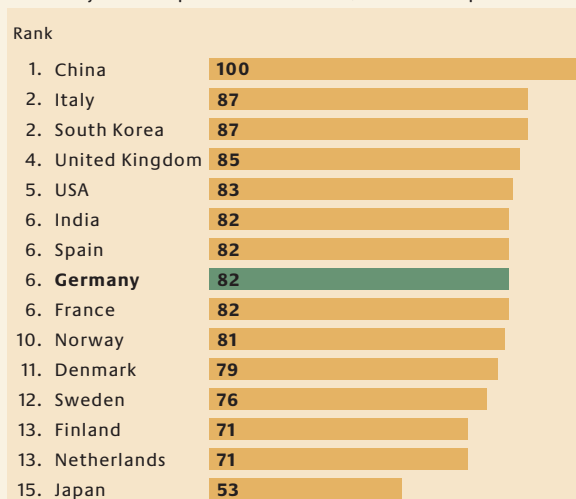
According to the TNS study “Digital Life”, 97.1 percent of all Chinese Internet users aged 16 years and older with access to the Internet in 2010 were members of a social network. No other ICT country included in the TNS benchmark came even close to achieving this figure. Trailing some way behind was Italy, with usage of social networks at 84.9 percent, ahead of South Korea with 84.2 percent, the United Kingdom with 82.7 percent and the USA with 80.3 percent.

India, Spain, Germany and France had roughly the same levels of usage, with 80.1 percent, 79.8 percent, 79.6 percent and 79.3 percent respectively. All four ICT countries also had an extremely good index value of 82 points, putting them in joint sixth place.

Following in tenth place was Norway with usage of 78.4 percent, ahead of Denmark with 76.7 percent, Sweden with 74.0 percent, Finland with 69.1 percent and the Netherlands with 68.6 percent. Japan brought up the rear with usage of 51.3 percent.

Fig. 5.2c: TNS benchmark – Use of social networks, 2009

Germany in sixth place with France, India and Spain



Source: TNS Digital Life (2010)

Previous year's figures not available; Basis: Interviewees aged 16 and over with Internet connection, use of social networks via PC, laptop or Netbook.

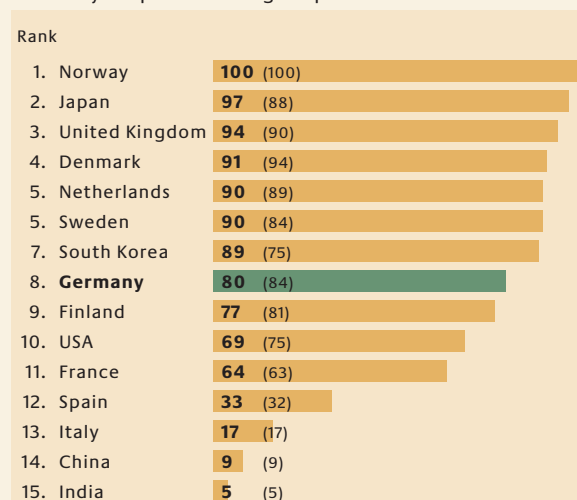
TNS benchmark: E-Commerce users

In 2009, the percentage of online buyers within the population in all of the 15 ICT countries included in the benchmark increased by an average 5.6 percentage points. As in the previous year, Norway was market leader among the 15 ICT countries. 70 percent of all Norwegians made at least one online purchase in 2009, which represented an online buyer growth of 11.1 percentage points. Japan ranked second with 68.2 percent of e-Commerce users, ahead of the United Kingdom with 66.0 percent and Denmark with 64.0 percent. The Netherlands and Sweden followed with 63.0 percent each respectively, ahead of South Korea with 62.3 percent.

56 percent of Germans made at least one online purchase in 2009. While that represented a growth of 5.6 percent over 2008, Germany still fell from sixth to eighth place because the other countries included in the study achieved greater rates of growth. Germany was followed by Finland with 54.0 percent of e-Commerce users, the USA with 48.2 percent, France with 45.0 percent, Spain with 23.0 percent, Italy with 12.0 percent, China with 6.6 percent and India with 3.3 percent.

Fig. 5.2d: TNS benchmark – E-Commerce users, 2009

Germany drops back to eighth place



Source: Eurostat (2010); TNS Infratest based on eMarketer (2010)
Previous year's figures in brackets

Purchases by companies via the Internet / Internet use in companies

TNS benchmark: Purchases by companies via the Internet

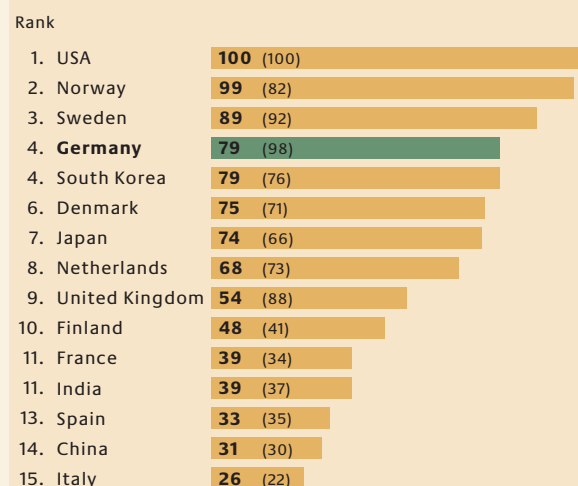
The number of companies making purchases via the Internet in 2009 was highest in the USA with 54.1 percent, followed by Norway in second place, with 53.8 percent, ahead of Sweden with 48.0 percent.

The percentage of companies that made purchases via the Internet* in 2009 in Germany was 43.0 percent. However, a methodological correction by data supplier Eurostat has caused wide variations in the comparison with the previous year. South Korea achieved a similar proportion as Germany and the same index value of 79, with just 42.5 percent of companies making purchases via the Internet. This was followed by Denmark with 40.4 percent, ahead of Japan with 39.9 percent, the Netherlands with 37.0 percent, the United Kingdom with 29.0 percent and Finland with 26.0 percent.

With 21.0 percent of companies, France and India were in joint eleventh place. Bringing up the rear were Spain with 18.0 percent, China with 17.0 percent and Italy with 14.0 percent.

Fig. 5.2e: TNS benchmark – Purchases by companies via the Internet*, 2009

Germany in fourth place in Purchases via the Internet



Source: TNS Infratest based on Eurostat (2010), OECD (2010); Previous year's figures in brackets

* Purchases via the Internet representing at least one percent of company's total expenditure (excluding VAT, wages and salaries)

TNS benchmark: Internet use in companies

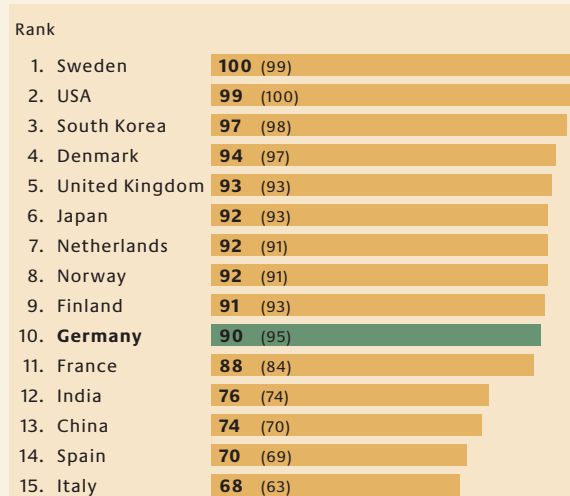
Within the framework of an annual survey, the World Economic Forum (WEF) determines the degree to which companies use the Internet via electronic networks for the purpose of e-Procurement, for the sale of products and services and for communication / data exchange within companies and between business partners (B2B). These data are used to create an index that positions all countries relative to the "best-in-class".

According to these calculations, after a growth of 0.25 points, Swedish companies achieved the highest index value in 2009 with 6.41 points. Previously at the top of the rankings, USA only managed to improve its index value by 0.14 points, which saw it fall to second place with 6.36 points. This was followed by South Korea with 6.19 points ahead of Denmark with 6.02 points and the United Kingdom with 5.98 points. Japan, the Netherlands and Norway were almost equal, with 5.89 points, 5.88 points and 5.87 points respectively, followed by Finland with 5.81 points.

Germany was the only country to register a decline in index value, falling from 5.91 points to 5.79 points, which caused Germany to drop from sixth to tenth place. At the bottom of the rankings were Spain with 4.47 points and Italy with 4.37 points.

Fig. 5.2f: TNS benchmark – Internet use* in companies, 2009

Germany falls five places in 2009



Source: TNS Infratest based on The Global Technology Report, World Economic Forum (WEF, 2010); Previous year's figures in brackets; *Responses to the question "To what extent does your company use the Internet for business purposes, i.e. for e-Procurement or for selling products, goods and services, or for automated, computer-aided exchanging of data within companies and between business partners (B2B)?"

Quality of e-Government services / Maturity of e-Participation

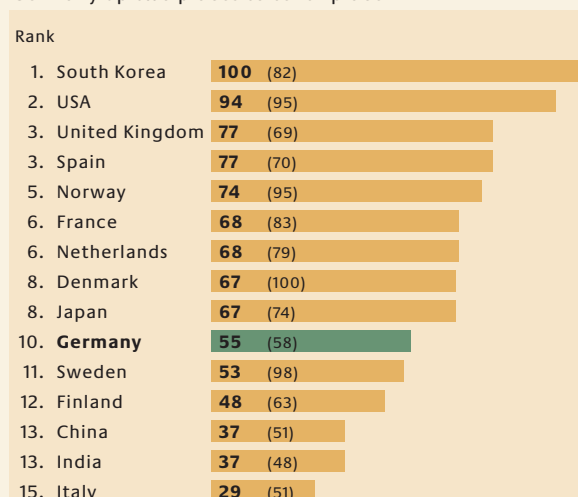
TNS benchmark: Quality of e-Government services

The United Nations regularly investigates the quality of e-Government services. This involves checking government web sites for the availability of services, the degree of expansion, from the simple provision of information through to the complete processing of administration processes, and the assessment of user friendliness and accessibility.

This year's ranking placed South Korea at the top with an improvement of 18 index points. In spite of dropping one index point, the USA managed to move up one place in the ranking, following in second place. Apart from South Korea, the only other countries able to increase their index values under the amended terms of the new evaluation form were the United Kingdom and Spain. The two countries were placed joint third. Of the Scandinavian countries – traditionally strong in the e-Government category – only Norway was in the top third (fifth place) with 74 index points. In spite of dropping three index points, from 58 to 55 points, Germany moved up two places to tenth place. Italy was last with 29 points.

Fig. 5.2g: TNS benchmark – Quality of e-Government services, 2009

Germany up two places to tenth place



Source: TNS Infratest based on UN (2010)
Previous year's figures in brackets

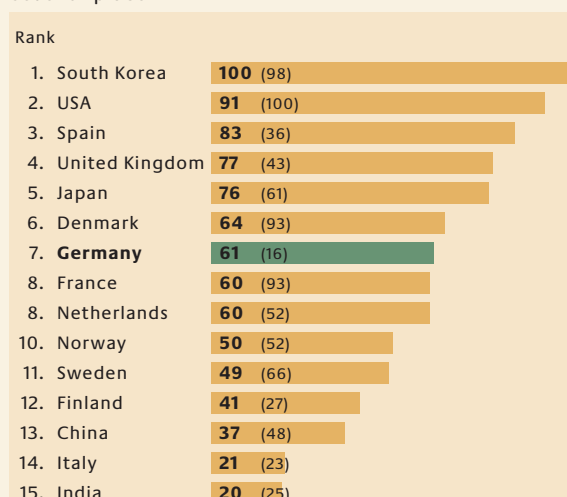
TNS benchmark: Maturity of e-Participation

In 2010 the UN once again investigated the maturity of e-Participation in its member states in the categories e-Information, e-Consultation and e-Participation in decision-making. Korea came first in the benchmark, followed by the previous year's victor, the USA. Spain gained 47 points and rose to third place. Germany gained 45 index points and climbed from fifteenth to seventh place. The northern European countries, which had performed very well in e-Government in previous years, fell to places in the middle of the field.

Denmark came sixth with 64 points, and Finland came twelfth with 41 points. The last three places were occupied by China with 37 points, Italy with 21 points and India with 20 points.

Fig. 5.2h: TNS benchmark – Maturity of e-Participation, 2009

Germany gains 45 points and climbs from fifteenth to seventh place



Source: TNS Infratest based on UN (2010)
Previous year's figures in brackets

Expert opinion on „Applications“



"Broadband provision is making good progress, thanks to new technology. LTE is opening up mobile use of the Internet to rural areas. Fibre-optic will also introduce considerably greater bandwidth into households.

"Open Access" co-operations between service providers and infrastructure operators give users access to innovative services, which in turn promote interest in the infrastructure."

Dr Wolf Osthaus, Head of Politics & Regulation
1&1 Internet AG



"Mobile use of the Internet is no longer a niche market, now that Internet access away from home and work is becoming increasingly widespread thanks to smart phones. Their increasing popularity and the nationwide introduction of broadband Internet and LTE, the fourth

generation mobile phone technology, have stimulated the development of completely new business models and application areas".

Lydia Sommer, CEO,
Nokia Siemens Networks GmbH & Co. KG Deutschland



"Companies can no longer avoid confronting with social media. However, rather than just focussing on risk management approaches, companies need to understand and consistently use all the new options available. Suitable strategies require the participation of company personnel and the alignment of corporate cultures".

Dirk Steffen, Deputy Managing Director,
TNS Infratest



"Yesterday e-Commerce, today social shopping, tomorrow audience engagement. Online business has gained momentum during the economic crisis and established itself as an attractive sales channel. Multi-channel concepts are essential. The more user participation and interaction is encouraged, the more people will use e-Commerce".

Dr Kai Hudetz, Managing Director,
E-Commerce Center für Handel



"The Internet fulfils the functions of a market place: it enables the provision of goods and services, the ability of customers to influence demand, but also exchange and co-operations between providers. The recovery of the economy after the financial crisis brings new opportunities. SMEs in particular should now be leveraging all e-Business options."

Dr Johannes Helbig, CIO, Member of the Division Board,
Deutsche Post AG



"Consistent use of the Internet in companies has long been a decisive economic factor. While we still need to increase awareness for the efficient operation of e-Business in small companies, Web conferences and Webinars are now fast becoming the norm in the SME world in Europe".

Jörg Mayer, Chief Sales Officer,
Netviewer AG



"When it comes to concepts such as open innovation, rather than just being the purveyor of information, the public sector should be taking a pro-active role. Now that large amounts of money have been provided for "Bund Online", it transpires we realise that there is little demand for many of these services. The public sector should be exploiting the "swarm intelligence" of the population and companies to determine which services would be worthwhile and what form they should take."

Dr Martin Fornefeld, CEO,
Micus GmbH



"An UN comparison showed that, in terms of e-Participation, Germany is already among the top ten nations worldwide. This considerably increases the ability of the population to actively participate in the shaping of democratic processes. To continue to build on these initial successes, we need to answer the crucial question for each participant: does my participation make a difference?"

Markus Städler, Division IT 1,
Federal Ministry of the Interior

6.

Competitiveness of the top ICT nations



6.1 The ICT Industry in France and the German ICT industry from the viewpoint of France

In the TNS benchmark of the top 15 ICT nations, the French ICT industry ranked eleventh with 49 index points, placing it behind Norway, ahead of Spain and lagging ten index points behind Germany in seventh place.

The following strengths/weaknesses profile comparing the French ICT industry with the German ICT industry is based on the results of the TNS benchmark and an analysis of the international comparison of ICT nations by leading experts from French companies, consultancies and associations.

The economic situation in France

In terms of economic strength and employment, France is the most important industrial nation in Europe next to Germany. In the current economic and financial crisis, the French GDP sank by 2.2 percent in 2009. In 2008 it gained 0.3 percent. The unemployment rate rose from 7.4 percent (2008) to almost ten percent in 2010. In terms of population, France is the second largest country in Europe after Germany, and ranks twentieth worldwide. The French population represents 13 percent of the population within the EU.

With a GDP of approx. 2.4 billion euro, Germany is the world's fourth largest economy and industrial nation, with the fifth highest energy consumption in the world after the USA, China, Japan and India. In 2009, the GDP fell by five percent, compared to a rise of 1.3 percent in 2008. The unemployment rate rose from 7.8 percent (2008) to 8.2 percent (2009). Measuring the GDP per capita, Germany ranks fifteenth worldwide and ninth in the European Union (OECD. Stat Extracts Database, dated: October 2010), France ranks eighteenth worldwide and eleventh within the EU. From 2003 to 2008, Germany was also the world's largest export nation.

The World Economic Forum (WEF) annually determines the competitiveness of 133 countries. Indicators are used that measure economic and social maturity, as well as the quality of infrastructures and legal frameworks. According to the WEF's "Global Competitiveness Index 2010 - 2011", in terms of global competitiveness, Germany ranks fifth with 5.39 points. France achieved fifteenth place with 5.13 points. Switzerland took pole position with 5.63 points. Germany rose two places over the previous year, France rose one place in the ranking.

According to the "Global Technology Index 2009-2010" of the World Economic Forum" (WEF), Ger-

many's infrastructure and regulatory framework and its use of information and communication technology in the "Networked Readiness Index 2009-2010" puts it in fourteenth place among 133 nations, while France is in eighteenth place.

In France, economic policy is traditionally subject to comparatively strong state intervention. France is a centrally managed economy, which has been increasingly deregulated and privatised in recent years. A national minimum wage, the SMIC, ensures that employees receive an hourly rate of 8.71 euro.

In France, a consolidation of the public authorities in accordance with the EU Stability Pact 2010 has been postponed indefinitely. The deficits of the public authorities rose from 7.9 percent in 2009 to 8.2 percent of GDP in 2010. That is the equivalent of 149.2 billion euro for the current year. Since President Sarkozy officially took up his post, the Government has adopted an economic stimulus package worth 26 billion euro and implementing a range of measures to increase purchasing power and promote employment.

Foreign trade has been a weak point in the French economy for a decade. The foreign trade deficit fell from 56 billion euro in 2008 to 43 billion euro in 2009, the second worst result for this period. The reasons for France's weakness in foreign trade are the unfavourable delocalisation policy of large companies, a lack of independent high-turnover medium-sized businesses and a restricted range of services and products in many industries.

With a volume of 114 billion euro in 2009, Germany remained France's most important trade partner (2008: 138 billion euro). The French deficit fell from 18.9 billion euro in 2008 to 14.2 billion euro in 2009, thus reaching its lowest level since 2006. In 2009 French companies benefitted from the German scrapping bonus.

"In France and in Germany we are missing global players. In other words: the key difference between France and Germany is SAP. However, we have companies such as Dassault and others. But they are no global players and can not reach a remarkable market share in the world markets."

Pierre Bosche,
Executive Manager,
Accenture France



TNS benchmark: France's performance in the category "Market relevance"

A comparison of the French and German ICT industries in the category "Market relevance" was generated by using nine key indicators. In the TNS benchmark, the market development of France was assessed with 39 index points and that of Germany with 41 index points.

The French ICT industry contributed the same to GDP as the German ICT industry – 5.3 percent, a contribution that had been more than eight percent in the previous year. In the TNS benchmark, both industries ranked seventh.

According to EITO, the French ICT industry generated a total of 101.5 billion euro in 2009. The turnover of the German ICT industry (excluding consumer electronics) was 127.2 billion euro. In France, 46.6 billion euro or 45.8 percent of ICT sales was generated in information technology, and 54.9 billion euro, 54.2 percent, in telecommunications.

At 1,622 euro, the French "ICT expenditure per capita" was 71 euro higher than in Germany. In France, expenditure fell by 53 euro, in Germany by 71 euro. In the TNS benchmark, France ranked eighth, ahead of Germany in tenth place.

The French ICT industry has a **global market share** of 4.5 percent (previous year: 4.6 percent). This put it in sixth place in the TNS benchmark. With a global market share of 5.7 percent, German sales were considerably higher. This placed Germany fourth in the TNS benchmark ranking. In both countries, the global market share fell marginally compared to the previous year, each dropping 0.2 percent.

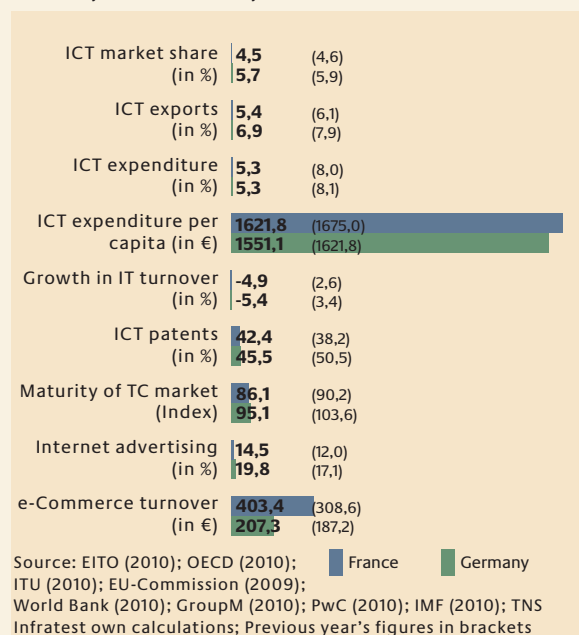
In both countries, the IT sector has been hit by the economic crisis, due to limited investment by application industries (slowdown in investment). This has also caused hardware prices to fall.

In 2009, sales in the IT sector fell in France by 4.9 percent, and in Germany by 5.4 percent. In the previous year, sales rose by 2.6 percent in France and by 3.4 percent in Germany. This saw France fall to eighth place. In the TNS benchmark, Germany fell by seven places to eleventh in the ranking.

According to the European Patent Office, the French ICT industry registered 42.4 **patent applications per million inhabitants** in 2009. The figures for Germany were 45.5. France ranked seventh in the global TNS benchmark, ahead of the USA, while Germany placed fifth, behind Japan (in fourth place) and ahead of South Korea (sixth place).

In 2009, France exported ICT products and services totalling 26.7 billion euro, while the same exports in Germany totalled 58.4 billion euro. In comparison to the previous year, the export of ICT goods rose in both countries.

Fig. 6.1a: Comparison of the performance of Germany and France: Category "Market relevance"
Germany leads in five key indicators, France in three



In the category “Export of ICT goods as a proportion of all exports”, France ranked tenth, Germany placed ninth.

In 2009, the “e-Commerce turnover per Internet user” for France was 403 euro (previous year: 309 euro), for Germany it was 207 euro (previous year: 187 euro), France ranked sixth and Germany eleventh in the TNS benchmark.

In the key indicator “Maturity of the telecommunications market”, in terms of fixed line and mobile phone penetration and telecommunications market as a proportion of GDP, France achieved 86.1 index points, Germany achieved 95.1 index points. In the TNS benchmark, France ranked fifth and Germany third.

A comparison of the performances of the French and the German ICT industry showed the following key differences:

1. Growth in IT turnover (difference: 0.3 percentage points in favour of Germany);
2. e-Commerce turnover per Internet user (difference: 196 euro in favour of France);
3. Per-capita expenditure for information and communications technology (difference: 71 euro in favour of France) and
4. ICT exports as a proportion of all exports (difference: 1.5 percentage points in favour of Germany).

In the interviews, ICT experts were asked for the main reasons for these deviations.

Reasons for strong deviations between France and Germany in the category “Market relevance”

1. Differences in Growth in IT turnover

According to EITO, France generated 49.0 billion euro revenues with information technology in 2008. In 2009, turnover fell by 4.9 percent, while in Germany turnover fell by 5.4 percent, to 63.5 billion euro.

These developments were to be expected due to the deterioration of GDP in both countries. The experts confirmed that there is a direct connection between the general economic situation and the level of investment in software and IT services.

The drop in hardware prices also contributed to the fall in turnover. Turnover for French hardware fell 10.6 percent in 2009, to 12.6 billion euro. A further drop of one percent is predicted for the current year.

Experts confirm that investment in application industries has slowed down during the economic crisis, although things are picking up gradually.

“On sent aujourd’hui des signes de reprise, on relance les embauches, la demande redémarre. C’est un redémarrage très fort.”

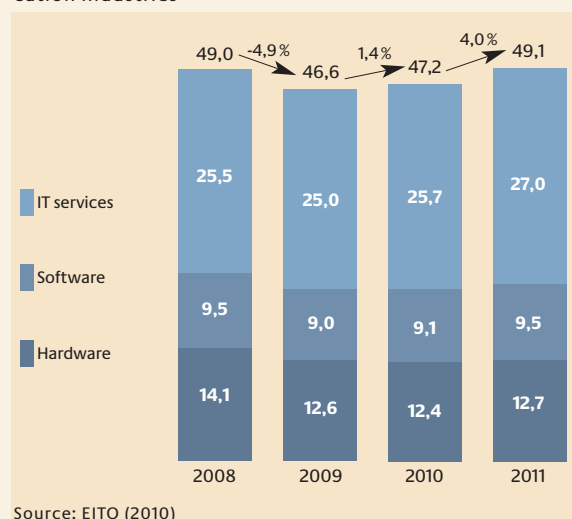
“Avec la crise on s’est retrouvé proche de 0 dans l’année 2009 et en 2010 on va être entre 0 et 2 avec l’industrie TIC, ce qui n’est pas mal si on compare avec le reste de l’économie.”

“The economy is definitely on the road to recovery. Things are on the up, there is a noticeable improvement”.

“After the stagnation of 2009, ICT turnover in 2010 is expected to increase by up to two percent. Compared to other industries, that’s not at all bad”.

In France, sales for software in 2009 fell by 4.7 percent. A growth of 1.2 percent is expected for 2010. Sales of IT services fell by 1.9 percent in 2009 and are predicted to rise by 2.8 percent in 2010. Outsourcing services are a key contributory factor towards this growth. According to EITO, these services achieved a growth of four percent in 2009 and are predicted to rise to seven percent in 2010, in which turnover for the current year will total 9.8 billion euro.

Fig. 6.1b: Development of IT turnover by submarket in France – sales in billion of euros and growth in percent, 2008 - 2011
Significant drops due to slowdown in investment in application industries



Experts indicate that the developments in the software and IT services sectors are closely linked to the developments in other industrial sectors, such as the automotive industry. Any upward trend in one of these sectors immediately influences the IT industry as well.

2. Difference in e-Commerce turnover

When confronted with the large differences between France and Germany in e-Commerce turnover per Internet user, the experts commented that it was important to first define exactly what was meant by e-Commerce. It needs to be determined whether online travel expenditure is included (excluded in both cases), or whether it includes the turnover of invoices submitted offline (also excluded in both cases). Furthermore, the experts surmised that the Germans were more security-conscious, leading to greater reluctance to engage on the Internet than the French.

“Les Allemands sont plus concernés par la sécurité que les Français.”

“The Germans have a greater need for, and a greater awareness of, security issues than the French.”

3. Differences in ICT expenditure per capita

While sales of mobile phones in France fell by 2.5 percent in 2009, sales of smart phones rose by 104.7 percent, which saw sales topping more than one billion euro for the first time (1.087 billion euro). This volume is expected to rise to 2.6 billion euro by 2011. In Germany, sales rose by 47.6 percent, to almost 1.1 billion euro in 2009. Sales in 2011 are predicted to achieve 1.65 billion euro.

Sales generated through Internet access and services increased in France by 9.7 percent in 2009, and by more than ten percent in 2010, rising to 6.5 billion euro. In Germany, there will be a growth of 3.6 percent in the current year, generating revenues of 8.7 billion euro.

The submarket with the highest growth rates is that of mobile data services, where sales grew by 15.5 percent in France in 2009 and are expected to rise to 16.7 percent in 2010, generating sales of more than five billion euro. In Germany sales grew by 8.4 percent in 2009, and 8.8 percent in 2010, to generate sales of 5.8 billion euro in the current year.

From an expert perspective, the differences between the per-capita expenditures of France and Germany are marginal.

“Il ne faut pas chercher des explications millimétriques ...comme la dépense en pourcentage du PNB est exactement la même.”

“Because the ICT expenditure as a proportion of GDP is roughly the same, it is not worth investigating the reasons for any discrepancy”.

4. Level of exports

The experts determined that the reason that Germany (ninth place) was one position higher than France (tenth place) in the ranking was due to the level of exports of the global player SAP, a strongly export-oriented company based in Germany. Large French software manufacturers, such as Cegid and Dassault Systèmes, only have a market share of the domestic market of two or one percent respectively. Their export quotas are extremely low, also there is virtually no hardware production in France anymore.

“En France, l’industrie de l’informatique n’existe plus. Avec Nokia Siemens le paysage est différent en Allemagne.”

“There is virtually no hardware manufacture in France anymore. With Nokia Siemens, the situation in Germany is very different”.

Added to which, Germany is one of the leading export nations.

“L’Allemagne est un pays exportateur, sa stratégie depuis longtemps est l’exportation, quelque soit le domaine d’activité.”

“Germany is one of the leading export nations, which very likely applies to the ICT industry as well.”

In 2009, the French Government revised its strategy for research and development in order to bring it more in line with the Lisbon objective of ensuring that research and development expenditure represents three percent of GDP. The “Stratégie nationale de recherche d’innovation” defines ICT and nanotechnology as the crucial criteria for research funding. The strategy refers to large French companies, such as France Télécom, Alcatel Lucent, Bull, Thales and Dassault, and highlights their importance to ICT research and development in France.

Four years ago, the Government published the CAP EXPORT programme for the promotion of SMEs. This aims to increase the low export quota of French SMEs compared to international competition by means of tax incentives and export credits.

Furthermore, the French Government also strongly promotes foreign trade. Key drivers are the Economic Missions which fall under the authority of the Ministries of Economy, Finance and Labour, and the French Embassies. The main focus of these Economic Missions is to help French companies initiate business relations. Ubifrance was founded as a central contact point. This association unites the services of the Economic Missions and public sector entities and serves companies as a guide. Above all, the network provides expertise in the export business.

TNS benchmark: France's performance in the category "Infrastructure"

A comparison of the French and German ICT industries in the category "Infrastructure" was performed using seven key indicators. Germany's performance achieved 76, France 58 index points.

ICT companies as a proportion of all companies. East Asia, Sweden, Denmark, Norway and Germany all have a higher proportion of information and communication companies (\geq ten employees) among all companies. In Germany, 3.98 percent of all companies with 10 employees or more are in the ICT sector. The corresponding value for France is 2.04 percent.

Key contributors to the French economy are the large companies listed in the CAC 40 share index. These are globally active companies that are of interest to foreign investors. More than 50 percent of the CAC 40 companies are under foreign ownership. Compared to Germany, the French SME segment is underdeveloped.

Broadband. In 2010, 30.3 percent of French citizens used a broadband connection to access the Internet, compared to 28 percent in 2009. This placed France clearly above the 24.8 percent average of the EU27 countries, and only marginally behind Germany with 30.4 percent. In the TNS benchmark, the two countries are in joint sixth place.

At the end of March, according to the French regulatory body, the "Autorité de Régulation des Communications Electroniques et des Postes" (ARCEP), 20.1 million broadband connections were available, of which 18.8 million were xDSL connections and 337,000 were fibre-optic connections. This corresponds to a growth of 9.3 percent within a single year.

"France numérique 2012", the digital agenda approved in October 2008, stipulates that by the end of 2012, all French citizens should have access to broadband with a minimum speed of 512 kbps and that this is to be available for less than 35 euro per month.

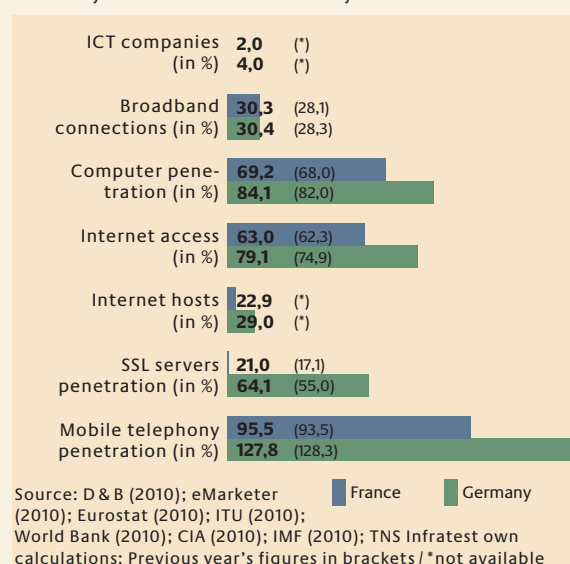
PC penetration in households. 69.2 percent of French households, compared to 84.1 percent of German households, have access to the Internet. Comparable figures for the previous year were 68 percent for France and 82.0 percent for Germany.

In 2009, sales of PCs in France generated 9.8 billion euro. Almost six billion euro of these sales were generated through the sale of portable PCs and 3.8 billion through the sale of desktop PCs. In 2009, sales fell by 3.8 percent and in 2010 by a further 2.4 percent. Experts put this down to a fall in demand and a sharp fall in prices due to intense competition.

No other EU15 country can match France's 40 percent penetration rate of desktop PCs.

However, France still has some catching up to do in **Internet access in households**. EITO estimates that sales for Internet access services in France rose

Fig. 6.1c: Comparison of the performance of Germany and France: Category "Infrastructure"
Germany ahead of France in all key indicators



"The expansion, availability and performance of broadband networks will have a positive impact not only on the ICT and media industry in France, but far beyond this, on society and the economy as a whole. Investment plans of private network operators and investors, as key supporters of broadband expansion, should be supported by politics and businesses and the framework conditions for such plans should be improved. It is necessary to think beyond 'Paris' and to consider the 'province', the rural areas."

Henri Tcheng,
Partner, in charge of Telecom,
Media & Utilities Firmwide,
BearingPoint



9.7 percent in 2009 and 10.2 percent in 2010, to 6.5 billion euro. In Germany, sales rose by 3.5 percent in 2009 and 2.9 percent in 2010, rising to 8.7 billion euro.

Internet host penetration. In the key indicator Internet host penetration per 100 inhabitants, France achieves 23 hosts, and Germany 29 hosts.

In the key indicator SSL server penetration per 100,000 inhabitants, France achieved 21 servers and Germany 64 SSL servers.

Mobile telephony. At the end of March 2010, 61.5 billion French citizens had a SIM card. This represents a growth of 6.6 percent within a single year. At 95.5 percent, the French penetration rate for mobile telephony is below the average for the EU27 countries with 121.9 percent and under that of the 128 percent achieved by Germany.

There were also **significant differences** in the performances of France and Germany in the following categories:

1. PC penetration in households (difference: 14.9 percentage points in favour of Germany);
2. Internet access in households (difference: 16 percentage points in favour of Germany);
3. SSL server penetration (difference: 43 SSL servers in favour of Germany) and
4. Mobile telephony penetration in the population (difference: 32.5 percentage points in favour of Germany).

Experts were asked for the main reasons for these deviations.

Reasons for strong deviations in the infrastructure of France and Germany

1. Differences in PC penetration in households and 2. in Internet access in households

The experts were of the opinion that the differences in performance between the German and the French ICT industry for both key indicators were due to three reasons:

- ▶ The economic slump, which has dampened consumer spending;
- ▶ the purchasing power of consumers, which is higher in Germany than France, and
- ▶ the delayed exploitation of the potential of information and communication technologies for private and professional purposes in France.

"L'écart entre les deux pays s'explique par une différence de force économique et de développement conjoncturel. L'Allemagne est plus riche que la France, cela se traduit par une consommation plus élevée des produits d'épargne et technologiques. Un pc à 400 euros est moins accessible en France qu'en Allemagne. En outre, ces indicateurs montrent aussi que la France a pris du retard."

"I think the key reason for the difference in performance of the two countries is due to the difference in economic strength and the economic development of both countries. Germany has more purchasing power than France, which also influences purchases in the ICT sector. This is to say that German consumers are more able to afford a PC at 400 euro than their French counterparts. Furthermore, the French were slower to invest in ICT technologies and to recognise its huge impact on the economy".

3. SSL server penetration

The experts were of the opinion that the Germans were far more concerned about security than the French. This meant that German network providers had introduced high standards of security, which was why SSL penetration was higher.

“L’Allemagne est un pays qui aime la sécurité. Depuis la crise monétaire de 1929, je pense que c’est culturel.”

“Germany is a country that places huge emphasis on SECURITY. This is a cultural difference that has emerged between the Germans and the French since the depression of 1929”.

4. Mobile telephony penetration

The experts explained the differences in penetration rates for mobile telephony by the fact that, with Orange, Bouygues-Telecom and SFR, France only has three mobile phone providers. By contrast, the number of providers in Germany is higher, which increases competitiveness, and in turn means that customers in Germany are offered cheaper tariffs than those in France.

36 percent of French mobile phone customers are “prepaid” customers. 71 percent of French citizens have a monthly mobile phone contract. The experts determined that France is lagging behind mobile telephony penetration for cost reasons:

“La pénétration des téléphones mobiles atteint la maturité, le retard est rattrapé. Qui veut un portable peut l’avoir. Je ne connais pas la comparaison des coûts entre la France et l’Allemagne. Par rapport à l’Angleterre, c’est très cher en France. Pour le même prix, on peut beaucoup plus communiquer en Angleterre. Cela dépend aussi de la convergence entre fixe et mobile.”

“The mobile telephony market in France has almost reached saturation, which will then see it in line with other industrial countries. Anyone with a desire to have a mobile phone can generally afford it. Even if I am not familiar with the prices for mobile phone calls in Germany, I know from comparisons with England that call costs in France are extremely high compared to Great Britain. The behaviour of consumers is also influenced by the convergence of mobile and fixed-line networks”.

Furthermore, the introduction of next generation networks will also cause prices to rise, which will act as a further deterrent for customers.

“C’est le coût des abonnements qui fait que l’usage mobile n’est pas populaire. La 3G nécessite du matériel, l’abonnement est cher, cela reste cher même si l’on assiste à une baisse de prix. Les licences ont été vendues une fortune, les opérateurs veulent récupérer leur mise; Tout cela rend les abonnements très très chers. ... Il faut des prix attractifs aussi pour l’internet mobile et pour le haut débit.”

“The tariffs for mobile phones discourage French consumers from greater use of mobile telephony. Furthermore, expensive subscriptions and investments in additional end devices are being demanded for networks of the third generation. This will keep costs high, even if tariff reductions have been promised. Providers paid a fortune for the mobile telephony licenses and are now trying to ensure they get a decent return on their investment. This makes mobile telephony use extremely expensive. We need attractive tariffs, particularly for the use of the mobile Internet and high-speed networks”.

However, experts pointed out that German companies often provide staff with an additional mobile phone, which is free to use.

“C’est dû à l’équipement de téléphones portables des collaborateurs d’entreprise. Les entreprises françaises sont assez pingres avec leurs collaborateurs, ils n’ont qu’un téléphone, le leur, alors que les entreprises allemandes allouent plus souvent un téléphone professionnel.”

“It is common practice for German companies to provide staff with mobile phones and pay the monthly call charges. This is not often the case in France”.

TNS benchmark: France’s performance in the category “Applications”

A comparison of the French and German ICT industries in the category “Applications” was performed using eight key indicators. Germany achieved 61 and France 50 index points.

Internet use in the population. In France, 71.6 percent of citizens aged 16 or over use the Internet, which is 0.9 percentage points more than the previ-

"In France, new mobile technologies are mainly used by individuals, not companies. To further promote their dissemination in companies, the offers must become more attractive and suitable for business purposes. New services such as electronic offers via the mobile, mobile electronic invoicing or mobile online banking via mobile phones or tablet PCs will continue to grow. In the next few years, particularly small businesses will be strongly engaged in developing appropriate mobile solutions."

Romain Hugot,
Research & Strategy Director,
SAGE



ous year. In Germany, Internet penetration is 79.3 percent, 1.4 percentage points more than the previous year. In the TNS benchmark, France ranked eleventh, behind Germany in eighth place.

Mobile Internet use in the population. In France, 10.6 percent of the population use the mobile Internet, which is 1.2 percentage points more than the previous year. By comparison, Germany achieves 21.3 percent, 3.9 percentage points more than the previous year. This puts Germany in third place in the TNS benchmark and France in eleventh place.

Use of social networks. In France, 79.3 percent, in Germany 79.6 percent of Internet users use social networks. This places the two countries in joint sixth place in the TNS benchmark.

E-Commerce users in the population. 45 percent of the French population use e-Commerce, which is five percentage points more than the previous year. In Germany the quota for e-Commerce use is 56 percent, three percentage points more than the previous year. This puts France in eleventh place and Germany in eighth place.

Internet use in companies. Within the framework of an annual survey, the World Economic Forum (WEF) determines the degree to which companies use the Internet via electronic networks for the purpose of e-Procurement, for the sale of products and services and for communication / data exchange within companies and between business partners (B2B). These results are used to create an index ranking which positions all ICT nations relative to the global market leader.

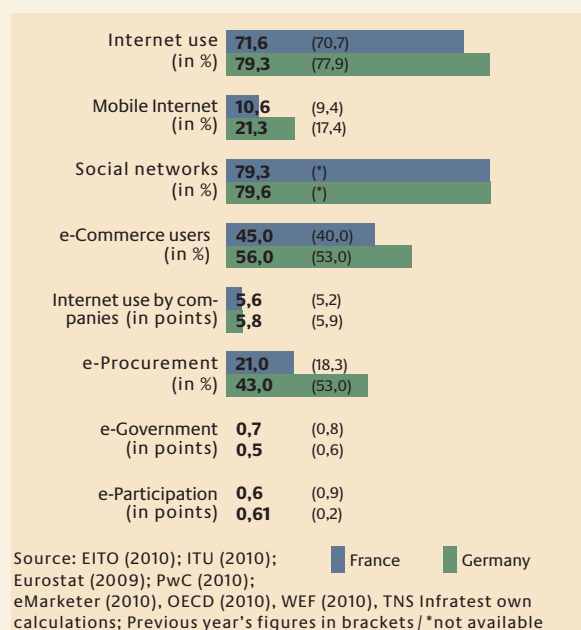
France achieved an index value of 5.64 points and Germany achieved 5.79 points, ranking the two

countries very closely in the TNS benchmark of the top 15 ICT nations. France ranked eleventh and Germany tenth.

Purchases by companies via the Internet. 21 percent of French companies make purchases via the Internet, which is three percentage points more than the previous year. In Germany, 43 percent of companies use this option, which is ten percentage points less than the previous year. France is ranked eleventh and Germany fourth in the TNS benchmark.

Quality of e-Government services. The United Nations regularly investigates the quality of e-Government services. This involves checking government web sites for the availability of services, the degree of expansion, from the simple provision of information through to the complete processing of administration processes, and the assessment of user friendliness and accessibility.

Fig. 6.1d: Comparison of the performance of Germany and France: Category "Applications"
Germany ahead of France in seven out of eight key indicators



France achieved 0.7 index points, ahead of Germany with 0.5 index points. France ranked sixth and Germany tenth in the TNS benchmark.

Maturity of e-Participation. In 2010, the United Nations' investigation of the maturity of e-Participation in its member countries looked at the categories e-Information, e-Consultation and electronic participation in decision-making. In 2009, France achieved 60 points and Germany 61 points out of a possible one hundred. In the TNS benchmark, France ranked eighth and Germany seventh.

Thus the French and the German ICT industries show **considerable differences** in the following categories:

1. Purchases by companies via the Internet (difference: 22 percentage points in favour of Germany);
2. Internet use in the population (difference: 7.7 percentage points in favour of Germany);
3. Mobile Internet use in the population (difference: 10.7 percentage points in favour of Germany);
4. e-Commerce users in the population (difference: eleven percentage points in favour of Germany).

Once again, the experts were asked for the main reasons for these deviations.

Reasons for considerable differences between France and Germany in the category "Applications"

The French experts consider the fact that France is lagging behind Germany in the categories:

1. Purchases by companies via the Internet,
2. Internet use in the population and
3. e-Commerce users in the population

is primarily due to one reason: the French were very slow to embrace the world of e-Business.

"En France, la vente sur l'internet a démarrée tardivement. L'adoption des pc, l'ADSL chère pendant longtemps, tout ça a des conséquences en terme d'adaptation d'internet comme sourcing. Il y a un retard important à résorber. Ça va se résorber, mais ça prendra encore du temps."

"France was a slow starter in terms of the introduction and use of the Internet by companies and the penetration of e-Business into the added value chains of companies. Compared to Germany, we took much longer to take this development on board, which explains why we are lagging behind".

This was also due in part to the lack of availability of company credit cards:

"Le paiement interne teste la carte bancaire, celle-ci est très peu développée en entreprise mais beaucoup plus chez les particuliers. Les Français n'ont pas de carte entreprise, c'est pour cette raison que les achats et les ventes via internet ne sont pas si développés en France qu'en Allemagne. Le chef d'entreprise étant souvent le seul à se servir d'une carte bancaire – pas l'entreprise elle-même."

"When using the Internet, the French generally pay by credit card. However, most company employees do not have access to a company credit card, which is probably one of the main reasons why French companies do not make as many online purchases as German companies".

4. Mobile Internet use in the population

One of the main reasons why France is trailing behind in the area of mobile Internet use is the high costs of use.

Strengths and weaknesses of the French and German ICT industries – special opportunities

Experts were asked for three strengths and weaknesses of the French and German ICT industries and where they saw special opportunities for future developments.

Strengths: Orange as an international player in mobile telephony – Germany with global player SAP – high media skills, good training of engineers – innovative SMEs in France

France was in a better position than Germany in the mobile phone sector in particular. The international activities of the French mobile phone provider Orange look very promising.

“Orange est un géant à l’export, c’est un atout. Le problème c’est qu’il utilise la France comme vache à lait pour développer l’international. Il pompe du cash en France et le réinvestit dehors. Cela ne contribue pas forcément à la diminution des prix et à la dynamisation des services en France.”

“Orange is one of the biggest telecommunications companies and is particularly active on foreign markets. Orange “is milking” the French industry, in order to boost its international business in particular. While it generates turnover in France, it invests outside France. This does not help to lower tariffs or improve services for the French”.

“Les opérateurs mobiles gagnent très bien leur vie. Leur faible nombre fait que les prix sont élevés ce qui est très bien pour les opérateurs. Ils sont riches et puissants.”

“Mobile phone providers achieve good revenues in France. There are only a few providers. The prices are high and providers make a lot of money. They are rich and have great political power”.

One of the strengths of the German ICT industry is the global player, SAP. While France has nothing comparable to offer, it has at least has one important France-based service provider with Dassault Systèmes.

One of the other strengths of the country is the good training of its skilled workers.

“Je pense qu’en France, nous avons les meilleurs ingénieurs du monde. La formation en France est très bonne, les ingénieurs sont créatifs, inventifs. Nos entreprises savent développer des produits.”

“Skilled French ICT workers receive some of the best trainings in the world. Training and education is excellent and engineers are creative and innovative. Our companies develop lots of new products”.

Additional strengths include strong media skills and dynamic SMEs.

“Les grandes forces sont: Connaissance technologique, les infrastructures et un secteur très dynamique de PME innovantes qui travaillent de plus en plus en réseaux.”

“The particular strengths of the French ICT industry are its strong media skills and dynamic SMEs, which are increasingly active on the global market”.

Weaknesses: no or little hardware production in both ICT industries – while France’s small and medium-sized ICT companies are considerably more internationally active than German companies, France is not good at successfully marketing innovative products – insufficient venture capital.

There is barely any hardware production in either of the ICT nations. Rather, revenues are primarily generated via sales of services and licenses. Sales of IT services in France in 2009 were approx. 25 billion euro, while sales of hardware were only half of that. Growth rates of between three and five percent are expected in the IT service sector for 2010 and 2011. By comparison, a maximum of two percent growth is expected – for the hardware sector, or possibly even negative growth.

“La France a des sociétés de services importantes, qui ont généré de grosses exportations, qui sont plus internationales et plus internationalisées que celles d’Allemagne. Le secteur du service professionnel est plus développé en France qu’en Allemagne. Par contre, la grande différence, c’est un gros éditeur en Allemagne, qui s’appelle SAP, qui n’a pas d’équivalent en France. La France a des acteurs petits, peu connus, avec une présence internationale limitée. L’écart important vient du géant mondial SAP.”

“More providers in France focus on exports and are globally active than in Germany. The main difference is that with SAP Germany has a key global player. The French industry is dominated by small and medium-sized companies which, while they are more globally active than Germany, still do not have sufficient international presence overall.”

“Un peu de fabrication de processeurs en France, mais cela reste faible. Les opérateurs tels que Nixdorf, Bull – c’est du passé, et cela ne reviendra pas. C’est une vraie faiblesse dans les deux pays.”

“While we still produce processors in France, companies like Nixdorf or Bull are truly and irrevocably in the past. Both countries have a real weakness in this area”.

Furthermore, the French simply do not understand how to set up an internationally successful software industry.

“On a tué dans l’oeuf l’émergence de l’industrie du logiciel en France. On n’a pas laissé de place à l’évolution du logiciel qui n’a donc pas pu se développer et n’a pas pu s’exporter. On a trop encouragé la prestation des services TIC.”

“The French stifled the development of an internationally successful software industry from the very outset. It simply focussed too narrowly on other ICT services”.

Furthermore, there are also considerable shortfalls in its conversion of innovations into marketable products:

“Nous ne savons pas vendre les innovations. Nous avons une situation paradoxale. Nos ingénieurs ne sont pas mal payés et nos commerciaux sont les mieux payés du monde. Une entreprise va investir tous ses moyens pour développer un produit, et n’aura plus de moyens pour le commercialiser.”

“We are very bad at bringing products quickly to market and marketing them successfully. And this is in spite of the fact that the French ICT industry has well-paid engineers and our marketing executives are among the most highly paid in the world”.

Companies simply do not have access to sufficient venture capital.

“En Europe, il y a un réseau dense de PME et un capital risque faible, par rapport aux Etats Unis, où il y a une culture du capital risque développée.”

“Companies do not have sufficient risk capital. The situation in the USA is very different to that in Europe”.

Opportunities: Offshoring – nationwide infrastructure – fast expansion of innovation and growth fields

Offshoring. Offshoring generated a total of 9.1 billion euro in France in 2009. This represents a growth of seven percent over the previous year. A similar growth is expected in the years ahead.

“Il y a un décalage de l’offshore impressionnant d’une année sur l’autre, un chiffre important et très rapide. Ce chiffre bénéficie essentiellement aux acteurs locaux, plus qu’aux entreprises indiennes, nées en Indes. Nos clients veulent faire l’offshore, mais que ce soit transparent. Ils ne veulent pas subir les conséquences, mais continuer à voir une interface francophone avec un bénéfice d’économie intéressant.”

“While offshoring is becoming more important with each passing from year to year, the French are increasingly interested in “nearshoring”, i. e. the outsourcing of work to countries that speak French, and not just in projects in India. This means there are no communication problems and costs are manageable”.

Nationwide availability of broadband achieved – provision of high-speed networks just beginning: A key condition for further growth is the nationwide availability of broadband connections and high-speed networks.

“La tendance est de rendre l’internet haut débit accessible partout en France. C’est une chance pour beaucoup de régions déshéritées, le poumon économique étant uniquement autour de Paris, il est nécessaire d’irriguer la province pour qu’elle puisse redécoller. Il y a maintenant une pression des pouvoirs publics en ce moment, pour que tout le territoire soit desservi en internet haut débit. – En ce qui concerne la fibre optique, c’est très lent.”

“High-speed broadband networks need to be available throughout France, not just in Paris, but in all regions.”

The French Government is making every effort to expedite the nationwide provision of broadband connection by means of appropriate funding. Availability in France has already reached 99 percent. However, penetration of fibre-optic networks in France is still in the early stages”.

The nationwide availability of high-speed networks would decentralise processes in France and bring about irrevocable changes in the country’s living and working conditions.

“On va revoir du développement économique dans les provinces. On le voit déjà. La localisation des bureaux a moins d’importance. Le homeworking se développe. Avoir du très haut débit partout disponible va redynamiser le tissu économique français, particulièrement dans des endroits où l’immobilier est moins cher et la qualité de vie supérieure.”

“The nationwide provision of high-speed broadband connections would increase the economic strength of regions outside Paris. We would also see an increase in teleworking and home working. This would allow people to live in areas that offer lower rents and a higher quality of living.”

Faster exploitation of growth opportunities.

The experts see cloud computing in particular as one of the growth areas that needs to be exploited more quickly and effectively.

“On a des grands discours autour du cloud. C’est une chose que la crise a poussée.”

“Cloud computing is increasingly on everyone’s lips. The financial crisis has highlighted the advantages of this submarket. Cloud computing can develop faster than had first been assumed”.

Other promising application fields named by the experts were embedded systems and e-Energy.

What the French ICT experts have to say about the German ICT industry

The French ICT experts also confirm the results of this benchmark report in as much as the German ICT industry does not hold a leading position on the world’s markets.

“L’Allemagne, ce n’est pas une terre d’industries TIC, en mettant de côté SAP. C’est un pays où les prix restent très élevés. Je n’ai pas de vision de géants mondiaux dans les TIC en Allemagne. L’Allemagne, pour moi, est un pays de forte adoption des TIC, un pays développé, riche, éduqué, qui utilise énormément les TIC, mais n’en produit pas beaucoup.”

“The first thing I associate with the German ICT industry is SAP. While the use and application of information and communication technology (ICT) is strong in Germany, it is definitely not an ICT manufacturer”.

In the years ahead, the German ICT industry will also have to face increasing competition from East Asia.

“L’Allemagne est gravement concurrencée sur la production industrielle, sur les pc, les serveurs l’équipement par les gens d’Asie, de Chine en particulier.”

“The Germans will face increasing competition in the ICT sector from Asia, and from China in particular”.

It is important for globally active French companies to have at least one branch in Germany. The German ICT industry is the fourth largest in the world and is strongly application-driven.

“Si vous êtes une entreprise qui n’est pas allemande, mais européenne, et que vous voulez vous étendre en Europe, vous ne pouvez pas ne pas vous installer en Allemagne. Le marché allemand est attractif, il consomme beaucoup de TIC. Si vous vous installez en Allemagne pour vendre il faut aussi développer des produits.”

“Anyone wanting to increase business in Europe needs to have a presence in the German ICT industry. Germany is an attractive ICT business location. Germans make extensive use of ICT. Ideally, in order to succeed, businesses should also develop their products in Germany”.

6.2 The ICT industry in India and the German ICT industry from the viewpoint of India

In 2009, India achieved 25 index points in the TNS benchmark, improving its performance by one point. However, India stayed in fifteenth place and maintained the same performance gap between itself and China, which also improved its performance by one point to 39 index points.

The following strength/weakness profile comparing the Indian ICT industry with the German ICT industry is based on the results of the TNS benchmark and an analysis of these results by expert interviews from Indian companies and associations.

The economic situation in India

The “Networked Readiness Index” of the World Economic Forum places India in 54th place in 2009, rising to 43rd place in 2010. According to the “Competitiveness Scoreboard”, India fell by one place in 2010, to 31st in the ranking.

As one of the BRIC states, alongside Brazil, Russia and China, India is an emerging nation with above average economic potential. This is due to the size of its population, its proven “clusters of excellence” and its unproblematic economic inclusion in the Anglo-Saxon world. In recent years, GDP has seen an annual growth of between 7.5 and eight percent. The OECD has predicted another eight percent growth in 2010. The IWF puts the growth of the Indian GDP at 7.3 percent in 2008, 5.7 percent in the crisis year, 2009, and 8.8 percent in 2010.

The rise of India to become an important business location is largely thanks to its liberalisation policy, started in 1991. This was accompanied by business-friendly industry and financial market policies. The Government also supported the set up of software parks with tax incentives, particularly for exports, and with optimised network connectivity.

Other factors that leveraged the economic rise of India, were cost-efficiency, high quality standards, highly qualified technicians and well-developed telecommunications infrastructure in major cities of the country. This is further enhanced by its advantageous geographic position to the USA and Europe, in as much as, in terms of offshoring; work, production and service times can be easily extended by exploiting the different time zones. In the ICT sector in particular, many multinational companies take advantage of offshoring options in partnership with Indian providers.

The Indian ICT industry has recovered rapidly from its recession following the crisis in the financial markets, helped by a re-orientation towards new products and new sales markets, such as those in emerging nations.

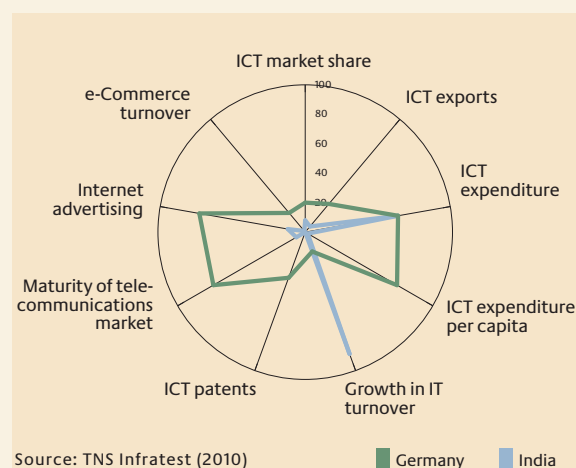
Sales generated by the Indian ICT market have grown from 28.7 billion euro in 2006 to more than 47.2 billion euro in 2009 and are expected to total 53.4 billion euro in 2010. Three quarters of this sales volume is generated in the telecommunications sector. The previously extraordinarily high growth rates of twenty percent and more have now “normalised” to growth rates of 13 to 14 percent. In the long-term, the 1.15 billion population is capable of developing sufficient purchasing power to outshine China by 2030.

TNS benchmark: India's performance in the category “Market relevance”

The performance of the Indian ICT industry was measured on the basis of nine key indicators.

The Indian ICT industry has a 2.1 percent share of global ICT sales, compared to 1.9 percent over the

Fig. 6.2a: “Market relevance” in India compared with Germany, 2009
India has the second-highest growth in turnover in information technology



“India’s importance in the global IT market will continue to increase over the next years, both in terms of size and quality. In size terms, the Indian IT industry will grow due to its unmatched ability to deliver cost-effective quality and potential to scale up rapidly. In quality terms, IT services sourced from India will address more phases of the value chain.”

Gerd Höfner,
Managing Director,
Siemens Information Systems Ltd.



previous year. This improved India’s ranking in the TNS benchmark from tenth to eighth place. The German share of the global ICT market fell from 5.9 percent to 5.7 percent. This represented a drop in the ranking from third to fourth place. Achieving eight index points, India matched the performance of Spain and South Korea.

According to OECD data, India’s **ICT export sales** totalled 1.3 billion euro. According to the calculations of the World Bank that is the equivalent of a 1.3 percent share of all global exports. With five index points, India was at the bottom of the performance ranking of the 15 ICT nations. By way of comparison, Germany achieved an export quota of 6.9 percent for ICT products, which placed it ninth in the ranking.

In 2009, the Indian ICT industry contributed the same to **GDP** as the German ICT industry – 5.3 percent, compared to the previous year’s performances of 5.0 percent in India and 5.1 percent in Germany. Both countries were in joint seventh place in the TNS benchmark, with 64 index points.

Indian **ICT sales** of 48.7 billion euro in 2009 comprised 34.5 billion euro for telecommunications and 14.3 billion euro for information technology. EITO expects this ratio to remain the same in 2010 (37.5 billion euro for telecommunications and 16.0 billion euro for information technology with a sales volume of 53.5 billion euro).

Both companies and the Government are currently investing strongly in the ICT infrastructure, particularly in telecommunications. The experts explained:

“Both companies and the government invest in ICT infrastructure to increase efficiency.”

“ICT expenditures of companies are high and still growing, as innovative products offer further support.”

At 39.11 euro, **ICT expenditure per capita** in India was a twentieth of German expenditure standing at 1,551.09 euro. However, compared to the previous year, per-capita expenditure in Germany fell by 4.4 percent, to 70 euro, while in India it rose by 6.5 percent, to 2.40 euro. In the TNS benchmark, India achieved two index points and stayed in last place, three points behind China. The extremely low level of ICT expenditure shows that large expanses of area are still without ICT connection options and that the population of those areas is also unable to generate the necessary demand.

IT sales in India rose by 7.7 percent in 2009, compared to the previous year’s growth of 15.7 percent. By contrast, the German ICT industry suffered a drop in sales of 5.4 percent, compared to a growth of 3.4 percent in 2008. This enabled India to maintain its second place behind market leader China in the TNS ranking in the category “Growth in IT turnover”, while Germany fell from fourth to eleventh place.

In 2009, India registered 22 ICT patents with the European Patent office, which is the equivalent of **0.02 ICT patents per one million inhabitants**. In Germany, this figure was 3,736 applications, the equivalent of 45.6 patents per one million inhabitants. Germany ranks fifth in the global benchmark, while India is in last place.

In the category **Maturity of the telecommunications market**, India achieved seven index points and stayed at the bottom of the ranking. This index value is made up of mobile telephony penetration of 43.8 percent and landline penetration of 3.1 percent. Germany is in third place with 72 index points.

3.2 percent of the Indian advertising budget flows into online media. In Germany **Internet advertising as a proportion of overall advertising market revenue** is 19.8 percent. India improved its performance by 2.3 percentage points, to nine index points, but remained in last place. Germany ranked sixth.

In 2009, India spent 6.92 euro per capita in the **e-Commerce** sector. That is the equivalent of only one index point and once again saw India in last place. By comparison, Germany spent 207.30 euro per capita, putting it in eleventh place with 17 index points.

Interviews with experts focussed largely on four differences between the Indian and the German ICT industry:

1. ICT exports as a proportion of all exports (difference: 5.6 percentage points in favour of Germany);
2. Growth in IT turnover (difference: 13.1 percentage points in favour of India);
3. ICT patent applications (difference: 45.4 patent applications per one million inhabitants in favour of Germany);
4. Maturity of the telecommunications market (difference: 85.7 percentage points in favour of Germany).

Comments on the selected key indicators in the category "Market relevance"

1. ICT exports as a proportion of all exports

Export sales in India reached 126 billion euro in 2008. Main export goods were agricultural products and textile products. India's ICT export volume was unanimously estimated by the experts at 50 billion euro. This is far higher than the figures of the World Bank – on which the benchmark is based; however, the World Bank is only taking into account export sales with ICT products, i. e. telecommunications, audio and video devices and equipment, computers and associated electronic components and other ICT products, but not software and ICT services. According to OECD, computer and software exports make up 90 percent of India's ICT exports.

The Indian experts also admit that well-known "Indian" software companies are all based abroad and that attribution of their export sales may well be performed at the respective headquarters of the companies:

"India is the 'back office' for international corporations from high cost countries."

"There are hardly any software products from INDIAN software companies. The Indian software industry is still a nascent industry."

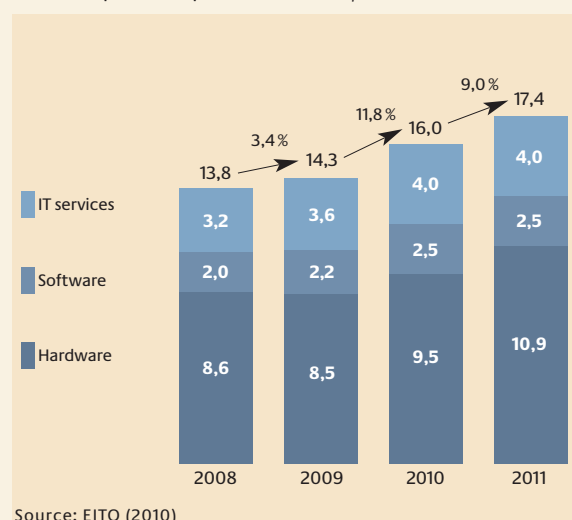
2. Growth in IT turnover

According to EITO, India generated 13.8 billion euro with information technology in 2008. Turnover in 2009 are expected to rise by 3.4 percent, to 14.3 billion euro. While turnover for hardware fell by 1.2 percent, turnover for software and IT services rose by 10.2 and 11.6 percent respectively. In Germany, IT turnover fell by 4.9 percent.

In 2010, India's turnover for information technology is expected to grow by 11.8 percent, to 16 billion euro. Hardware turnover rose by 10.7 percent, software by 14.1 percent and IT services by 12.9 percent. In 2011, EITO predicts a growth of 15 percent, to 17.4 billion euro. Turnover of hardware is predicted to grow by 15.2 percent because the first "cheap tablet PCs" made in India are expected to hit the market.

The experts stated that the expected ICT boom in India was due to company successes in the hardware

Fig. 6.2b: Development of IT turnover by submarket in India – sales in billion of euros and growth in percent, 2008 – 2011
IT sales up twelve percent in 2009/2010



sector, as well as infrastructure initiatives and an expansion of Government services.

"The industry will continue to be the fastest growing IT industry in the world. Revenues are expected to grow 15 - 20 percent in the next three years."

"Key drivers will be infrastructure projects, domestic demand, the reform of the education system and e-Government: There is a government initiative to make e-Government services available anywhere in India within the next 20 years."

3. ICT patent applications

The fact that India is lagging behind in the category patent applications is partially due to the fact that the patent application process is extremely involved and laborious.

Also, the number of Indian patent developments is not properly reflected in the performance indicator "ICT patent applications" due to the fact that many companies carrying out research in India are branches of international ICT companies based outside India, so that any patent applications are attributed to the home country of the respective company's headquarters.

"The process to file patents in India is cumbersome. A large part of the Indian ICT industry is controlled by multinational companies such as SAP, Intel, Microsoft, Cisco etc. Research is done in India (hence the expenditures and revenues for R & D) but patents are filed in the home countries of the companies."

"It is not true that there are no patents coming from India. Patents filed by multinationals for example by the very strong Philips R & D centre in Bangalore, are probably filed through the base country of the HQ, in this case the Netherlands."

4. Maturity of telecommunications market

In the key indicator "Maturity of the telecommunications market" India ranks last in the TNS benchmark. With telecommunications expenditure as a proportion of GDP at 3.24 percent, India has a higher share than Germany at 2.35 percent. However, telecommunications network penetration in India is very low.

The high level of telecommunications expenditure as a proportion of GDP is thanks to the endeavours of the Indian Government to implement a sophisticated telecommunications infrastructure. With this in mind, in 2010, the Indian Government offered 3G licenses at auction.

Mobile telephony penetration continues to grow rapidly, largely due to the fact that there is virtually no fixed line infrastructure at all outside the larger cities. BSNL, a provider specialising in supplying administrative buildings, only sells broadband agreements in combination with fixed line connections.

"Fixed lines are dying out. There is lots of competition from the mobile segment as rates have come down drastically and are now even cheaper than fixed lines."

"Overall teledensity in May 2010 was 55.38 percent. However, the urban teledensity is about 111 percent and rural teledensity is about 21 percent. Individuals typically have only one connection. However, there is a growing trend to have more than one connection as individuals are opting for dual SIM phones to make better use of the extreme low pricing of operators. As an extreme example it is reported that in some towns in Himachal Pradesh the teledensity is nearly 200 percent."

TNS benchmark: India's performance in the category "Infrastructure"

India is an emerging nation, which always languishes in one of the last two rankings in terms of penetration rate due to the state of its infrastructure.

However, if one analyses India in terms of growth rates, it performs considerably better. The performance of India is measured on the basis of seven key indicators: five penetration rates and two growth rates.

In the category **ICT companies as a proportion of all companies** India achieves a share of 2.18 percent and ranks eleventh in the benchmark of the top 15 ICT nations with an index value of 45 points. In Germany, this value is 3.98 percent, which placed Germany sixth in the TNS benchmark.

In 2009, 44.8 percent of the 80,000 Indian ICT companies had less than ten employees. 53.6 percent

of the companies have between ten and 249 employees and 1.6 percent of companies have 250 employees or more. In Germany, 83.7 percent of all ICT companies have less than ten employees. 15.5 percent of all ICT companies have between ten and 249 employees and 0.8 percent have 250 employees or more. The differences in company sizes are probably largely due to the low labour costs in India.

Broadband penetration in India rose from 0.45 percent in 2008 to 0.65 percent in 2009. In Germany 30.4 percent of the population had access to a broadband connection in 2009 (previous year: 28.3 percent). India ranks last and Germany sixth in the TNS benchmark.

Computer penetration in households: In 2009, 4.4 percent of all Indian households owned a PC. In Germany this figure was 84.1 percent. India was last in the 15-nation ranking, while Germany ranked sixth, with 93 index points.

In 2009, 2.3 percent of Indian households had access to the Internet, which placed it last, with two index points. In Germany, 79.1 percent of households had access to the Internet, which placed the German ICT industry in sixth position with 82 index points.

Internet host and SSL service penetration: With 0.3 Internet hosts per 100 inhabitants and 0.2 SSL servers per 100,000 inhabitants India failed to achieve a single index point and remained last in the ranking in both categories. With 29.0 hosts per 100 inhabitants and 64.1 SSL servers per 100,000 inhabitants, Germany achieved 23 and 45 index points respectively and placed ninth in both cases.

Mobile telephony penetration in India rose by 14 percentage points in 2009, to 43.8 percent and continues to rise relatively rapidly. In 2009, India had at least half a billion mobile phone connections. An Indian partner estimated that by May 2010 the number of mobile phone connections would be 617.5 million. By contrast, the number of mobile phone connections in Germany was 107.2 million. This represented a penetration rate of 127.8 percent and fifth place in the TNS benchmark. India was bottom of the ranking.

Interviews with Indian ICT experts focussed on the following performance indicators:

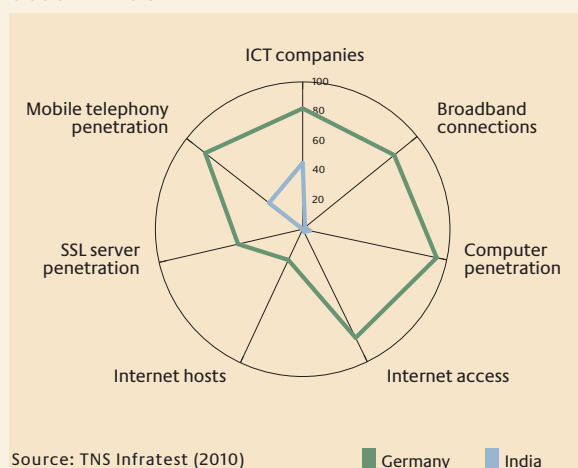
1. Broadband penetration in the population (difference: 29.8 percentage points in favour of Germany);
2. Computer penetration in households (difference: 79.7 percentage points in favour of Germany) and Internet access in households (difference: 76.8 percentage points in favour of Germany);
3. Internet hosts (difference: 28.7 percentage points) and SSL server penetration (difference: 63.9 percentage points in favour of Germany);
4. Mobile telephony penetration in the population (difference: 84 percentage points in favour of Germany).

Comments on the selected key indicators in the category "Infrastructure"

1. Broadband penetration in the population

The broadband penetration rate rose from 0.45 percent to 0.65 percent which, according to ITU, is the equivalent of 7.7 million connections. According to Indian experts, the number of broadband connections has now risen to 9.2 million connections. There is no broadband provision in rural areas. The ten largest Indian cities have limited access to broadband networks, some of which offer speeds as low as 256 kbps. The current broadband standard is DSL. In its 2004 broadband strategy, the Indian Government planned to provide twenty million connections by 2010. It will therefore have only achieved half this number by the end of this year.

Fig. 6.2c: "Infrastructure" in India compared with Germany, 2009
Noteworthy ICT infrastructure in ICT companies as a proportion of all companies and in Mobile telephony penetration in India



In the years ahead, a higher broadband penetration is to be achieved over a nationwide 3G and BWA/WiMax network. The plan is to increase the number of broadband connections to 48 million by 2011.

“Unlike in the US and Europe, where people first used broadband via fixed lines, in India the Internet revolution will take place through mobile services as people have Internet ready phones in rural areas. The arrival of 3G is expected to boost broadband usage.”

“Broadband access is available in the metro areas, so there are no problems for the companies. In large cities most people have broadband access (also private households), only in other areas broadband is not readily available.”

2. Computer penetration and Internet access in households

In India, network coverage, broadband reception and online offerings fluctuate hugely in quality. Overall, PC ownership in households and regular Internet use requires a much improved infrastructure.

The Indian Government is aiming to achieve the nationwide provision of PCs and Internet connections and use of e-Government services, even in remote and rural areas.

“The government plans to connect all rural areas to the Internet and provide computers and Internet access in all rural areas, so that government services can be offered and all citizens can register through the Internet. They are setting up Community Internet Centres with the aim that 300,000 to 400,000 (of all more than 600,000 rural villages in India) will have Internet access. Currently, this has been implemented to 10,000 to 20,000 villages only.”

“There are no uniform PC subsidies by the government, but there are programmes that support schools and government institutions when purchasing PCs.”

3. Internet hosts and SSL service penetration

5.1 percent of all Indians are “onliners”. The demand for Internet hosts and SSL servers is therefore comparatively small.

On the other hand, the infrastructure of India’s big cities with their globally active companies must not be underestimated. With 675 ISO-27000 certifications per one million companies, the quota in India is almost three times that of Germany, which only achieves 239 certifications per one million companies. In India, certification is seen as evidence of competitiveness on international markets.

“As Indian IT-companies provide services to the rest of the world, any type of international certification is a tool to gain trust and to acquire clients. Often customers ask for the certification.”

“Indian companies are extremely aware that information security is one of the most critical aspects of doing business. Certifications help build trust.”

4. Mobile telephony penetration

The mobile phone infrastructure and mobile telephony penetration are deciding success factors for the Indian ICT industry because the fixed line infrastructure is virtually non-existent.

The Indian mobile phone industry is currently experiencing a boom: in contrast to former years, incoming calls are now free. Prepaid numbers are valid indefinitely. Billing of phone calls is second-based.

In the opinion of the Indian ICT experts, the mobile telephony penetration of 44 percent was very plausible. In cities, such as Mumbai and Delhi, mobile telephony penetration is probably one hundred percent. While a quarter of the city population could have two mobile phone connections, nationwide this figure may be only two to three percent.

Smart phones are common among wealthy city dwellers. However, their use in the business sector is negligible. The most common smart phone is the “Blackberry”.

“Most of business is done over mobile phones as they are available everywhere – everyone has a cell phone. Even many people in villages without electricity have mobiles and recharge those using dynamos.”

“The spread of mobile phones is bringing ‘real freedom’ to India. People in rural areas get the chance to be a much more integrated part of society.”



Sreekanth S. Rameshaiah,
Executive Director,
Mahiti Infotech Pvt. Ltd.

"The level of IT education in India is very high and it offers perfect opportunities. The good education results in a large amount of professional graduates, post-graduates and PhD holders who add to the market innovation dynamics and flexibility. For example, in Bangalore more than 115 colleges exist. This is probably more than in any Western European city."

"Not many have more than one mobile phone. In the upmarket segment, there are few persons who own more than one mobile phone, but in rural or semi-urban areas, there is a large market of first-time cell phone buyers. In urban regions, there is a market of second cell phone buyers."

"Only a small share of the population uses smart phones, only rich people. There are not as many services for smart phones compared to the West (e. g. location based services)."

TNS benchmark: India's performance in the category "Applications"

India's performance in the category "Applications" is measured on the basis of eight key indicators. According to these indicators, and as is to be expected, India is generally in the bottom third of the 15 ICT nations.

Internet use in the population: 5.1 percent of all Indians and 79.3 percent of all Germans use the Internet. With an index value of six points, India languishes at the bottom of the ranking in fifteenth place, while Germany achieves eighth place.

Mobile Internet use: According to surveys conducted by PwC, 3.7 percent of the population makes mobile use of the Internet. This is four times more than in the previous year. In Germany, 21.3 percent of the population use the mobile Internet, which represents a gain of almost four percentage points over the previous year. India ranks fifteenth with four index points, while Germany is in third place.

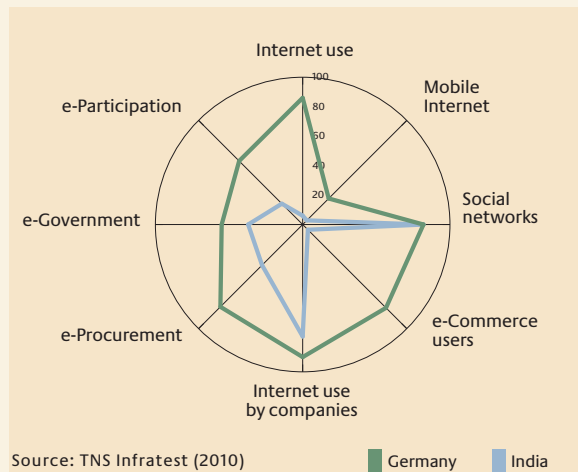
In the category **Use of social networks**, India achieved a participation quota of 80.1 percent of all Internet users. In Germany, this quota is 79.6 percent; this places the two countries in joint eighth position in the TNS benchmark. However, it must be noted that this indicator reflects "onliners" as a whole, and is not based on population or households.

In the category **e-Commerce users in the population**, India achieves 3.3 percent, compared to three percent over the previous year. 56 percent of the German population uses E-Commerce, This represents a growth of three percentage points. With five index points, India is four index points behind China and in last place. Germany was in eighth place.

Within the framework of an annual survey, the World Economic Forum (WEF) determines **Internet use in companies** via electronic networks in the areas of "e-Procurement", "Sale of products and services" and "Communication / data exchange within companies and between business partners (B2B)". With an index value of 4.89 points, India ranks twelfth in the 15-nation ranking, a position it already held in 2008 with 4.58 points. Germany achieved 5.79 points, which was a drop of 0.12 points and saw Germany fall from fifth to tenth place.

Fig. 6.2d: "Applications" in India compared with Germany, 2009

80 percent of German and Indian Internet users use social networks



"In India fixed telephone lines are dying out. There is a lot of competition from the mobile segment as rates have come down drastically. Most of business is done over mobile phones as everyone has got one. Even people in villages without electricity have mobiles and recharge those using dynamos. Mobile phones are much more important than fixed line broadband."

Zainul Abedin Abbasi,
CEO,
Zaintechs Consultants



21 percent of Indian companies made **Purchases via the Internet** in 2009, compared to twenty percent in the previous year. 43 percent of German companies made purchases via the Internet in 2009, compared to 53 percent in 2008. India ranked joint eleventh with France in the 15-nation ranking and Germany fell from second to fourth place. However, the absolute figures were not directly comparable to the previous year due to methodological corrections by data supplier Eurostat.

The United Nations regularly investigates the **Quality of e-Government services**. This involves checking government web sites for the availability of services, the degree of expansion, from the simple provision of information through to the complete processing of administration processes, and the assessment of user friendliness and accessibility. With 0.37 index points, the Indian ICT industry lags behind Germany with 0.55 index points. India ranked thirteenth and Germany tenth in the TNS benchmark.

In 2010, the United Nations' investigation of the **Maturity of e-Participation** in its member countries looked at the categories e-Information, e-Consultation and e-Participation in decision-making. In 2009, India achieved twenty points and Germany achieved 61 points. This placed India in last place, only marginally behind Italy with 21 index points. Germany was in seventh place.

Interviews with experts focussed on the following categories:

1. Mobile Internet use in the population (difference: 0.9 percentage points in favour of Germany);

2. Use of social networks (difference: 0.5 percentage points in favour of India);

3. e-Commerce users in the population (difference: 52.7 percentage points in favour of Germany) and

4. Quality of e-Government services (difference: 0.18 percentage points in favour of Germany).

Komments on the selected key indicators in the category "Applications"

1. Mobile Internet use

Internet users as a proportion of the population rose by 0.7 percentage points in 2009, to 5.1 percent. Mobile Internet use quadrupled over the previous year, rising from just under one percent to 3.7 percent in 2009.

"Mobile usage is a huge trend. E-Commerce, e-mobile applications and smart phones will grow strongly within the next three years."

"Infrastructure is being expanded; the government is giving out 3G and BWA licenses. Connectivity will increase as more and more people use mobile devices rather than fixed lines. Wireless will be the technology of the future."

2. Use of social networks

At 80.1 percent, the use of social networks among Indian Internet users is slightly higher than that of German Internet users at 79.6 percent. Social networks are estimated to have great potential for



VS Mani,
General Manager Marketing,
Siemens

"India's capability originates in its large talent pool that is fluent in English, a proactive government and its entrepreneurship. If India is able to improve the infrastructure and invest in workforce development as planned it will be able to attract additional foreign direct investments and maintain its competitive advantage."

growth in India, both in private and commercial sectors. "Bollywood" promotes many of its films via social media. One social network that is particularly popular in India and Brazil is "Orkut", which is operated by Google.

"There is a terrific potential for growth, already almost all young people are on Orkut and/or Facebook. Professionals use LinkedIn. More and more people are adopting."

"Social network usage is gaining importance in the tech sector as a means to identify talent and increase brand awareness. Many Indian professionals use social networks as a tool to enhance their business opportunities."

3. e-Commerce users in the population

The proportion of e-Commerce users in the population rose by 0.3 percentage points, to 3.3 percent. However, the range of e-Commerce offerings is very limited and the quality is often poor. The products most frequently sold via the Internet are train and plane tickets.

"E-Commerce is not very popular; it is becoming more popular in the cities and among the age group from 20 to 30. Most people rarely buy online; they adopt new things slowly and are afraid of poor customer support. In addition, spending cash is more popular than using credit cards."

"One socioeconomic issue for the hesitance towards online shopping is the fact, that Indians are looking for a shopping experience, they want to look at the products, feel the quality etc."

4. Quality of e-Government services

The quality of e-Government services fell in India by eleven points, to 37 index points, and in Germany by three points, to 55 index points. The Indian Government is planning new e-Government services, such as tax office transactions and payments to public utilities (gas, water, electricity). These services are likely to be of most value in the big cities.

"E-Government services are available mainly in big cities (penetration is 100 percent). In semi-urban areas the penetration is approximately 20 percent and it is very low in rural areas. Government is trying to make these services available also in semi-urban and rural areas."

"The government is setting up Internet kiosks around the country as part of the e-Government initiative. Thus e-Government services are expanded to the countryside. Popular e-Government services include applications for passports, tax number registration, service tax registration and company registration."

Summary: Profile of India's strengths and weaknesses – future areas of growth

Strengths. India is one of the main countries used by European countries and the USA for offshoring. This particularly applies to the information and communication technology sector. The experts are of the opinion that India's success in this area is due to the availability of highly skilled ICT workers that speak English. These workers generally have a university degree. Products and processes in India meet global standards.

“The telecommunication revolution in India is taking place via mobiles rather than land lines. The spread of mobile phones is bringing ‘real freedom’ to India, as people in rural areas get the chance to be a much more integrated part of society. Before, every family in the big cities and semi-urban areas used to have one landline, now a family owns more than one mobile phone.”

Debasis Chatterji,
CEO,
Netxcell Ltd.



Company start-ups in India are possible with very little capital and tend to be very unbureaucratic. There is a great entrepreneurial spirit in parts of India. The Indian Government is promoting the set-up of software technology parks (STPI) with sophisticated telecommunications infrastructures and tax incentives for export businesses.

Weaknesses. As weaknesses of the Indian ICT industry, the ICT experts cited the lack of practical relevance in the university education, an ICT industry that paid too much attention to service and too little to research and the conversion of innovations into marketable products, the emigration of skilled workers (“brain drain”) and the lack of infrastructure, in the ICT sector in particular and generally, such as roads and other transport routes.

Risks. As risks for the country as a whole, they cited the rural exodus, the rising cost of living in the cities and the growing economic chasm between urban and rural regions. Unreliable energy supplies frequently cause power failures. Political risk factors are unstable governments, corruption and the risk of ter-

rorist attacks. However, the experts saw the greatest threat in the economic and political strengthening of China and the growing pressure of competition on international markets with China as competitor.

Opportunities and areas of growth. The experts were of the opinion that the most important areas of growth in the ICT sector were e-Commerce, mobile applications, microfinance payment gateways, cloud computing, smart grids, green IT and the expansion of e-Government services. India has great growth potential on both the domestic market and global markets.

What the experts have to say about the German ICT industry

In 2009, India’s direct investments abroad totalled 50 billion euro. The Tata Group (annual turnover: 50 billion euro) bought the steel group “Corus” for 9.4 billion euro and the automotive companies Jaguar and Rover for a total of 1.5 billion euro. In continental Europe in 2009 and 2010, Indians bought the fashion company Escada, the private bank Merck Finck and

Fig. 6.2e: Strengths / weaknesses profile of India

Key strengths	Key threats
<ul style="list-style-type: none"> ▶ Offshore destination with high cost efficiency and high quality standards ▶ High level of university education and skilled workers with outstanding qualifications ▶ Strong entrepreneurial spirit and liberal economic system 	<ul style="list-style-type: none"> ▶ Domestic security / terrorism / corruption ▶ Unreliable energy supply ▶ Increasing pressure of competition from China
Key weaknesses	Key opportunities
<ul style="list-style-type: none"> ▶ Emigration of skilled workers (“brain drain”) ▶ ICT industry is too service-oriented, insufficient emphasis on research and innovation ▶ Poor infrastructure 	<ul style="list-style-type: none"> ▶ Continuous economic growth ▶ Growing domestic demand ▶ Technological areas of growth for knowledge-based products

Source: TNS Infratest (2010)



Ameet Nivsarkaar,
Vice President,
NASSCOM

"The Indian economy is growing very fast and more people are becoming part of the consumption class. The consuming potential is very high and India will be one of the largest markets in the world in the future. Due to the high population, the per capita indicators may be misleading. You only need to look at the penetration rates and – in total numbers – you are able to understand the real size of the Indian market."

the textile dye manufacturer Dystar, also for a total of 1.5 billion euro.

"Germany is known for innovation, capabilities in manufacturing and possibilities for partnerships."

The Indian IT service provider Infosys, which has 114,000 employees and produces almost exclusively for export, is planning to expand its branches in Western locations and create hundreds of jobs in Germany.

Germany enjoys an outstanding image among Indian ICT experts. The country stands for high production quality, dynamic engineering and innovation, as well as precision and reliability. The German automotive and mechanical engineering industries are globally acclaimed best practice models and SAP is renowned in the ICT sector.

"The German ICT industry has a very high reputation in India. Germany is known for its precision, reliability and methodological approach when solving problems."

Nonetheless, the majority of those consulted said that they would choose other countries over Germany as the location for a company start-up. The USA and the United Kingdom are better known and more popular in India, due to the English language and India's affinity with the Anglo-Saxon culture. The innovative strength and lack of market-entry barriers of the USA was praised. Switzerland was also viewed positively as a result of its tax incentives and more flexible regulations in business and commercial law.

"Compared to Germany, Switzerland is a European country that offers more tax holidays and more flexibility."

This could all change if German companies became more involved in India and entered into partnerships with Indian companies.

"Most people talk about the US. Germany is not very prominent, so for Germany there is a tremendous scope to expand their basis in India."

6.3

Country profiles of all 15 benchmark countries



6.3.1 Country Profile China



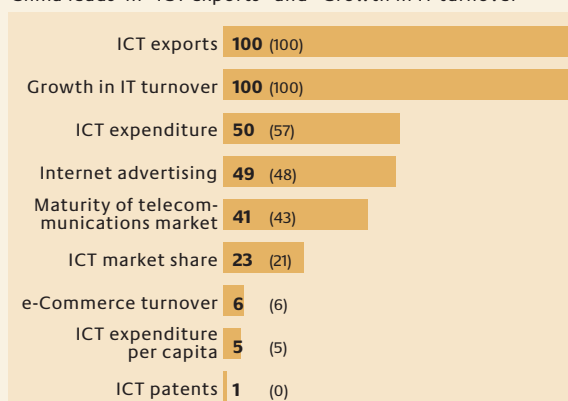
With 39 index points in the overall benchmark, as in the previous year China was only able to reach fourteenth place. This meant that the country was once again unable to improve its average performance.

However, China was the market leader in three key performance indicators: “ICT exports as a proportion of all exports”, “Growth in IT turnover” and “Use of social networks”.

Market relevance – 5th place ↑

China’s performance in the category “Market relevance” deteriorated by two index points compared to the previous year, reaching 42 points. However China improved its ranking by one place. China owed this strong position primarily to its global market leadership in the key indicators “ICT exports” and “Growth in IT turnover”. There were also improvements in “Internet advertising”, where the country gained one index point, and in the “ICT market share”, which showed an improvement of two index points. Only in “Maturity of the telecommunications market” and “ICT expenditure” was China’s index value lower in 2009 than in 2008.

Fig. 6.3.1a: Importance of the Chinese ICT market, 2009
China leads in “ICT exports” and “Growth in IT turnover”

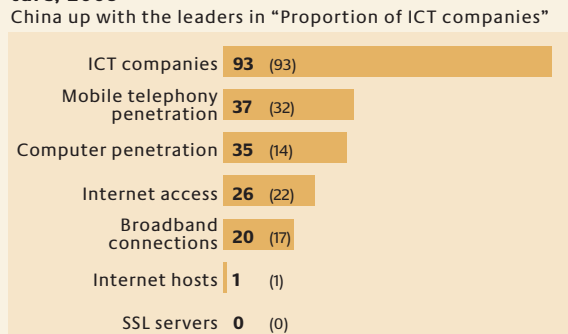


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 14th place →

With 36 index points in the category “Infrastructure” in 2009, China was unable to improve its position compared to the previous year. Even though the country is well ahead in the ranking in “ICT companies as a proportion of all companies”, its ICT infrastructure penetration rates are only growing slowly. China’s overall performance in all key indicators was well below average. In “Computer penetration in households”, however, between 2008 and 2009 China managed a significant jump of 19 index points to 35 percent compared with the global leader, the Netherlands.

Fig. 6.3.1b: State of development of China's infrastructure, 2009
China up with the leaders in “Proportion of ICT companies”

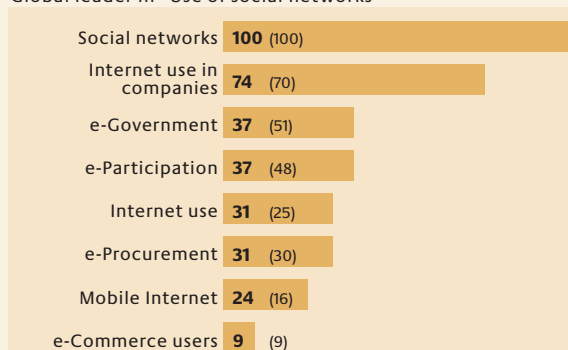


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 14th place →

In the category “Applications”, China’s average performance improved by three to 37 index points. Even though it achieved global leadership in “Use of social networks”, the country was unable to improve its position compared to the previous year. This left China in second to last place in the benchmark study. In “e-Commerce” and the “Mobile Internet” in particular, China has considerable catching up to do.

Fig. 6.3.1c: Maturity of China's applications, 2009
Global leader in “Use of social networks”



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.2 Country Profile Denmark



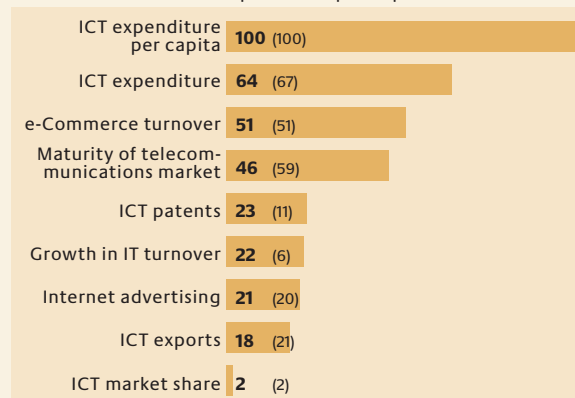
Denmark's performance in virtually all key indicators was good to above average, allowing it to take fourth place in the ranking of 15 ICT nations, with 62 index points.

Its market leadership in the indicators "ICT expenditure per capita" and "Broadband connections in the population" in particular made a positive contribution to Denmark's placing. The country chalked up considerable losses in "e-Government quality" and "e-Participation".

Market relevance – 11th place ↑

With a national average of 35 index points in the category "Market relevance", Denmark only made it to eleventh place in the TNS benchmark. In 2009 Denmark once again set the global benchmark for the indicator "ICT expenditure per capita". Denmark's performance in "Growth in IT turnover" improved significantly, from six to 22 index points. The country had to accept a poorer placing than in the previous year in "Maturity of the telecommunications market", where the index value fell from 59 to only 46 overall. The "Share of ICT expenditure" also decreased by three index points.

Fig. 6.3.2a: Importance of the Danish ICT market, 2009
Denmark leads in "ICT expenditure per capita"

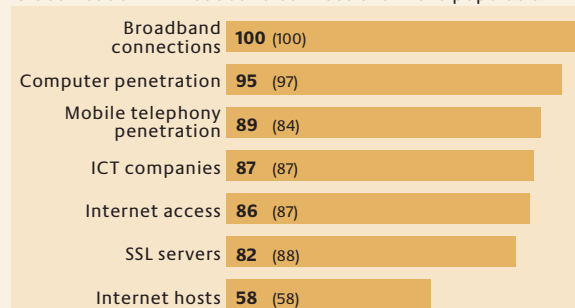


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 1st place →

In the category "Infrastructure", Denmark achieved 90 index points in the national mean index, the best performance of all 15 ICT nations. In "Broadband connections in the population" the country was once again at the top of the ranking. Its index position in "Computer penetration in households" fell slightly, by two index points, while the country chalked up considerable progress in "Mobile phone penetration", from 84 to 89 index points.

Fig. 6.3.2b: State of development of Denmark's infrastructure, 2009
Global leader in "Broadband connections in the population"

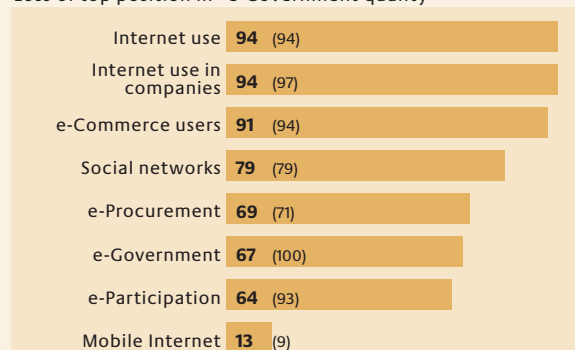


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 6th place ↓

In "Applications", Denmark remained in the middle of the ranking of countries, but lost ground in 2009, with 60 index points compared to 61 the previous year, and dropped to sixth place. This drop was primarily caused by its loss of global leadership in the key indicator "Quality of e-Government Services". While Denmark's performance in 2008 was still rated at an index value of 100, in 2009 the country only achieved 67 index points. Denmark's performance in "Maturity of e-Participation" also fell considerably, from 93 to 64 points.

Fig. 6.3.2c: Maturity of Denmark's applications, 2009
Loss of top position in "e-Government quality"



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.3 Country Profile Finland



In the comparison of the global competitiveness of the 15 ICT nations, Finland was ranked ninth. The country therefore came out as average in the benchmark study, with an index value of 54 points.

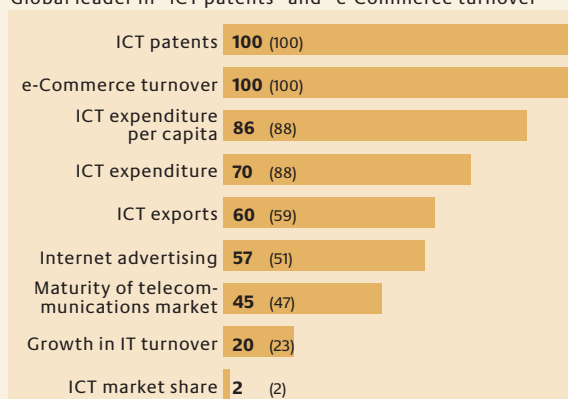
The Finnish ICT industry was in the lead in two key performance indicators: “ICT patent applications” and “e-Commerce turnover”.

Market relevance – 5th place →

With an average index value of 42 points, in 2009 Finland remained in fifth place in the category “Market relevance”. As in the previous year, the country showed considerable strength in the international comparison, not least because of its global leadership in “ICT patent applications” and “e-Commerce turnover”. Finland’s performance remained poor in “Growth in IT turnover” with 20 index points, and “Market share of ICT turnover in the global market” with only two index points. The biggest drop occurred in “Share of ICT expenditure” where Finland dropped by 18 index points.

Fig. 6.3.3a: Importance of the Finnish ICT market, 2009

Global leader in “ICT patents” and “e-Commerce turnover”



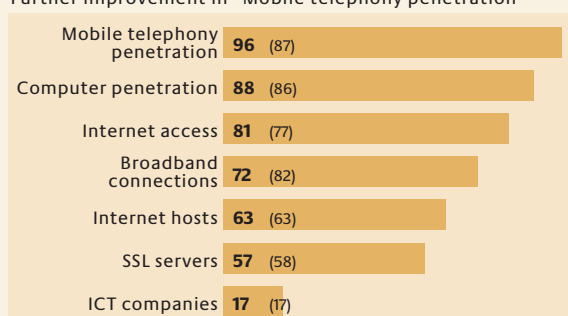
Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 10th place →

With an average index value of 66, while Finland’s performance was slightly above average, it was not sufficient to gain it a higher ranking. Finland showed particularly strong performance in “Mobile telephony penetration”, with 96 index points, and in “Computer penetration in households”, with 88 index points. However, one significant weakness in Finland’s infrastructure is still the indicator “ICT companies as a proportion of all companies”, in which the country achieved an index value of only 17 points.

Fig. 6.3.3b: State of development of Finland's infrastructure, 2009

Further improvement in “Mobile telephony penetration”



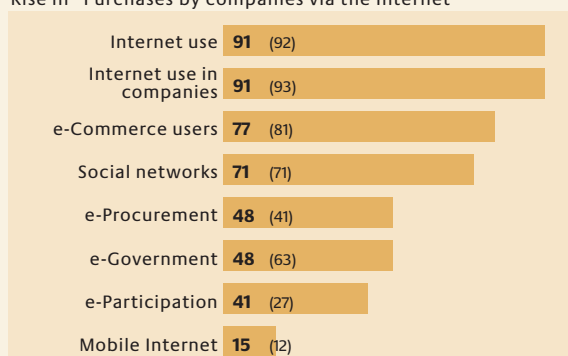
Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 10th place →

Finland was also unable to improve its ranking in the category “Applications” in 2009. With an index value of 53, the country remained tenth in the ranking. In both “Internet use in the population” and “Internet use in companies”, Finland has almost reached saturation point, and is only nine index points behind the world’s top nations in each indicator. Finland had to accept considerable losses in the international ranking in “Quality of e-Government Services”, where its index plummeted 15 points to a value of 48 points.

Fig. 6.3.3c: Maturity of Finland's applications, 2009

Rise in “Purchases by companies via the Internet”



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.4 Country Profile France



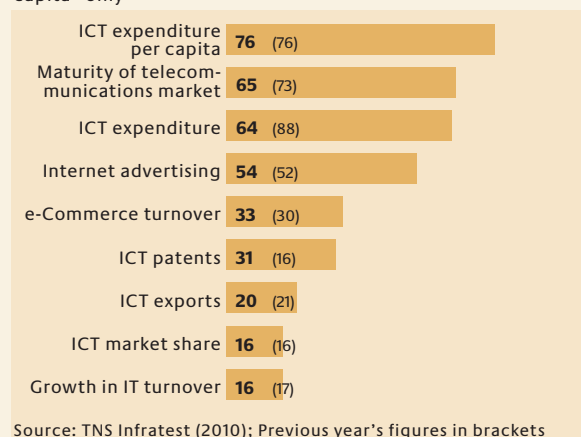
With 49 index points in the international comparison, France's global competitiveness remains poorer than that of the other Western European countries.

France was only ranked eleventh overall in the ranking of 15 ICT nations, and failed to become global leader in any of the performance indicators.

Market relevance – 8th place →

With an average index value of 39 points in the category “Market relevance”, France is again eighth in the ranking of countries. Compared with the other countries, France's performance remained stable, but it was unable to achieve an index value better than average in any of the key indicators investigated. France performed relatively well in the indicator “ICT expenditure per capita”, where its index value of 76 points placed it in the upper middle of the range.

Fig. 6.3.4a: Importance of the French ICT market, 2009
Relatively strong performance in “ICT expenditure per capita” only

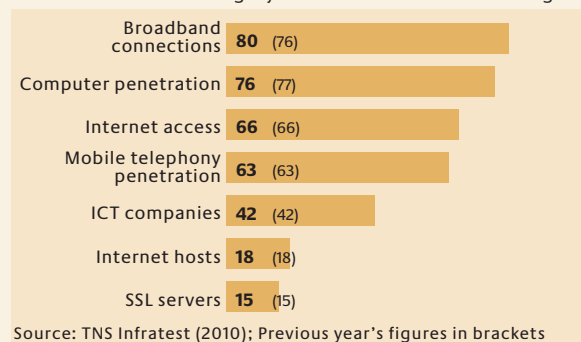


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 11th place →

58 index points in the international comparison meant that, as in the previous year, France was ranked eleventh in the category “Infrastructure”. This means that only Italy, Spain, China and India performed worse than France. However, France's infrastructure still shows considerable stability. The only decline was in the indicator “Computer penetration in households”, which fell by one index point. France has made headway in “Broadband connections in the population”, and now has an index value of 80 points.

Fig. 6.3.4b: State of development of France's infrastructure, 2009
Performance in the category “Infrastructure” below average

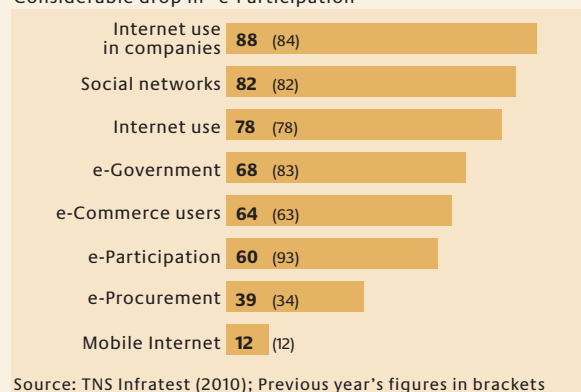


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 11th place →


In the category “Applications” the performance of France's ICT industry was below average, with an index value of 50. In some parts of the user's area the country still has a long way to go to catch up with the world's top nations. However, its relatively poor performance was primarily caused by two key indicators: in “Quality of e-Government Services” the country fell by 15 index points to a value of 68. In “Maturity of e-Participation”, compared with the previous year there even was a drop of 33 index points, to a value of only 60 points.

Fig. 6.3.4c: Maturity of France's applications, 2009
Considerable drop in “e-Participation”



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.5 Country Profile Germany

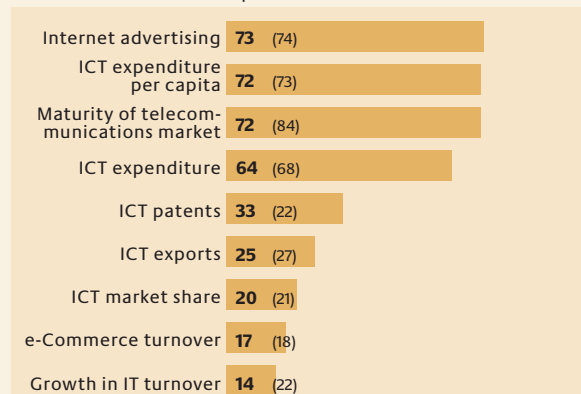
 With 59 index points, in 2009 Germany once again took seventh place in the overall ranking of the 15 ICT nations. It is therefore again placed with the Netherlands again in the middle of the range.

Germany was unable to take the lead in any of the key indicators investigated. With a considerable improvement by 45 points in “Maturity of e-Participation” to 61 index points, Germany showed its strength internationally.

Market relevance – 7th place ↓

With 41 index points in the category “Market relevance” – two index points less than in the previous year – Germany took seventh place in the ranking of ICT nations. In “Maturity of the telecommunications market” in particular, Germany’s performance fell by comparison with 2008 to an index value of 72. Performance remained static overall in the key indicators examined. However, in “ICT patent applications” Germany performed well, with a growth of eleven index points to a total of 33 points.

Fig. 6.3.5a: Importance of the German ICT market, 2009
Decline in market development

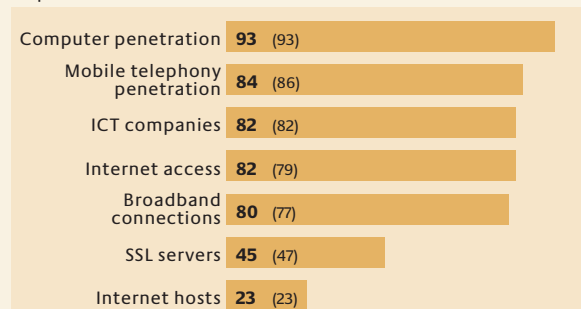


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 6th place →

With an average index value of 76, in 2009 Germany was able to hold its own ahead of the United Kingdom and the USA at sixth place in the category “Infrastructure”. The German industry’s above-average performance in all infrastructure key indicators, and especially in “Computer penetration in households”, “Mobile telephony penetration”, “ICT companies as a proportion of all companies” and “Internet access in households”, contributed to the country’s good results.

Fig. 6.3.5b: State of development of Germany's infrastructure, 2009
Improvements in “Internet access” and “Broadband connections”

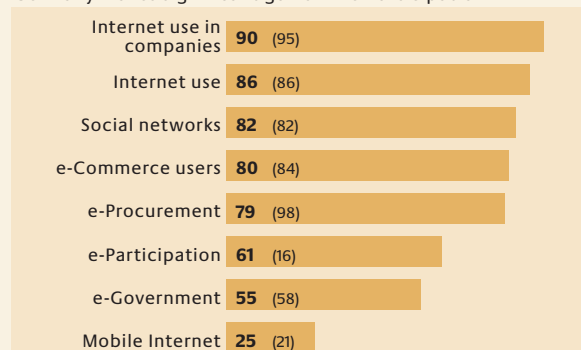


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 4th place ↑

With a total of 61 index points in the category “Applications”, this year Germany was able to move up in the ranking of countries, sharing fourth place with Norway for the first time. The reasons for this fine performance include relatively stable index values, in “Internet use in the population” and “Use of social networks”, but, at the same time Germany’s performance in the key indicator “Maturity of e-Participation” was outstanding. In 2008 it had only been able to achieve 16 index points, but in 2009 maturity rose by 45 index points to an index value of 61.

Fig. 6.3.5c: Maturity of Germany's applications, 2009
Germany makes significant gains in “e-Participation”



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.6 Country Profile India



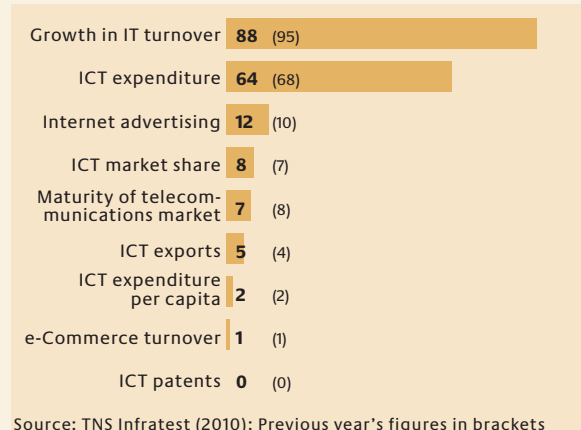
This year India's ICT industry was once again ranked last in the comparison of the 15 ICT nations.

With 25 index points in global competitiveness, the country was able to gain one point compared to the previous year, but failed to close the gap on the other countries.

Market relevance – 11th place →

India's national average in the category "Market relevance" was 35 index points. Slight decline in the performance of the Indian market compared to the previous year had no influence on its ranking, at eleventh place. Even though India had dropped back to 88 index points in "Growth in IT turnover", it remained among the leading nations in this key indicator. In "ICT expenditure as a proportion of GDP", India declined by four points in its performance to 64 index points.

Fig. 6.3.6a: Importance of the Indian ICT market, 2009
India weakens in "Growth in IT turnover"

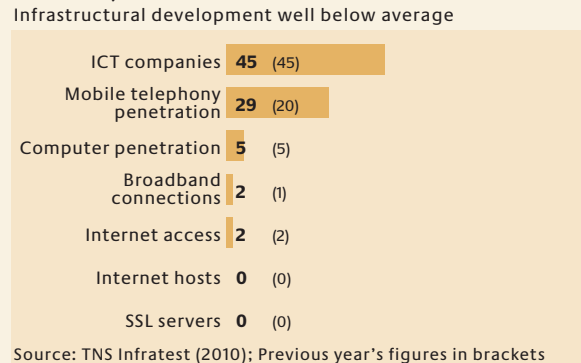


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 15th place →

In terms of infrastructure, India has failed to keep pace with the other countries studied for the time being. The gap between India's 16 index points and the leading nation, Denmark, with 90 points is enormous. However, the category "Infrastructure" remained overall stable in 2009. In "Mobile telephony penetration", India managed an increase of nine points to an index value of 29 points.

Fig. 6.3.6b: State of development of India's infrastructure, 2009
Infrastructural development well below average

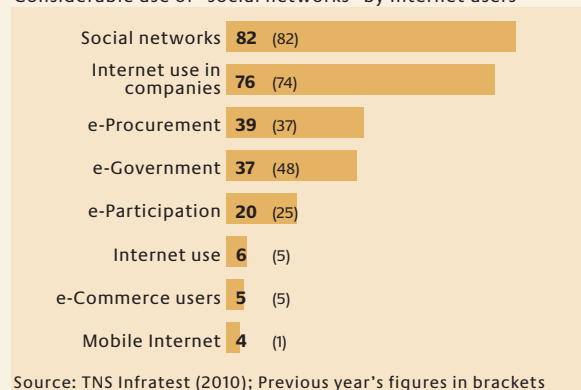


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 15th place →

In the category "Applications", India once again came last in the ranking, with 23 index points. However, relatively strong performances can be seen in this category. In particular there was considerable "Use of social networks" by Internet users in India, resulting in an index value of 82 points. The indicators "Internet use in companies" and "Purchases by companies via the Internet" were also on the rise. The below-average "Internet use in the population" was reflected in an index value of six points.

Fig. 6.3.6c: Maturity of India's applications, 2009
Considerable use of "social networks" by Internet users



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.7 Country Profile Italy



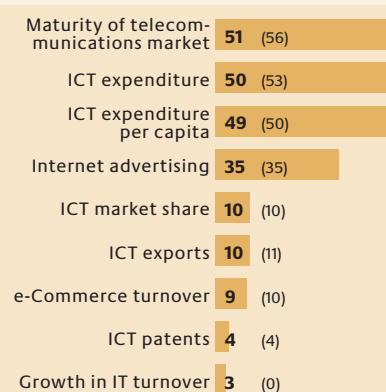
Despite stagnation with 42 Index points, Italy was able to defend its thirteenth place in the global benchmark.

However, compared to the global market leader Italy clearly still has some catching up to do. The country was still in the lead in the key performance indicator “Mobile telephony penetration”.

Market relevance – 14th place →

In the category “Market relevance”, Italy lost one index point, and with 27 points it is currently in fourteenth place in the ranking of countries and well below the 41 index point average of all 15 countries. Only in “Growth in IT turnover” was the country able to improve its performance in the index in 2009, albeit only from zero to three points.

Fig. 6.3.7a: Importance of the Italian ICT market, 2009
Mostly below average in the category “Market relevance”

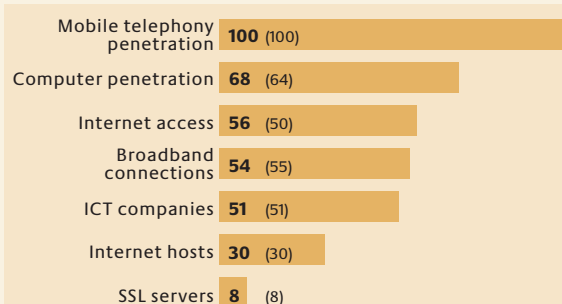


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 11th place →

In the category “Infrastructure”, Italy was once again able to move up by one index point, to 58 index points. However, it was still well below the average of 65 index points. In “Computer penetration in households” with 68 points and “Internet access in households” with 56 points, there was a considerable improvement this year compared to 2008. In “Mobile telephony penetration” Italy was still the front-runner, and was defending its global market leadership.

Fig. 6.3.7b: State of development of Italy's infrastructure, 2009
Italy remains global leader in “Mobile telephony penetration”

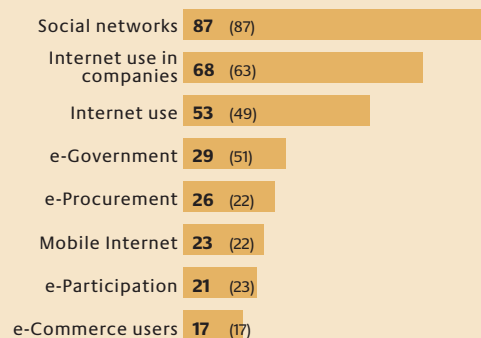


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 13th place →

With 38 index points in “Applications”, Italy remained well behind in the ranking. Even though “Internet use in companies” rose to 68 index points and “Internet use in the population” to 53, Italy's performance was only sufficient for thirteenth place. One reason for this was a significant 22-point drop in “Quality of e-Government Services” to an index value of 29 points.

Fig. 6.3.7c: Maturity of Italy's applications, 2009
Marked drop in “Quality of e-Government Services”



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.8 Country Profile Japan



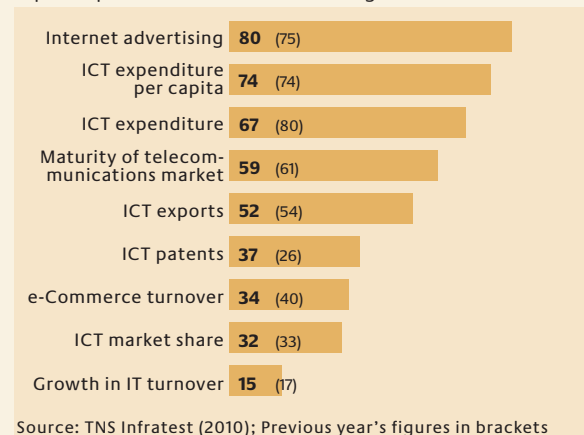
With 63 index points, Japan took third place in the ranking of 15 ICT nations.

The country was world leader in one of the key performance indicators studied: “ICT companies as a proportion of all companies”.

Market relevance – 4th place ↓

Japan’s ICT industry performed well in “Market relevance”, with 48 index points. Nevertheless it dropped from second to fourth place. Japan was able to score highly in “Internet advertising” in particular, with 80 index points. The country’s performance in “ICT patent applications” improved significantly, from 26 to 37 points. However, the performance in “ICT expenditures as part of GDP” deteriorated by 13 index points.

Fig. 6.3.8a: Importance of the Japanese ICT market, 2009
Japan improves in “Internet advertising”



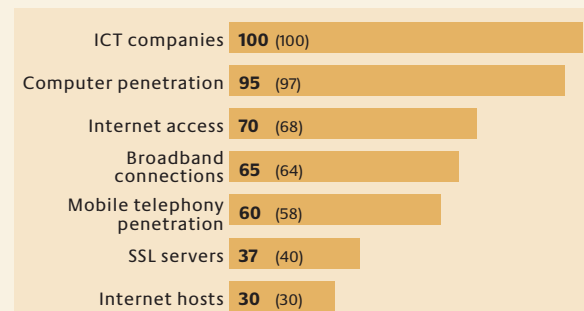
Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 9th place ↓

Where infrastructure was concerned, Japan lost ground compared to the previous year, and is now ninth in the ranking of countries with 68 points. Despite minor losses in the key indicator “Computer penetration in households” and “SSL server penetration”, Japan was able to score: In “ICT companies as a proportion of all companies” the country was ahead of all the countries studied, and as such set the benchmark.

Fig. 6.3.8b: State of development of Japan's infrastructure, 2009

Global leader in “ICT companies as a proportion of all companies”

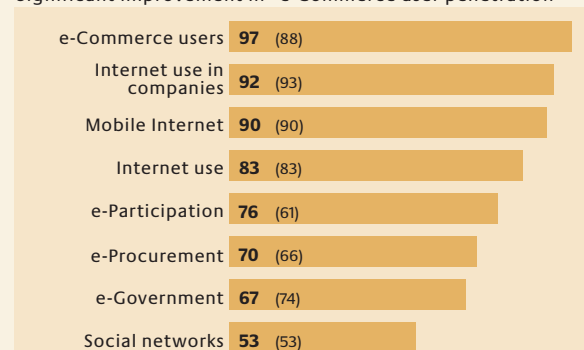


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 2nd place →


Japan performed very well in the category “Applications”. With 84 index points it was only beaten in the race to leadership in this category by South Korea. Japan scored high index values in seven of the examined key indicators. In the number of “e-Commerce users” it even managed to gain a further nine index points. Only in “Use of social networks” does the country still have some catching up to do.

Fig. 6.3.8c: Maturity of Japan's applications, 2009
Significant improvement in “e-Commerce user penetration”



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.9 Country Profile Netherlands

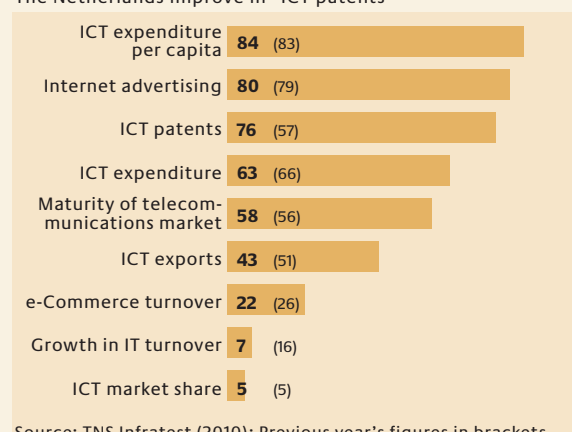
 The Netherlands shared seventh place with Germany in the overall benchmark of 15 ICT nations (59 index points).

However, the Netherlands is world leader in two key performance indicators: “Computer penetration in households” and “SSL server penetration”.

Market relevance – 10th place ↓

With only 37 index points in the category “Market relevance”, the Netherlands dropped back one place in the ranking of countries. The performance of the Netherlands had fallen, especially in “ICT exports as a proportion of all exports” with a loss of eight points to 43 index points and “Growth in IT turnover” with a drop of nine points to seven index points. On the other hand, the country had made significant gains of 19 points in “ICT patent applications”, reaching an index value of 76.

Fig. 6.3.9a: Importance of the Dutch ICT market, 2009
The Netherlands improve in “ICT patents”

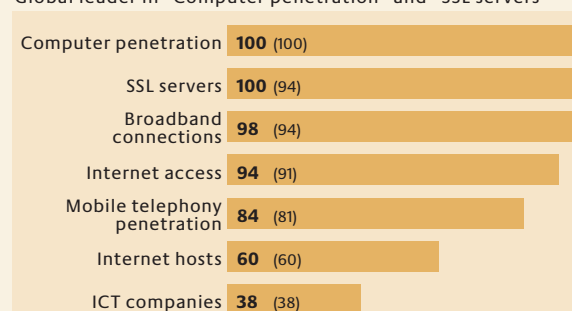


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 3rd place →

With 81 index points in the category “Infrastructure”, the Netherlands were only just behind Sweden and Denmark. The country performed well throughout. In 2009 the Netherlands became global leader in two key indicators, “Computer penetration in households” and “SSL server penetration”.

Fig. 6.3.9b: State of development of the Netherlands' infrastructure, 2009
Global leader in “Computer penetration” and “SSL servers”

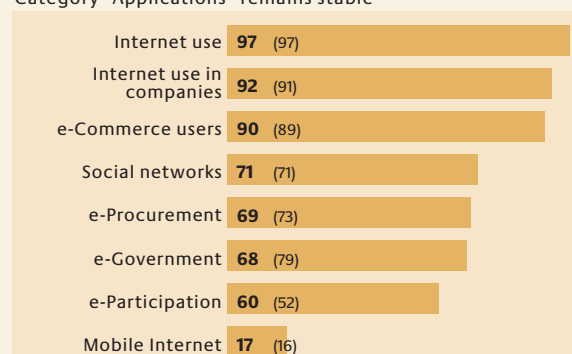


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 6th place →

With 60 index points in the category “Applications” the Netherlands held its placing in the ranking of countries compared with the previous year. The country's performance in “Maturity of e-Participation” rose to an index value of 60. In “Quality of e-Government services” the Netherlands performed considerably less well than in the previous year, with a loss of eleven points to 68 index points.

Fig. 6.3.9c: Maturity of applications in the Netherlands, 2009
Category “Applications” remains stable



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.10 Country Profile Norway



With an index value of 53 index points in 2009, Norway's overall performance remained stable in tenth place.

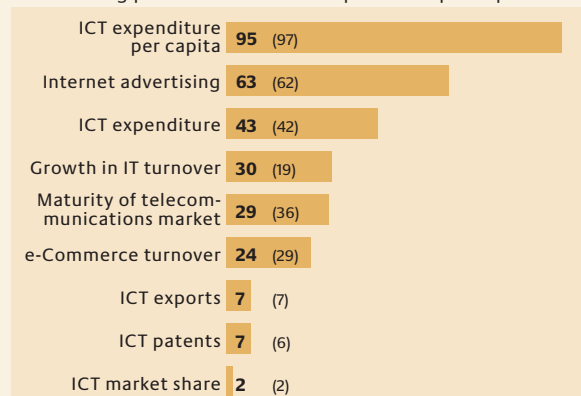
The country defended its market leadership in "Internet use" and "e-Commerce users".

Market relevance – 15th place →

With an index value of 26, Norway put in the worst performance in the comparison of ICT nations. Norway's ICT industry therefore had the lowest market relevance. Only in the key indicator "ICT expenditure per capita" did the country, with 95 index points, nearly manage to catch up with the global market leader Denmark.

Fig. 6.3.10a: Importance of the Norwegian ICT market, 2009

Outstanding performance in "ICT expenditure per capita"



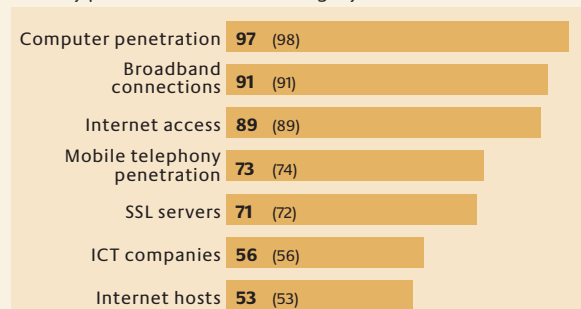
Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 5th place →

The category "Infrastructure" analysed a completely different picture. With 77 index points, Norway was among the top five of the countries in the benchmark. However, the country was unable to improve its index in any further key indicators.

Fig. 6.3.10b: State of development of Norway's infrastructure, 2009

Norway performs well in the category "Infrastructure"

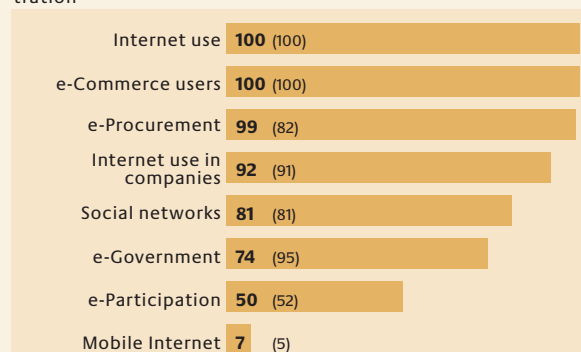


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 4th place ↑

In the category "Applications" Norway shared fourth place with Germany, achieving an index value of 61 points. Norway's performance is particularly striking in this area, with market leadership in two key indicators: "Internet use" and "e-Commerce users". On the other hand, the country had considerable catching up to do in "Mobile Internet", where it lagged 83 points behind the leading nation South Korea.

Fig. 6.3.10c: Maturity of Norway's applications, 2009
Best-in-class in "Internet use" and "e-Commerce user penetration"



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.11 Country Profile South Korea



South Korea has pushed the USA out of first into second place in the ranking of countries. With 72 index points in the overall benchmark, the country is in the lead.

South Korea is the global market leader in seven key performance indicators altogether: “ICT expenditure”, “Maturity of telecommunications market”, “Internet advertising”, “Internet access”, “Mobile Internet”, “e-Government quality” and “e-Participation”.

Market relevance – 2nd place ↑

With 53 index points in the category “Market relevance”, South Korea was able to jump to second place in the ranking of countries, sharing it with the United Kingdom. South Korea became top in three key performance indicators in the benchmark study: “ICT expenditure as a proportion of GDP”, “Maturity of the telecommunications market” and “Internet advertising turnover as a proportion of the advertising market”.

Infrastructure – 4th place ↓

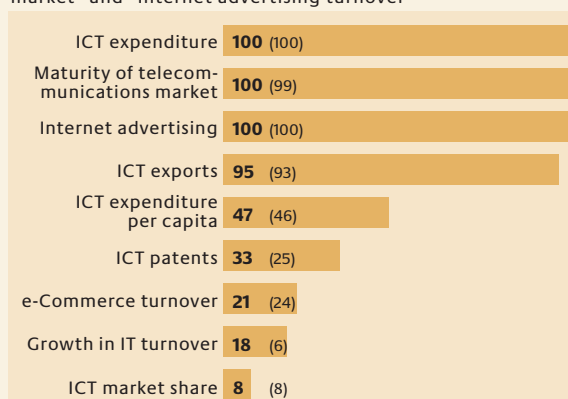
80 index points in the category “Infrastructure” took South Korea to fourth place in the ranking of countries. South Korea’s performance was very steady overall. The country has trumped in the category “Infrastructure”, with its market leadership in “Internet access in households”. Regarding “Internet host”, however, it shared the fourteenth rank together with India.

Applications – 1st place →

In the category “Applications”, South Korea remained unbeaten in first place, its index value of 94 putting it ten points ahead of Japan in second place. In none of the key performance indicators did it score less than 79 points. Altogether South Korea was able to claim leadership in three categories, “Mobile Internet use”, “Quality of e-Government services” and “Maturity of e-Participation”.

Fig. 6.3.11a: Importance of the South Korean ICT market, 2009

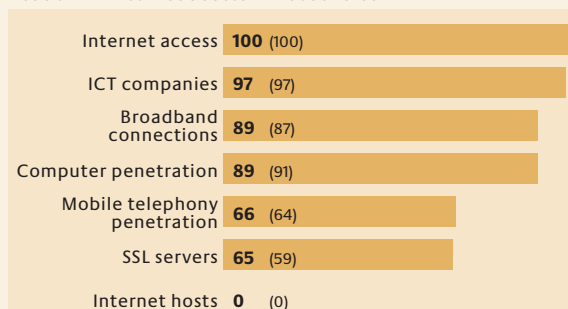
Leader in “ICT expenditure”, “Maturity of telecommunications market” and “Internet advertising turnover”



Source: TNS Infratest (2010); Previous year's figures in brackets

Fig. 6.3.11b: State of development of South Korean's infrastructure, 2009

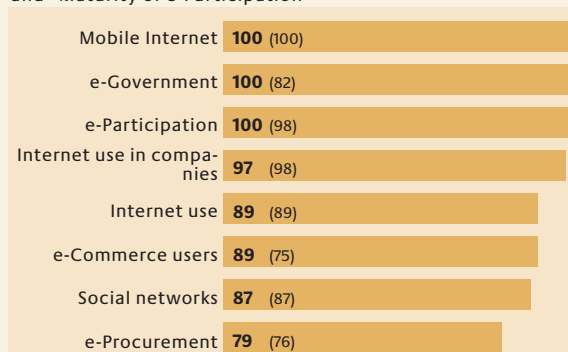
Leader in “Internet access in households”



Source: TNS Infratest (2010); Previous year's figures in brackets

Fig. 6.3.11c: Maturity of South Korea's applications, 2009

Best-in-class in “Mobile Internet”, “Quality of e-Government” and “Maturity of e-Participation”



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.12 Country Profile Spain



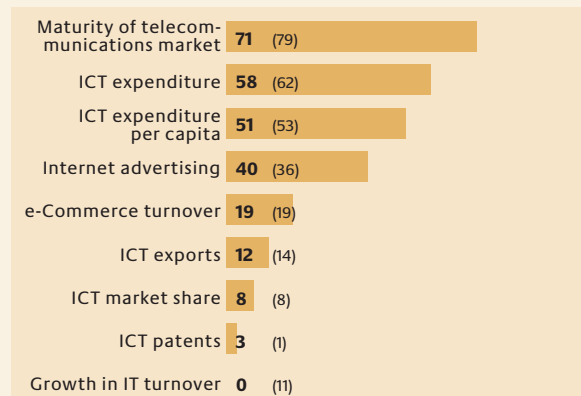
In 2009, Spain once again trailed far behind in the comparison of 15 ICT nations, only managing twelfth place with 43 points.

While the country did improve in a number of key indicators, it was unable to join the middle of the field.

Market relevance – 13th place →

Spain's performance in the category "Market relevance" fell from 33 to 30 index points. In the ranking the country keeps position 13. Spain was only able to improve its index position in the key indicators "Internet advertising", with a gain of four points, and "ICT patent applications", with a gain of two points. In five key indicators its performance had fallen.

Fig. 6.3.12a: Importance of the Spanish ICT market, 2009
Only "Maturity of the telecommunications market" good



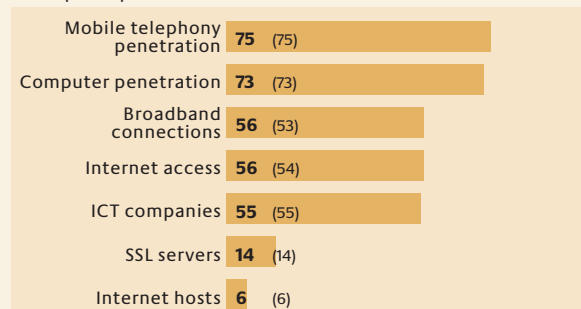
Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 13th place →

With only 54 index points in the category "Infrastructure", Spain has catching up to do, and finished considerably below the international average of 65. The country was able to improve its index positions in "Broadband connections in the population" and "Internet access in the population", with 56 points in each.

Fig. 6.3.12b: State of development of Spain's infrastructure, 2009

Strong performance in "Mobile telephony penetration" and "Computer penetration"

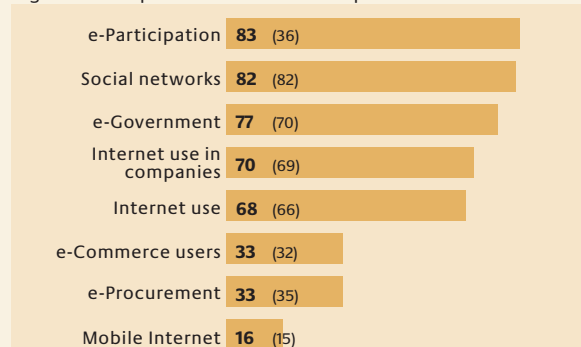


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 12th place →

With 45 index points in the category "Applications", Spain was able to remain stable in twelfth place in the international comparison. Despite its relatively poor placing, the country showed significant improvement in two categories. Spain's performance in the indicator "Quality of e-Government services" improved by seven points to a value of 77. In "Maturity of e-Participation", a marked improvement of 47 points allowed Spain to score an index value of 83 points.

Fig. 6.3.12c: Maturity of Spain's applications, 2009
Significant improvement in "e-Participation"



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.13 Country Profile Sweden



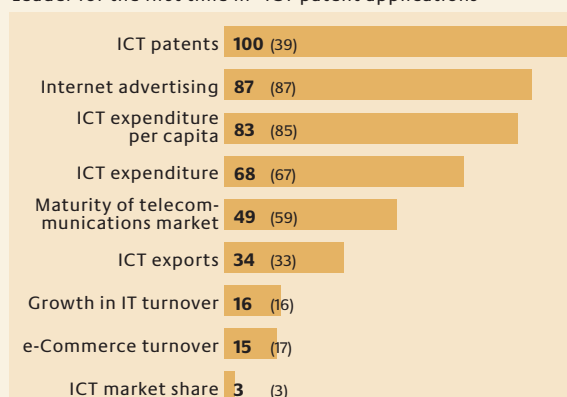
Sweden remained stable in the overall benchmark with 60 index points, but falls back on sixth place.

The country was therefore ranked in the middle of the field. For the first time Sweden was global market leader in two key performance indicators: "ICT patent applications" and "Internet use in companies".

Market relevance – 8th place ↑

With 39 index points in the category "Market relevance", Sweden was able to move up two places compared with the previous year. This improved positioning was primarily due to achieving market leadership in "ICT patent applications" for the first time. Sweden's performance in this area improved enormously, from 39 points in 2008 to 100 points in 2009.

Fig. 6.3.13a: Importance of the Swedish ICT market, 2009
Leader for the first time in "ICT patent applications"

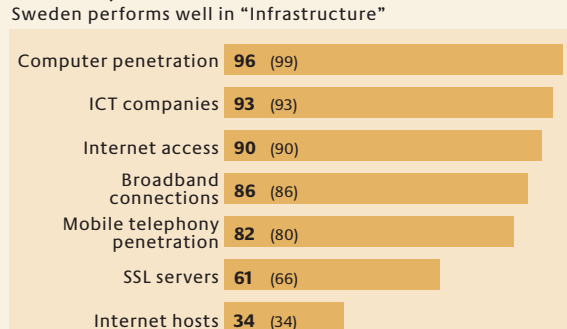


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 2nd place →

Only Denmark was able to better Sweden's performance in the category "Infrastructure". With 82 index points, Sweden thus achieved a commanding position in the ranking of countries. Indeed the country was unable to become market leader in any of the key indicators; in at least two of them, "Computer penetration in households" (96 points) and "ICT companies as a proportion of all companies" (93 points), it only just missed out on market leadership.

Fig. 6.3.13b: State of development of Sweden's infrastructure, 2009
Sweden performs well in "Infrastructure"

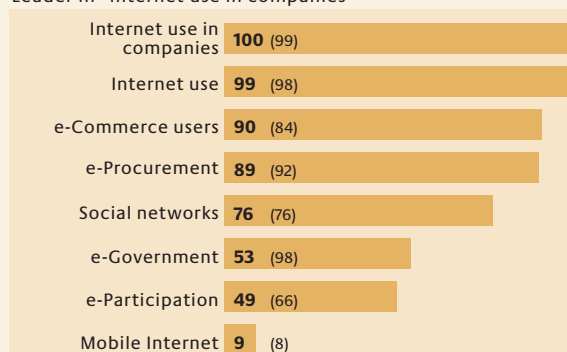


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 8th place ↓

In 2009 Sweden was unable to hold on to its placing in "Applications", dropping to eighth place with 59 points. This was primarily caused by its poor performance in "e-Government quality", where Sweden lost 45 index points. On the other hand, it achieved global market leadership for the first time in the indicator "Internet use in companies". In "Internet use in the population" Sweden was only one point short of global leadership.

Fig. 6.3.13c: Maturity of Sweden's applications, 2009
Leader in "Internet use in companies"



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.14 Country Profile United Kingdom



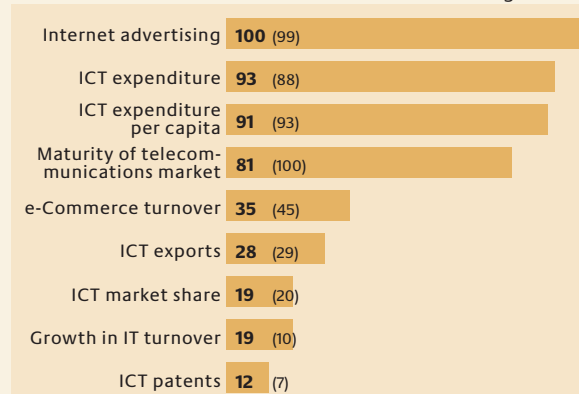
With 62 index points, the United Kingdom was one of the strongest ICT nations in the comparison of global competitiveness, sharing fourth place with Denmark.

The United Kingdom was the global market leader in “Internet advertising turnover as a proportion of the total advertising market”.

Market relevance – 2nd place ↑

With 53 index points in “Market relevance”, the United Kingdom was in second place after the USA. The United Kingdom’s performance is most clearly shown in the key indicator “Internet advertising”, in which it was able to achieve market leadership for the first time. At the same time it suffered severe losses in “Maturity of the telecommunications market”, where its index value fell by 19 points to 81 index points between 2008 and 2009.

Fig. 6.3.14a: Importance of the UK’s ICT market, 2009
Market leader for the first time in “Internet advertising”

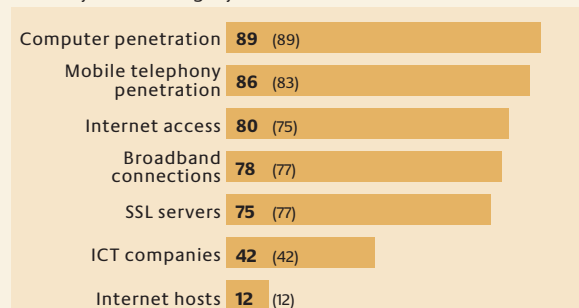


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 7th place ↑

In the category “Infrastructure”, the United Kingdom (70 index points) shared seventh place with the USA. This meant that the United Kingdom’s infrastructure was ranked one place higher than in the previous year. Its index values for “Mobile telephony penetration” grew by three points, “Internet access in households” rose by five points and “Broadband connections in the population” rose slightly by one index point.

Fig. 6.3.14b: State of development of UK’s infrastructure, 2009
Stability in the category “Infrastructure”

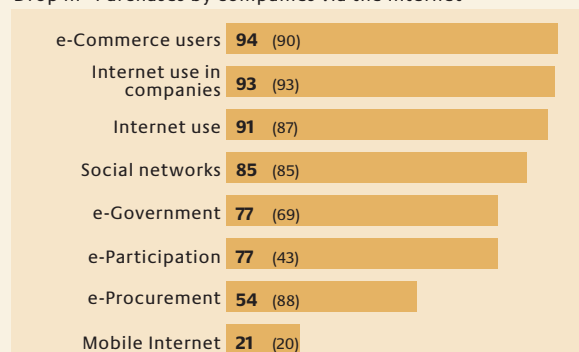


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 3rd place →

In 2009 the United Kingdom was able to hold onto third place in the category “Applications”, with an index value of 63. With 94 index points in “e-Commerce users”, the gap between the United Kingdom and the leader Norway narrowed. However, the country achieved its greatest improvements in the categories “Quality of e-Government Services” and “Maturity of e-Participation”, where its performance improved by eight and 34 points respectively to an index value of 77 in each category.

Fig. 6.3.14c: Maturity of UK’s applications, 2009
Drop in “Purchases by companies via the Internet”



Source: TNS Infratest (2010); Previous year's figures in brackets

6.3.15 Country Profile USA



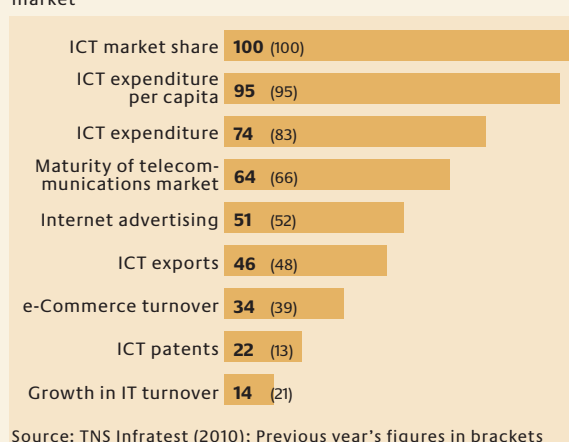
In 2009, the USA ceded its leading position to South Korea, and with 69 index points in the overall benchmark of the 15 ICT nations was only able to take second place.

The country was able to achieve global market leadership in three key performance indicators: “Share of ICT turnover in the global market”, number of “Internet hosts”, and “Purchases by companies via the Internet.”

Market relevance – 1st place →

The USA performed well across all key indicators in the category “Market relevance”. This gave it an index value of 75 points, thus putting it in first place. Even though the USA’s performance in some of the categories investigated had fallen slightly, it remained well ahead of the runner-ups, the United Kingdom and South Korea with 22 points respectively.

Fig. 6.3.15a: Importance of the US ICT market, 2009
Global market leader in “Share of ICT turnover in the global market”

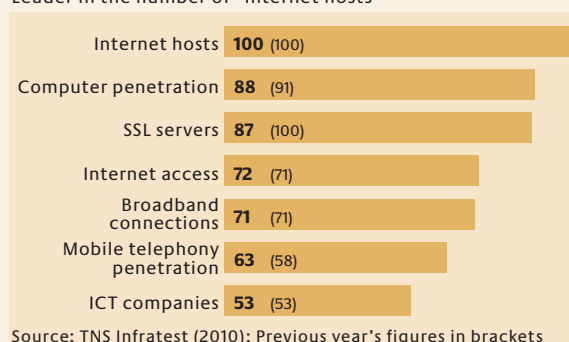


Source: TNS Infratest (2010); Previous year's figures in brackets

Infrastructure – 7th place →

With an index of 70, the USA was only able to reach the middle of the field in the category “Infrastructure”. The country was able to keep the lead in “Internet hosts”, but the same could not be said of “SSL server penetration”, where it lost its leading position and dropped 13 points in the index.

Fig. 6.3.15b: State of development of the USA's infrastructure, 2009
Leader in the number of “Internet hosts”

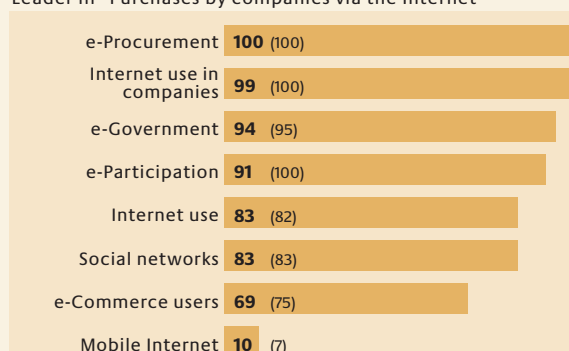


Source: TNS Infratest (2010); Previous year's figures in brackets

Applications – 9th place →

The USA’s performance in the category “Applications” was only moderate. With 57 index points it was only able to gain ninth place. In 2009 the country had to cede two of its leading positions. It failed to renew its market leadership in “Internet use in companies” by one index point, and in “Maturity of e-Participation” by nine points. The USA remained leader in “Purchases by companies via the internet”.

Fig. 6.3.15c: Maturity of USA's applications, 2009
Leader in “Purchases by companies via the Internet”



Source: TNS Infratest (2010); Previous year's figures in brackets

7. Methodology



7. Methodology

The “International Comparison of the Status and Prospects of the German Information and Communication Industry 2009-2011”, commissioned by the Federal Ministry of Economics and Technology, is a new research project that builds on the TNS Infratest reports produced since 2000 as part of the “Monitoring the Information and Communication Industry” project.

It enables companies, economic policy and science to draw on figures and analyses relating to the German ICT industry that provide a longer-term comparison.

The “Monitoring Report – Digital Germany 2010” uses a consistent approach to provide a global benchmark comparison of the German ICT industry with the 14 leading ICT nations for 2009.

1. Quantitative report

The “Monitoring Report – Digital Germany” analyses the performance of the German ICT industry and compares it with Germany’s main competitive countries in Europe and Asia and the USA.

In order to calculate the performance of all 15 countries in a comparable manner, “key indicators” were used to position Germany in relation to the 14 most important ICT countries in a quantified “status report”.

Selection of countries

Countries were selected on the basis of a survey of experts conducted by TNS Infratest in October 2008 (cf. 4th ePerformance Report 2008, pages 41-46). In response to the question “From which countries/regions will German ICT face the greatest competition in the next few years to the end of 2013?” the following countries were regarded as being by far the most important ICT nations, and were therefore selected for the benchmark.

- ▶ The USA, which was in pole position in the TNS benchmark of the top 15 ICT nations until 2008.
- ▶ In addition to the five European countries with the largest populations (Germany, the United Kingdom, France, Spain and Italy), Norway, Denmark, Sweden, Finland and the Netherlands were included in the TNS benchmark as the leading European ICT countries.
- ▶ The ICT developments in Japan, South Korea, China and India were chosen to represent the Asia-Pacific region.

Selection and type of indicators

Agreement on the key indicators to be used in the benchmark was reached at an expert workshop. The criteria used in selecting them were relevance, validity, and coverage of the problem areas selected, together with the regional and temporal comparability of data. The requirements for high validity and availability of data, which were to some extent contradictory, had to be balanced against one another when making the decisions. Due to the dynamics of the ICT sector, six new indicators were included in the Monitoring Report 2010. A total of 24 key indicators were identified.

“Key indicators” are indicators for which directly comparable data are available for all 15 of the selected benchmark industries for the relevant period. 24 key indicators were used for the benchmark.

Categories “Market relevance”, “Infrastructure” and “Applications”

Industry positioning and industry assessment of the ICT markets were performed using the three categories “Market relevance”, “Infrastructure” and “Applications”.

The performance of the 15 leading ICT nations in the category “Market relevance” was measured on the basis of nine key indicators.

The performance of the 15 leading ICT nations in the category “Infrastructure” (see chapter 4) was measured in a global comparison on the basis of seven key indicators (see Fig. 7a). Furthermore, the topic of “IT security” was also discussed in order to assess the infrastructure conditions.



The performance of the 15 leading ICT nations in the category “Applications” (see chapter 5) was measured in a global comparison on the basis of eight key indicators (see Fig. 7a).

Sources

As far as possible the calculation of the key indicators was based on a single source in order to ensure a uniform methodology and data consistency. Any discrepancies between the source-material used is indicated in the respective chapters.

Calculation of benchmarks

Indexing of individual indicators – evaluation methodology

A quantitative global comparison of the performance of the German information and communication industry is carried out for all 24 key indicators.

To enable comparison of data from a wide variety of sources measured in different units, index values were calculated for each of the key indicators. In each

Fig. 7a: Overview “key indicators”

Category I „Market relevance“		Category II „Infrastructure“		Category III „Applications“	
Key indicator	Source	Key indicator	Source	Key indicator	Source
Market share of ICT turnover in global market	EITO	ICT companies as a proportion of all companies	D & B	Internet use in the population	ITU
ICT exports as a proportion of all exports	World Bank	Broadband connections in the population	ITU, European Commission, OECD	Mobile Internet use	PwC
ICT expenditure as a proportion of GDP	EITO, IMF	Computer penetration in households	ITU, eMarketer	Use of social networks	TNS
Expenditure on ICT per capita	EITO, IMF	Internet access in households	eMarketer, OECD	e-Commerce users	Eurostat, eMarketer
Growth in IT turnover	EITO, KISDI	Internet hosts	CIA, IMF	Purchases by companies via the Internet	Eurostat, OECD
ICT patent applications	EPA	SSL server penetration	World Bank, Netcraft	Internet use in companies	WEF
Maturity of telecommunications market	ITU, EITO	Mobile telephony penetration in the population	ITU	Quality of e-Government services	WEF
Internet advertising turnover	PwC			Maturity of e-Participation	WEF
e-Commerce turnover	GroupM, bda, UNECE, Research and Markets, ETC, PhoCus-Wright.com				



case the current performance of the “best-in-class country” formed the yardstick for comparison, and was given the maximum index value of 100. The other countries included in the comparison obtained index values of less than 100 according to the gap between them and the global leader. The benchmark of key indicators always includes a comparison with the previous year, so that developments in performance can be assessed in an historical comparison.

The previous year’s figures for the key indicators “ICT companies as a proportion of all companies”, “Internet hosts” and “Use of social networks” were estimated on the basis of data available from other sources covering periods of many years. This enabled comparisons with previous years. In the case of the key indicator “Purchases by companies via the Internet”, a methodological correction by data supplier Eurostat caused wide variations in the comparison with the previous year.

In the “Monitoring Report – Digital Germany 2009” some of the previous year’s figures were adjusted in order to ensure comparability with the key indicators included in the 2010 survey.

Indexing on the level of

- ▶ “ICT performance of industries” and
- ▶ “ICT performance of categories”

A procedure was developed allowing a country benchmark to be carried out for regions on the basis of clearly describable mean index values.

Mean values were calculated for the 24 key indicators. This is possible because annual data would be available for the entire duration of the research project for all the ICT nations included in the benchmark. As the values for the key indicators are standardised by the indexing performed (index of best-in-class country in the benchmark = 100 index points), and as they are also cardinal in nature (index 50 is half as good as index 100), they can be aggregated as weighted mean values. In this way an index can be calculated for the overall performance of an industry in the ICT sector. Mean values were also calculated for the categories “Market relevance”, “Infrastructure” and “Applications”.

When aggregating the 24 key indicators to produce a national average or index for a category, weightings were applied to reflect the relative importance of the individual key indicators.

One major advantage of the system developed is that in future it will be possible to incorporate or remove additional key indicators as required without compromising temporal comparability.



2. Interviewing of experts in selected countries

The quantitative performance measurement, as described in 1., is supplemented by a qualitative industry assessment. This was carried out by Managing Directors and board members from leading German ICT companies. In addition, foreign ICT experts were interviewed and asked to assess their country profiles in comparison with the German ICT industry.

This report is supplemented by qualitative interviews with ICT experts from France and India.

In France, four interviews were conducted with experts from the information technology and telecommunications sector, from management consultancies and the French ICT association, Syntec. In India, six interviews were conducted with representatives of ICT companies, consultancy firms and the Indian ICT association, NASSCOM.

The experts were asked to express an opinion on the comparisons between Germany and their own country with regard to individual indicators. The main questions asked were:

- ▶ What are the strengths and opportunities of the German ICT industry compared to your own industry? What image does the German industry have?
- ▶ Why can a number of “outliers”, both upwards and downwards, be seen in your own industry in the global comparison?
- ▶ What innovation measures and measures to promote innovation have been implemented in the respective countries?

The results of these interviews are set out in the form of country profiles with comments.

3. Conducting workshops

In 2010, on behalf of the Federal Government, the Federal Ministry of Economic and Technology (BMWi) drew up a cabinet paper for the formulation of a coherent, forward-looking industry strategy for the ICT sector by 2015.

For this purpose, TNS Infratest Business Intelligence was commissioned by BMWi to plan and run a workshop within the framework of “Monitoring Report – Digital Germany 2010“. The key question at the workshop was “What is the quickest and most effective way to improve the German ICT industry and its competitiveness?”

Workshop “Digital Germany 2015”, 18 May 2010, Berlin

65 high-ranking ICT experts from associations and the political, economic and scientific arenas took part in lively and critical debates moderated by TNS Infratest and drew up initial recommendations for the ICT strategy “Digital Germany 2015“. These recommendations were elaborated up in four rounds of discussions stimulated by introductory presentations by TNS Infratest Business Intelligence, GFT Technologies, McKinsey and the Federal Ministry of Economics and Technology.

The workshop was attended by representatives from 25 provider and user companies and 18 representatives from associations, management consultancies and public bodies, including company chairpersons, managing directors and presidents of trade federations. The workshop was chaired by Dr Andreas Schuseil and Bernd Weismann from the Federal Ministry of Economics and Technology (BMWi).



Participants, 18 May 2010 at the Federal Ministry of Economics and Technology

Ansgar **Baums**, SAP AG
 Dr Irene **Bertschek**, Zentrum für Europäische Wirtschaftsforschung GmbH
 Peter J. **Bisa**, Tactum GmbH
 Dr Peter **BleECK**, Federal Ministry of Economics and Technology
 Prof. Dr Knut **Blind**, Fraunhofer FOKUS, Technical University of Berlin
 Mike **Cosse**, Microsoft Deutschland GmbH
 Thomas **Dold**, D & B Deutschland GmbH
 Anke **Domscheit-Berg**, Microsoft Deutschland GmbH
 Prof. Dr Claudia **Eckert**, Fraunhofer-Institut für sichere Informationstechnik, SIT
 Norbert **Eder**, Software AG
 Dr Thomas **Endres**, Deutsche Lufthansa AG
 Dr Martin **Fornefeld**, Micus GmbH
 Klaus **Fuest**, Roland Berger Strategy Consultants GmbH
 Jürgen **Gallmann**, visionapp AG
 Rainer **Glatz**, Verein Deutscher Maschinen- und Anlagenbau e. V., Fachverband Software
 Dr Andreas **Goerdeler**, Federal Ministry of Economics and Technology
 Dr Oliver **Green**, Bundesverband IT-Mittelstand e. V.
 Prof. Dr Oliver **Günther**, Humboldt-Universität zu Berlin, German Informatics Society
 Christoph **Hecker**, FINAKI Deutschland GmbH
 Dr Johannes **Helbig**, Deutsche Post World Net AG
 Peter H. Hellmonds, Nokia Siemens Networks GmbH & Co. KG
 Dr Robert **Henkel**, Federal Ministry of Economics and Technology
 Prof. Dr Lutz **Heuser**, SAP AG
 Dr Sven **Hischke**, Deutsche Telekom AG
 Dr Andrea **Huber**, Informationsforum RFID e. V.
 Dr Kai **Hudetz**, E-Commerce Centre for Trade
 Stephanie **Kage**, Federal Ministry of Economics and Technology
 Dr Christine **Kahlen**, Federal Ministry of Economics and Technology
 Eva-Maria **Kirschsieper**, Deutscher Industrie- und Handelskammertag e. V.

Thomas **Knebel**, Federal Ministry of Economics and Technology
 Torsten **Koß**, Roland Berger Strategy Consultants GmbH
 Prof. Dr Helmut **Krcmar**, Technische Universität München
 Dr Wolfgang **Kubink**, Deutsche Telekom AG
 Dr Timo **Leimbach**, Fraunhofer Institute for System and Innovation Research, ISI
 Dr Michael **Littger**, Bundesverband der Deutschen Industrie e. V.
 Thomas **Mosch**, Bundesverband Informationswirtschaft, Telekommunikation und neue Medien e. V. (BITKOM)
 Bernd **Neujahr**, Federal Ministry of Economics and Technology
 Marja von **Oppenkowski**, Kabel Deutschland Holding AG
 Dr August **Ortmeyer**, Deutscher Industrie- und Handelskammertag e. V.
 Dr Wolf **Osthaus**, 1&1 Internet AG
 Malte **Piekarowitz**, Telefónica O₂ Germany GmbH & Co. OHG
 Prof. Dr Hans-Joachim **Popp**, Deutsches Zentrum für Luft- und Raumfahrt e. V.
 Harald **Preiml**, HEITEC AG
 Björn **Quambusch**, Deutsche Bank AG
 Olaf **Reus**, Telefónica O₂ Germany GmbH & Co. OHG
 Frank **Riemensperger**, Accenture GmbH
 Dr Jörg Ritter, BTC AG
 Stefan **Schnorr**, Federal Ministry of Economics and Technology
 Dr Andreas **Schuseil**, Federal Ministry of Economics and Technology
 Hannes **Schwaderer**, Intel GmbH
 Alexander **Steinke**, D & B Deutschland GmbH
 Gisela **Strnad**, Fujitsu Technology Solutions GmbH
 Dr Ingo **Stürmer**, Deutschland sicher im Netz e. V.
 Jennifer **Welp**, Federal Ministry of Economics and Technology
 Dirk **Wittkopp**, IBM Germany Research & Development GmbH
 Andrea **Wlcek**, GFT Technologies AG
 Helmut **Wörner**, Controlware GmbH



Moderators and lecturers

Ulrich **Dietz**, GFT Technologies AG
 Claudia **Nemat**, McKinsey & Company Inc.
 Richard **Gehling**, TNS Infratest (Moderator)
 Dr Sabine **Graumann**, TNS Infratest Forschung GmbH
 Anselm **Speich**, TNS Infratest Forschung GmbH
 Bernd **Weismann**, Federal Ministry of Economics and Technology

Minute-takers

Tobias **Weber**, TNS Infratest Forschung GmbH
 Alexander **Wiedl**, TNS Infratest Forschung GmbH

Currency conversion rates

All currency conversions were based on the official exchange rate mid-year in 2009 as determined by the IMF.

1 Euro =:

US dollar	1,3946
Korean Won	1780,1700
Swedish Krona	10,6624
Japanese Yen	130,5538
Danish Krone	7,4699
British Pound	0,8909
Indian Rupee	67,4248
Norwegian Krone	8,7646
Chinese Yuan	9,5263

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