Vodafone Institute
for Society
and Communications

BIG DATA

A EUROPEAN SURVEY ON THE OPPORTUNITIES AND RISKS OF DATA ANALYTICS

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Preface

by Matthew Kirk

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If analysed and understood, the staggering amount of electronic data generated on a daily basis has the potential to help us enhance our societies and invigorate our economies. As advances in technology – from ultrafast internet connections to tiny low-powered sensors – have made it possible to collect and analyse data more efficiently and accurately than ever before, it looks as though the phenomenon of Big Data will start to deliver on its promise soon.

This brings into sharp focus questions about how Big Data may impact people's privacy and human rights. While analysis of data to help prevent the spread of disease would benefit the whole of society, using data to predict someone's propensity to commit criminal acts could lead to discriminatory effects. Furthermore, the ease with which data can be collected may result in incidental or accidental collection of sensitive data unless the necessary safeguards are incorporated into the design of Big Data projects.

Finding a way to take advantage of the social and economic benefits that big data offers while protecting the rights and freedoms of individuals is one of the most important challenges we face today. The collection and analysis of data could change our lives for the better, but this will only happen if we understand individuals' privacy concerns and put them at the heart of Big Data initiatives.

We hope this study from the Vodafone Institute for Society and Communications will contribute to this important debate. It analyses over 8000 individuals across eight European countries and offers valuable insight into people's perceptions of data analytics. While there are some interesting differences across countries, the consensus is that organisations need to simplify their communications, be more transparent about how data is collected and analysed and give users more control over how their data is used.

We are at an important juncture: the potential of Big Data will only be realised if data is permitted to flow freely and organisations have the freedom to innovate. This, in turn, will only happen if we understand and respect privacy concerns and find the right balance between what is technically possible, what is legally allowed and what is socially acceptable.

Guest Commentary

by Viktor Mayer-Schönberger

Viktor Mayer-Schönberger,
Professor of Internet Governance and Regulation,
Oxford Internet Institute

Make no mistake – this impressively comprehensive study on European attitudes towards Big Data is nothing short of an indictment of current European data protection practices. The public's lack of trust is dramatic. Just as the European Court of Justice is reinforcing privacy laws in the shadow of Big Data – think of the right to be forgotten or the invalidation of the "safe harbour" agreement -, the vast majority of the population is tuning out. Or at least that is how it looks at first glance.

However, those that have predicted the death of privacy – mostly heads of US Internet and IT companies – have no reason to rejoice and declare victory. Because upon a closer look, we discover that Europeans, as the survey ably evidences, remain strongly wedded to the value of privacy. That commitment hasn't changed (nor, quite frankly, does it differ greatly from North American attitudes; humans do treasure their privacy on either side of the Atlantic.)

But Europeans seem deeply sceptical of the prevalent practice of data protection. They don't believe they have control over how their data is used. Their desire for easier and more transparent privacy policies of data users are rooted in the bewildering complexity of how their personal data is currently processed.

Who can blame them? Privacy terms of popular web platforms run into dozens of pages. Researchers have estimated that to just read these terms of the top ten Internet players would require more than two hundred hours, and given the legalese of these terms there's little hope for enlightenment once one is done.

This will only get worse in the context of Big Data, with increased complexity of data analysis, often combining different data sets for novel purposes. People are sensing that, the survey results show, as they express deep scepticism vis-à-vis a Big Data approach. But there is much nuance beyond the initial doubt: people seem much more pragmatic than current data protection legislation when it comes to the use of their personal information. Many of them understand that personal data is the currency they have to pay in exchange for free services, such as online search, email

or social media. And they are more open-minded about the use of health data as it can lead to more effective diagnosis and treatment. Equally pragmatic yet consistent are their red lines: financial privacy seems crucial, as are clear prohibitions of personal health data being reused by insurers (rather than aiding medical intervention). And though companies may reuse personal data, handing such data over to third parties is a distinct no-no for most in the survey.

I see two important messages emerge from this valuable study. The first surely is humbling for the European data protection elite. The people do not find the current mechanisms in place to protect personal data to be effective. This requires new thinking. Policymakers are tasked to come up with better ways to protect personal data; ways that acknowledge the complexity of Big Data analytics and the resulting limitations of individual informed consent.

Unfortunately, policymakers are struggling to take this – I believe valid – criticism of the people to heart, and to come up with new, more effective mechanisms to protect personal data.

This is lamentable, because an obvious alternative exists: regulation. Rather than asking individuals to consent to something they don't (and have no realistic chance of) understanding, we could regulate the use of personal data by companies and governments, interdicting irresponsible and unaccountable behaviour. We already do this in many other areas that have gotten too complex for individuals to comprehend. We don't expect people to test themselves the medication or the food they buy. Rather, we have regulations, regulators, and regulatory agencies, which have put in place stringent processes of checks and oversight. Neither are we expecting individuals to make choices about wearing seatbelts in cars. Because not being buckled up is so dangerous, we have just mandated their use. I strongly believe we will have to do the same to protect personal data in the age of Big Data, and shift much of the burden of data protection from individual consent to regulating accountable and responsible data use. This does not necessarily have to stifle Big Data innovation – on the contrary: permitting responsible data use (including repurposing of personal data) without individual consent can create space for innovative experimentation by responsible data users. It's time we tell the policymakers!

The second, equally important message is that for all the hyperbole and rhetoric around Big Data, companies and governments so far have failed to make a compelling case to the people why Big Data has strong positive individual and social value. Moreover, the revelations about data misuse from private companies all the way to democratic governments (as evidenced in the Snowden files) have not helped build and maintain trust by the people that their personal data is used appropriately. Here, companies and governments need to act, because without trust of the people Big Data cannot flourish. My personal sense is that Big Data if done responsibly holds tremendous societal value. So I wish for this trust to be built. But I fully recognise that it is up to the data users to create and preserve that trust.

I believe these two crucially important messages coming out of this study suggest ample and imperative calls for action by policymakers and stakeholders alike. As an optimist, I can but hope they will heed the call. But there is so much more this important survey offers. That is precisely its distinct and lasting value: to offer both narrative and nuance on an issue of seminal importance for the future of our society.

Survey Design

Key Facts

Qualitative pre-phase*

- 4 focus groups (6-8 persons each)
- Germany and Italy
- July 2015

Quantitative main survey

- 8,256 telephone interviews (CATI)
- 8 countries (cf. map right)
- August/September 2015

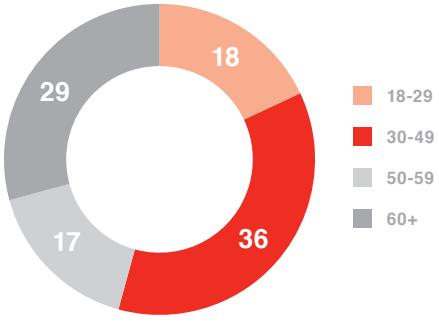
* Some original quotations from the qualitative pre-phase are shown in speech bubbles.

Czech Rep. (CZ): n = 1.008
France (FR): n = 1.018
Germany (DE): n = 1.216
Ireland (IE): n = 1.009
Italy (IT): n = 1.000
Netherlands (NL): n = 1.002
Spain (ES): n = 1.001
United Kingdom (UK): n = 1.002

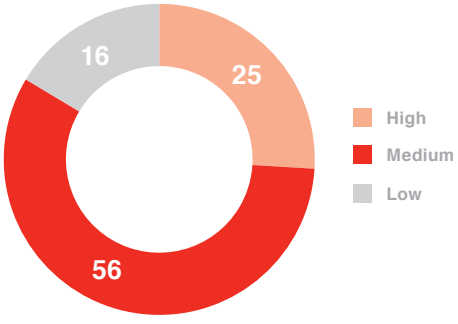
Background

In the last decade, society has witnessed a digital revolution that has transformed the way in which we interact, work, learn, and do business. The Big Data Revolution helps us to spot socially valuable insights or unlock new forms of economic value in data. This rapid technology-driven development, however, raises some important political and ethical questions: How can we make full use of data analytics in a responsible and human-centered manner, and make sure that people's data and privacy are protected? Setting rules fit for the digital age in both economic and ethical terms is one of the key challenges of our time.

To illustrate how people in Europe perceive the handling of their personal data and about privacy issues, the Vodafone Institute for Society and Communications initiated "Big Data – Opportunities and Risks" – a survey of the consumer perspective in eight European countries. The survey addresses everyday situations in which consumers consciously or unconsciously disclose their personal data when it is collected by private companies or public institutions to enable customised products, services and experiences.



Age



Educational Level*

Due to roundings, numbers presented in this document may not add up precisely to 100% and average values displayed may differ from average values calculated from the document. * Highest level of formal education

Key Findings

People unconvinced by Big Data in general
When asked about what they think about the Big Data phenomenon in general, the digital service users surveyed are sceptical. Less than one-third of all respondents say that they think there are advantages associated with the Big Data phenomenon – over half of the participants say they see more disadvantages.

Low level of trust in both companies and the government regarding the use of personal data
The study points to the need for companies and service providers to improve communications and do more to build a trusting relationship with their customers if they are to be successful with Big Data projects: Only 26 percent of respondents agree that organisations respect the privacy of their personal data and only 20 percent say they know where and by whom their personal data is collected and stored. Only 29 percent of the people feel they have control about which information is collected about them.

The level of trust in how private and public-sector institutions manage personal data is low. Whereas health service providers (43 percent), the own employer (36 percent) and banks (33 percent) inspire slightly higher confidence, only a few users trust search engines (16 percent) and social media service providers (11 percent).

People rarely read terms and conditions
Although many people grant access to their data on a daily basis, they often have no idea about what exactly happens with it. The survey reveals that only 12 percent of the European citizens surveyed obtain their information on data usage from the service providers' Terms & Conditions of Use (T&Cs of Use) or General Terms & Conditions (GTCs). 34 percent said they get their information about data collection from the media. An average of 40 percent of respondents stated that they often accepted T&Cs of Use and GTCs without actually having read them.

Users wish for clear and simple language in terms and conditions, more control and transparency
64 percent of respondents would like there to be a higher level of transparency on the use of their personal data. 68 percent want terms and conditions to be more concisely worded and easier to understand. On average, 51 percent of Europeans would like to be able to define their own privacy settings. Many of the younger users are in favour of this confidence-inspiring step. Obviously, it isn't enough to be a well-known or established brand name because only 34 percent of respondents said that this inspired their confidence.

Big Data for Good: Respondents more willing to share data for health, traffic and the environment
There is broad consensus on the issue of personal data being passed on to third parties for commercial purposes. The vast majority of survey respondents strongly disapproves of this practice, irrespective of the reason or type of data.

When asked about their ideas on specific applications for big data, two thirds of the respondents say they could envisage data from many people being anonymously collected by the healthcare service to improve disease identification and treatment. Overall, 53 percent of the Europeans surveyed also say that they wouldn't mind their data being collected, stored and analysed in non-anonymous format if it would help them or other people to improve their health.

68 percent stated that they were in favour of installing smart meters to record data on building residents' usage behaviour so that more eco-friendly heating practices could be introduced. 55 percent of respondents were also happy about data on their movements in the car being transferred to navigation system service providers for personalised traffic reports.

Sceptical Germans, Big Data friendly Spaniards: different perceptions across Europe
The comparison of countries shows that Germans are especially critical concerning privacy issues, and are particularly sensitive about their personal data being passed on. The Irish, the British and the Dutch are (a little) less sensitive to the issue. The Dutch feel very confident in the digital space, they also believe that they are the most informed internet users in Europe. South Europeans in the survey are generally more relaxed as far as the collection and use of their data is concerned.

Low level of confidence among the elderly and less educated
People's competence and expertise in internet use varies considerably depending on their level of education and age. People with a low level of education feel that they are inadequately informed about data collection and use practices. While younger people consider themselves to be competent in the digital world, elderly people feel a lack of knowledge and trust. People over 60 are most critical, while those under 49 would like to get more personally involved in determining their privacy settings.

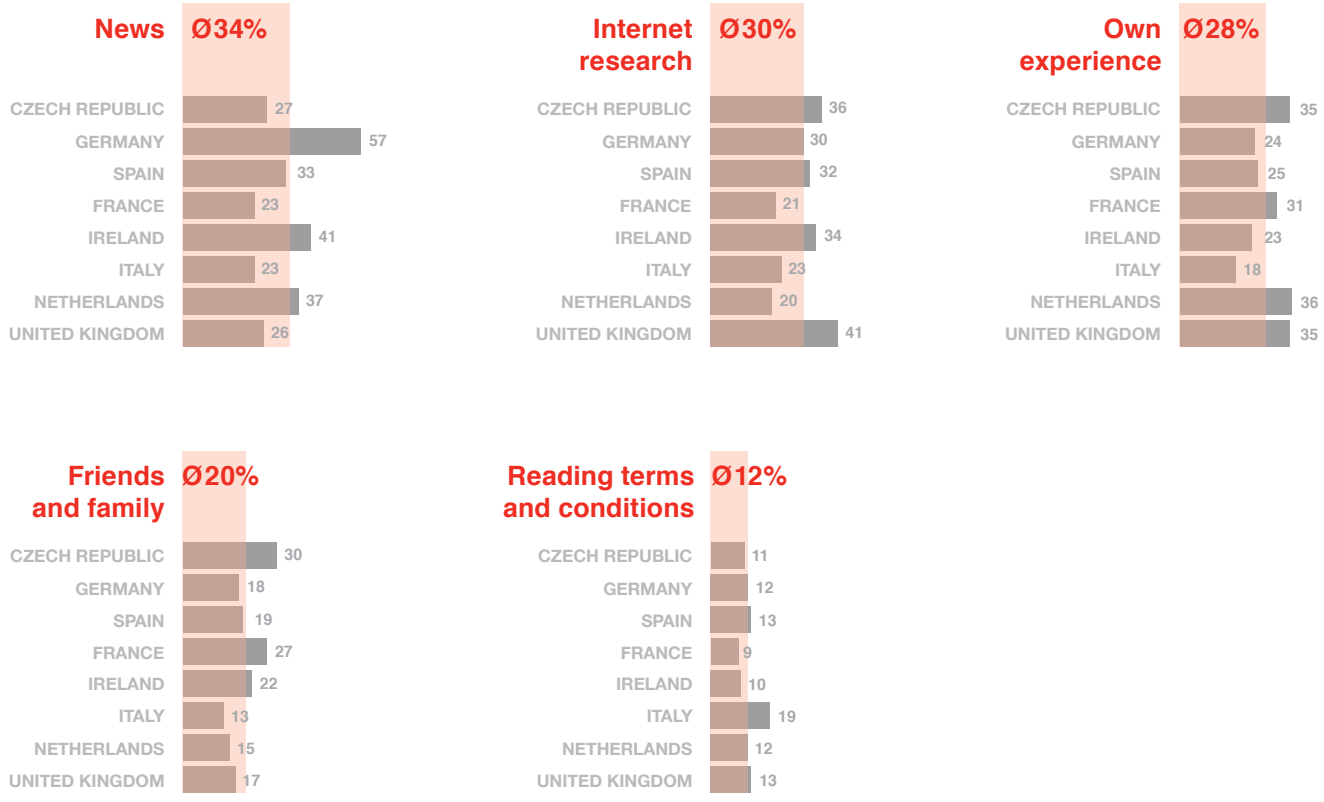
Knowledge

Nowadays, many organisations and institutions collect data on their users in order to improve their products, to adapt their services according to customers' needs or to increase the efficiency of their processes. This is not a new practice. But facilitated by the rapid development of the internet, growing data storage capacities and advanced data analytics, organisations have found new ways of up-scaling the opportunities for data collection and exploitation. Although many people grant access to their data on a daily basis, they often have no idea about how it is used and what exactly happens to it. One of the survey goals was to discover where people get their knowledge about personal data collection and use.

Consumers use different sources to gather information about the collection and usage of data by organisations. News and the media is the number one source, with over a third of the respondents gaining their information here, especially Germans (57 percent). The second most important source is internet research, used by 30 percent.

Where do you get your knowledge about corporate data collection?

Percentage shown = "yes"



Where do you get your knowledge about their collection of data from? Multiple answers. Base: Part of the respondents (n=4,134)

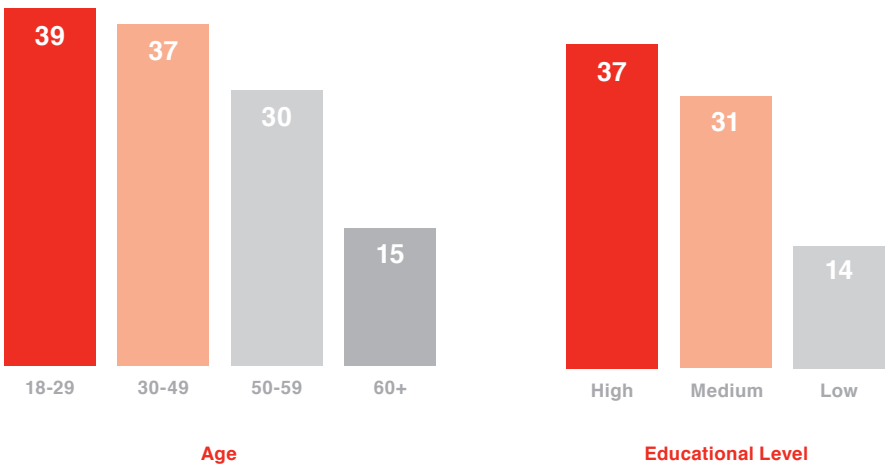
Only 12 %

of the people say that they read terms and conditions as a source of knowledge about the collection and usage of their personal data.

The elderly and less educated people barely use the internet as information source (age 60+: 15 percent; low educational level: 14 percent). Personal knowledge about the collection of personal data is gathered by means of own experience (28 percent) and friends and family (20 percent). Only 12 percent of people read terms and conditions as a source of knowledge.

> „If you want to register on a website you need to agree to all this stuff, otherwise you just can't register."
> PARTICIPANT FOCUS GROUP QUALITATIVE SURVEY

Internet research as a source of knowledge about the collection of data

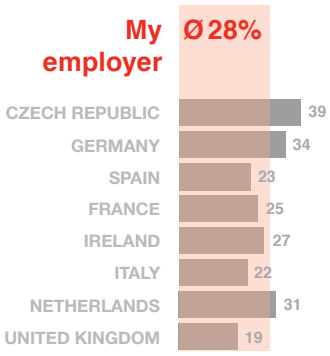


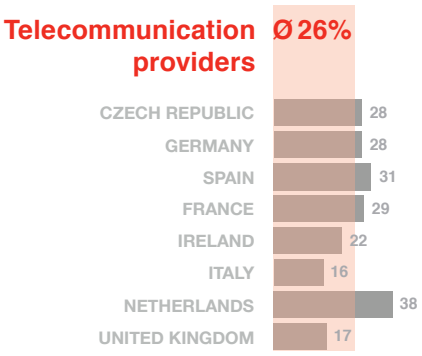
Where do you get your knowledge about corporate data collection? Multiple answers. Base: Part of the respondents (n= 4,134)

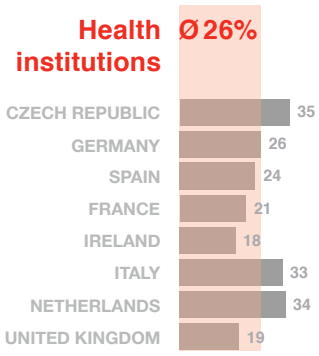
Knowledge

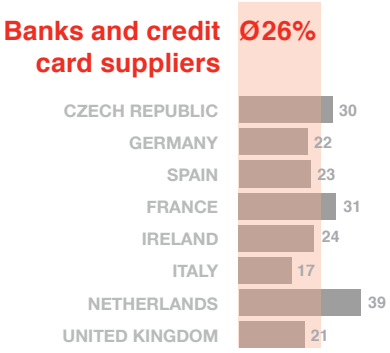
How much do you know about the collection and usage of data by the following institutions?

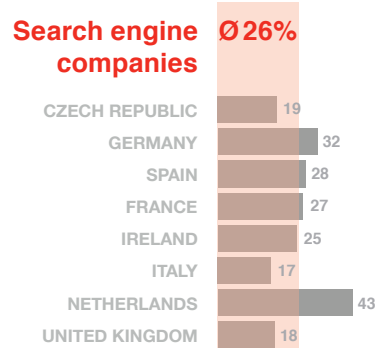
Percentage shown = “great deal” + “quite a lot”

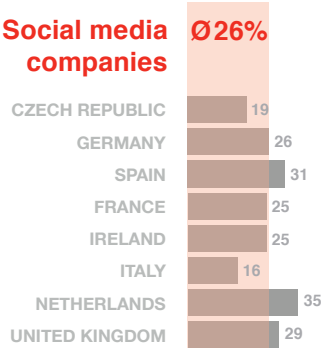






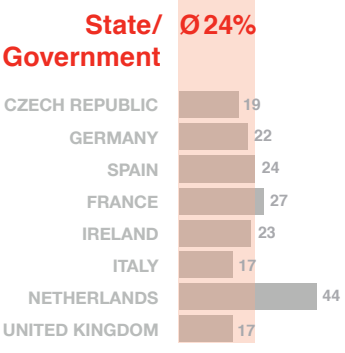






Less than

a quarter of the Europeans interviewed say they know about the way in which the government handles their data (24 percent).

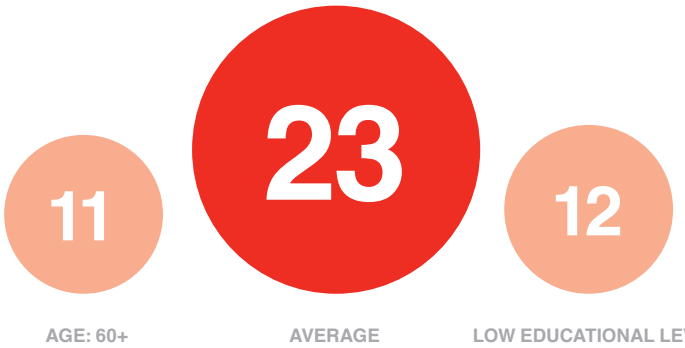


The survey shows that most people do not feel well informed about current practices of data collection. Respondents were asked how much they know about the collection and usage of data by different organisations. They name their employer as the organisation about which they know most, with less than a third of the respondents stating that they know a great deal or quite a lot about them (28 percent). 26 percent state that they know about data collection by telecommunication providers, health institutions, banks, search engine operators and social media companies, with the Dutch showing a higher level of knowledge and the Italians tending to fall behind. Less than a quarter of people know about the way in which the government handles their data (24 percent), only one person in five understands data collection and usage by online shops (21 percent) and online payment services (20 percent).

Some organisations or institutions collect, store and analyse personal data for various purposes. How much do you know about the data collection and usage of the following institutions? Please use the scale from 1 "a great deal" to 5 "nothing". You can use the numbers in between to grade your answer. Top 2 boxes. Base: All respondents (n= 8.256)

General perceived knowledge about the collection and usage of data by age and educational level

Percentage shown = "great deal" + "quite a lot"



Aggregated level of knowledge about the data collection and usage across all institutions. Percentage of the respondents answering "a great deal" or "quite a lot". Base: All respondents (n= 8.256)

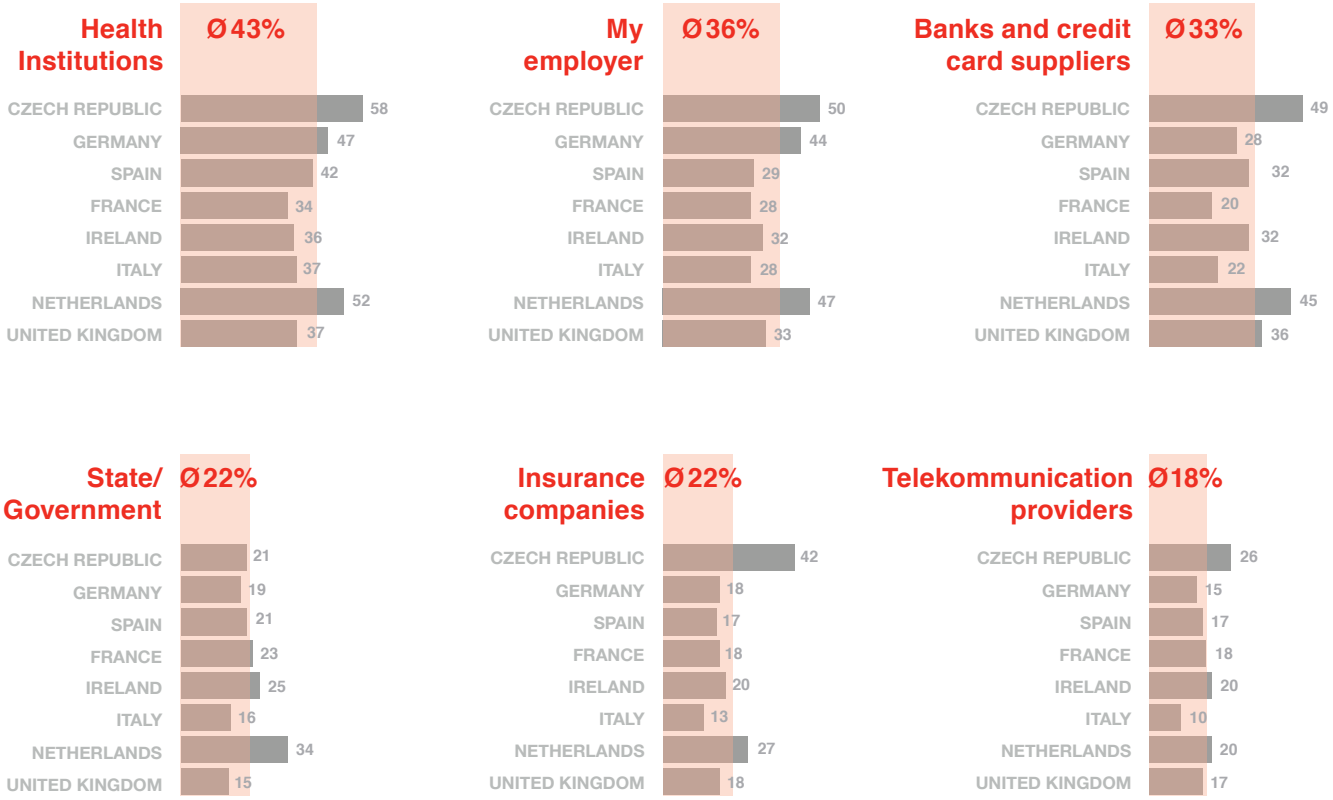
People feel more or less informed about the collection and usage of their data depending on their educational level.

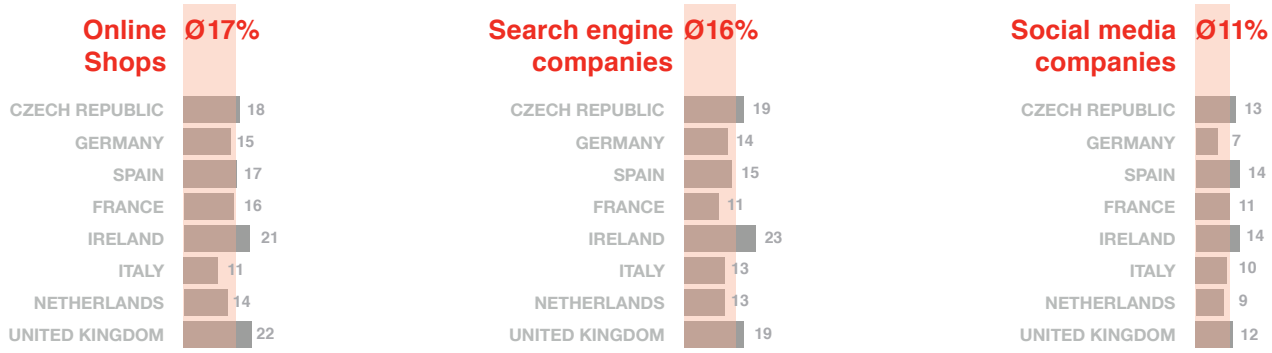
Trust

The basis for any relationship, and thus for interaction and collaboration with an organisation or institution, is trust. To gain people's trust regarding the usage of their personal data, organisations are expected to act in a responsible way. The survey shows that the levels of trust regarding the use of personal data vary significantly between sectors and the types of institutions. In general, people show little confidence that their data are handled adequately.

To what extent do you trust […] with regard to the use of your personal data?

Percentage shown = "very strongly" + "strongly"





To what extent do you trust the following organisations or institutions with regard to the use of your personal data? Please use a scale from 1 "very strongly" to 5 „not at all". You can use the numbers in between to grade your answer. Top 2 boxes. Base: All respondents (n= 8,256)

By taking a closer look at the results, we see that respondents in countries such as the Netherlands and the Czech Republic have a higher level of trust regarding the use of personal data. Online providers are generally less trusted. Social media companies are the least trusted type of organisation at eleven percent, followed by search engine companies (16 percent) and online shops (17 percent). Both the age of the respondents and the educational level have a clear influence on the level of trust; we can see that with increasing age or lower educational level, the level of trust drops.

Level of trust across all institutions with regard to the use of personal data by age and educational level

Percentage shown = "very strongly" + "strongly"

Level of trust across all institutions with regard to the use of personal data. Percentage of the respondents answering „very strongly" or „strongly". Base: All respondents (n= 8.256)

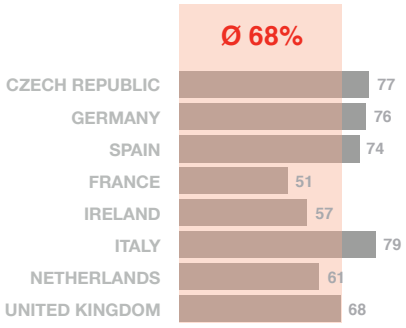
Trust

There are several ways to gain and increase trust between people (consumers/citizens) and organisations with regard to the collection and usage of personal data. Users need to have a clear understanding of what kind of data is collected about them and what will be done with it. The use of simple and clear language and short terms and conditions greatly help in gaining trust; over two thirds of the respondents agreed with this statement (68 percent). Furthermore, transparency about what data is collected and how it could be used is the second most important driver to gain trust – this is mentioned by 64 percent of the respondents. Organisations can adress these needs by avoiding small print: 56% say that would increase trust.

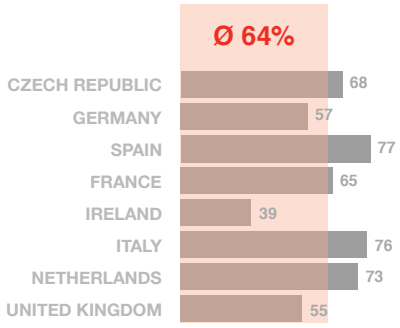
How should an institution gain your trust with regard to the use of your personal data?

Percentage shown = "yes"

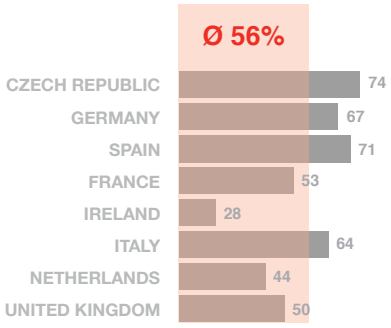
Use simple, clear language and short terms and conditions which I can understand



Be transparent about what data is collected and how it could be used

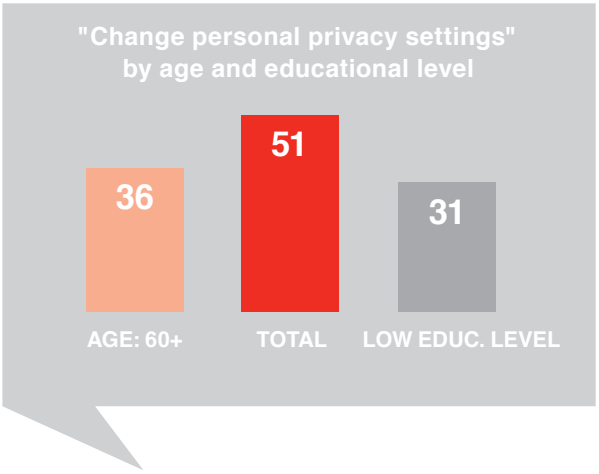


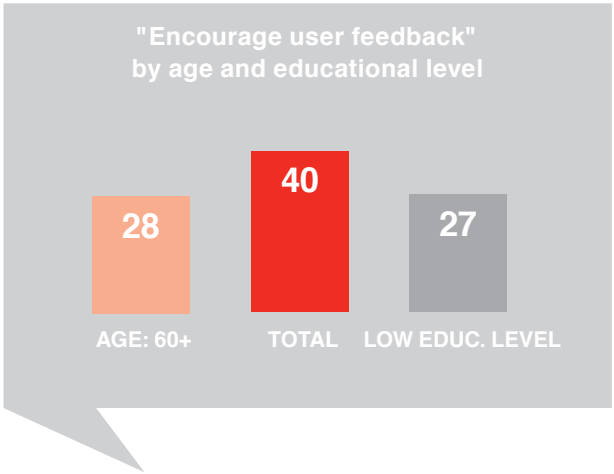
Avoid small print



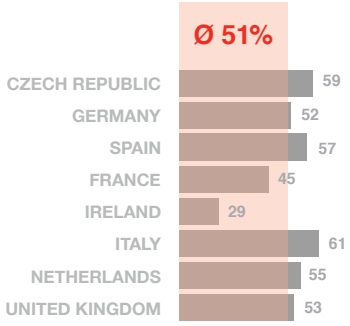
Another way of gaining trust is through the empowerment of users. Over half of the respondents (51 percent) associate trust in institutions with the potential for having personal influence over their personal privacy settings. Another form of empowerment is the encouragement of public feedback from users, which is mentioned by four out of ten people. In particular the older generation (60+) and people with a lower educational level show less interest in individual privacy settings. Being a well-known brand is not enough to create trust, with only a third (34 percent) agreeing with this statement.

Ways to gain consumers‘ trust

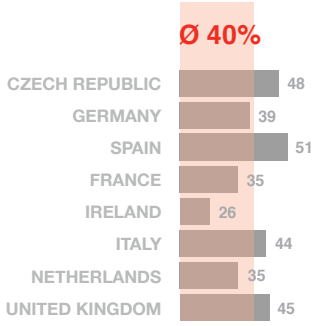




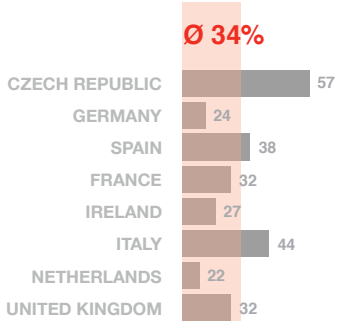
Ability to change personal privacy settings



Encourage public user feedback



Be a well-known brand



In your opinion, how should an organisation or a company gain your trust with regard to the use of your personal data? Multiple answers. Base: Part of respondents (n= 4.140)

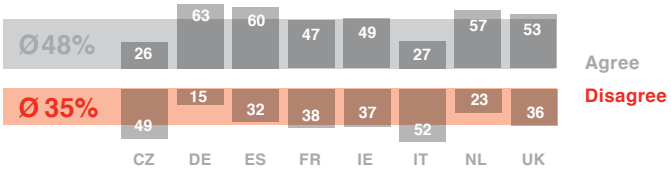
Over two thirds

(68 percent) of the respondents agree that the use of simple and clear language and short terms and conditions greatly help in gaining trust.

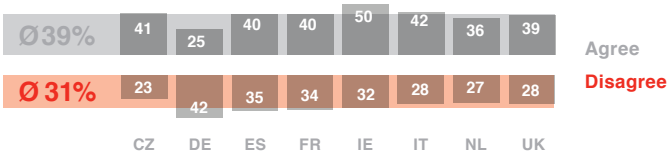
Views and opinions

State of knowledge of how companies deal with data

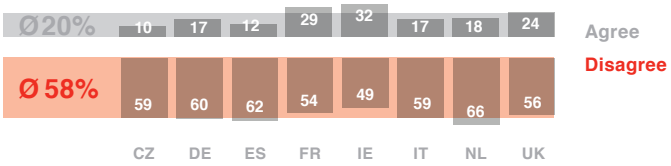
I understand that companies who offer free services […] will use my data in order to market/advertise other companies' products and services to me.



Nowadays, more and more companies try to give their customers more control over data by informing them about the privacy settings and how they can adjust them.



I know where and by whom my personal data is collected and stored.



To what extent do you agree with the following statements? Please use the scale from 1 „completely agree" to 5 „completely disagree". You can use the numbers in between to grade your answer. Base: split sample (n = 4.514-8.256).

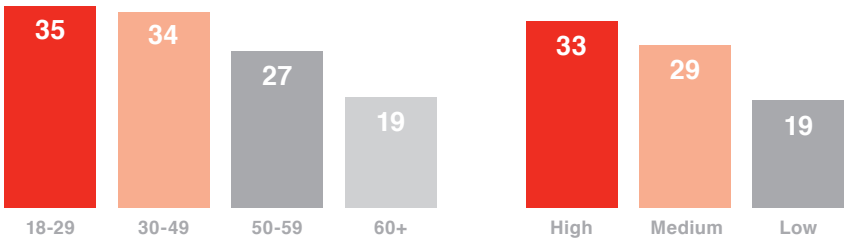
The level of people's knowledge of how companies handle their data varies greatly between countries. Thus in total just under half (48 percent) of the Europeans questioned are aware that free services from companies are linked to the collection of data for advertising purposes. In Germany and Spain in particular, six out of ten respondents agree with this statement (63 and 60 percent respectively). Nonetheless, over a third (35 percent) is not aware of this practice - with Italians and Czech being tail-light (27 and 26 percent agreement respectively).

The efforts by companies to give their users more control over the collected data are perceived to different degrees amongst the respondents: while 39 percent agree with this statement (in Ireland even every second person), 31 percent recognise no discernible efforts and just over a quarter (26 percent) want to take no clear position.

Just how acute the need for action is in this area becomes evident in the question about people's knowledge of which bodies collect data and where they store this. Only two in ten respondents here say they are informed about this (20 percent), while well over half (58 percent) are not.

“Through my online behaviour and the privacy settings that I chose, I feel in control of what information is collected about me”

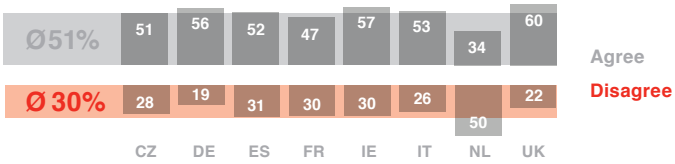
Percentage shown = “agree”



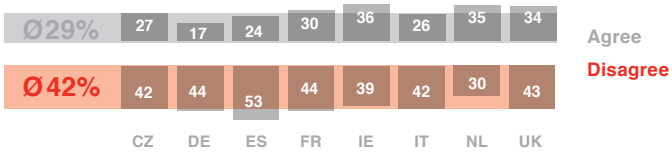
To what extent do you agree with the following statements? Please use the scale from 1 „completely agree“ to 5 „completely disagree“. You can use the numbers in between to grade your answer. Base: split sample (n= 4.514-8.256)

Data protection through online behaviour

I avoid writing about very personal matters in emails or text messages because I fear that third parties might access them.



Through my online behaviour and the privacy settings that I chose, I feel in control of what information is collected about me.



To what extent do you agree with the following statements? Please use the scale from 1 „completely agree“ to 5 „completely disagree“. You can use the numbers in between to grade your answer. Base: split sample (n= 4.514-8.256)

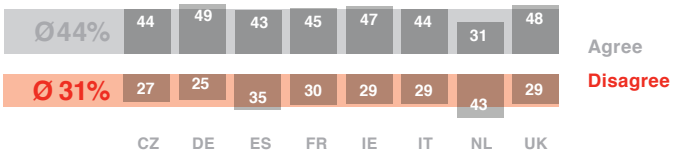
There is pronounced concern over unknown third parties possibly being able to access personal data. As a result, over half of the respondents (51 percent) avoid writing about personal matters in emails or text messages. Above all the British (60 percent) and Germans (56 percent) are worried about this, while half the Dutch respondents (50 percent) appear to be unconcerned and do not restrict themselves in their writing behaviour.

Despite the opportunities for controlling their own online behaviour and adjusting their privacy settings, less than a third of internet users (29 percent) feel they have control over what information is collected about them. In contrast, 42 percent disagree with this statement. Just a small number of Germans and Spaniards feel secure (17 and 24 percent respectively), and the same is true of older people aged over 60 and people with a low level of education (19 percent in each case).

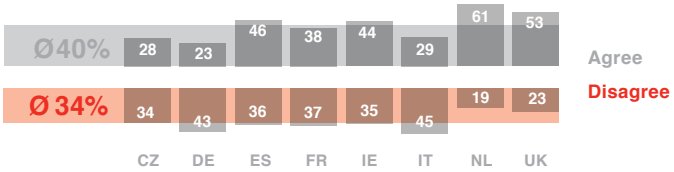
Views and opinions

Dealing with terms and conditions

I read the terms and conditions before downloading apps or programmes.



Even though I normally do not read all the terms and conditions, I often tick the box and use an online service without knowing exactly what the privacy protections are in place.

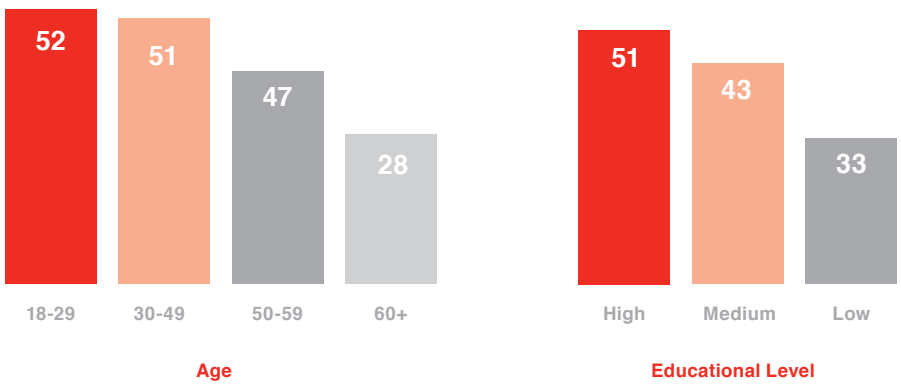


To what extent do you agree with the following statements? Please use the scale from 1 „completely agree" to 5 „completely disagree". You can use the numbers in between to grade your answer. Base: split sample (n= 4.514-8.256)

Generally, the terms and conditions inform users about what personal information is collected and used. 44 percent of respondents stated that they read these before downloading programmes or apps from providers. Here the Dutch stand out in particular, at 13 percentage points below the overall average. But people over 60 also differ significantly from the average, as only 28 percent of them say that they read the terms and conditions. The behaviour of people with a lower level of education is similar in that respect, with only one third of them stating that they read the terms and conditions. When we take a closer look at how people deal with the terms and conditions, it is evident that many people agree to them without having read them in detail beforehand. Thus four out of ten users (40 percent) use an online service without having checked precisely what will happen to their data.

„I read the terms and conditions before downloading apps or programmes"

Percentage shown = "agree"



To what extent do you agree with the following statements? Please use the scale from 1 „completely agree" to 5 „completely disagree". You can use the numbers in between to grade your answer. Base: split sample (n=4.514-8.256)

One third of respondents (34 percent) disagree with this statement. If we examine the individual countries surveyed, clear differences become apparent in terms of how users deal with the terms and conditions. Only 23 percent of the Germans and 28 percent of the Czechs tick the box without having informed themselves about the terms and conditions, while six out of ten Dutch people (61 percent) state they do.

Given the developments in recent years, topics such as data retention and government surveillance have increased in significance. Access to private data could assist the government in responding appropriately and swiftly in critical situations in order to prevent terrorist attacks and specific risks.

Half of the people questioned (55 percent) across all eight countries surveyed agreed with the statement that the government should be permitted to access personal data in order to maintain security in its own country. On the other hand, a quarter (25 percent) are against this requirement, while 19 percent abstain and neither agree nor disagree. Above all people from countries such as England and the Czech Republic endorse data access (62 percent each), while the French in particular vote against this (35 percent against).

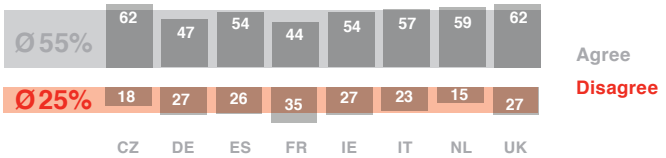
Half of

the people (55 percent) agree that the government should be permitted to access personal data in order to maintain security in their country.

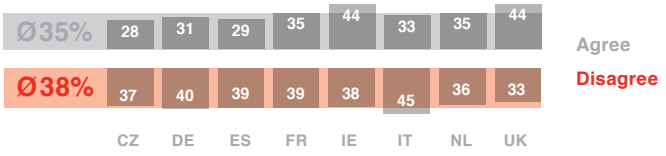
Against the backdrop of the digital transformation, the preservation of privacy has become a substantially more complex task. It is a matter of considerable debate whether the existing laws and government regulations regarding privacy protection are appropriate and proportionate. It is apparent from the results obtained that the perceptions of the regulatory framework vary greatly. Just over one third of the respondents (35 percent) agree with the statement that the existing laws are adequate and appropriate in this respect, while over a third (38 percent) disagree with this. A quarter of the sample refrained from answering (25 percent).

Government regulations and laws concerning data usage

Governments have a legitimate requirement to request access to people's data in order to keep the country safe from crime or terrorism.



I trust that the existing laws and government regulations with regard to the protection of my privacy are appropriate and proportionate.



To what extent do you agree with the following statements? Please use the scale from 1 „completely agree" to 5 „completely disagree". You can use the numbers in between to grade your answer. Base: split sample (n= 4.514-8.256)

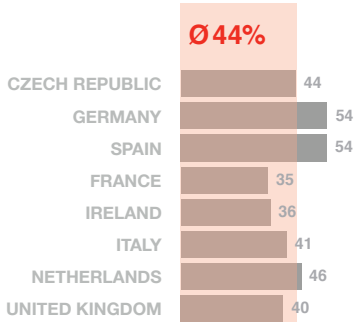
Data Protection

There are many possible ways to protect you personal data. The measure most frequently mentioned by the Europeans surveyed (44 percent) was to delete or block cookies. Germans and Spaniards do this more frequently than the average, the French and the Irish less often. A further measure that is also popular with the Spanish and less used by the French is to stop a download when they are requested to enter their personal details. In total 41 percent of the respondents do this. At any rate, almost one third (31 percent) across all countries say they do not give their real name and other personal details. Here too there are fairly large differences between countries – Czechs do this much more frequently (50 percent), and the Dutch much less often (18 percent). Avoiding the use of social media is also an effective method employed by just under one third (31 percent) to protect their own data. Other options that are employed are not shopping online (around a quarter in total), and for a smaller portion of respondents (15 percent) the use of email programmes that can encrypt messages.

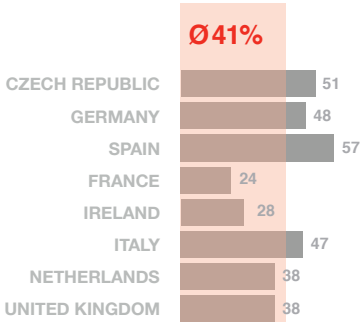
What measures do you undertake in order to protect your personal data?

Percentage Shown = "yes"

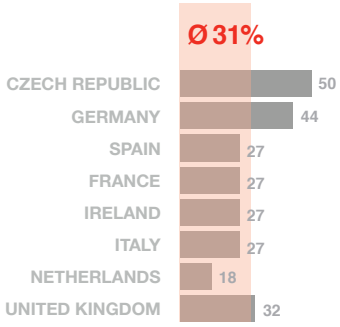
I delete or block cookies from my computer



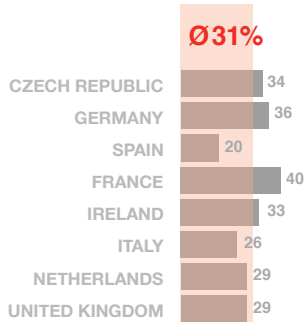
I have started to download […] but stopped when I realised I would be required to give access to my personal data […]



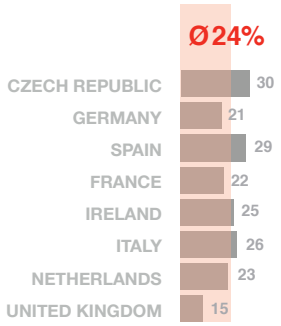
I avoid using my real name and other personal details



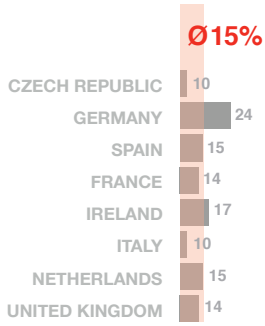
I avoid using social media



I don´t shop online



I use special e-mail accounts that encrypt my messages



What measures do you undertake in order to protect your personal data? Multiple answers. Base: All respondents (n= 8.256)

General attitude to big data

Over half of all the Europeans surveyed (55 percent) say they would prefer to pay money to use a service rather than permit their data to be collected and used by the provider. Younger people tend not to have such a strong aversion to their own data being used by the service provider. However, in the 18-29 age group, roughly equal numbers prefer to pay money or hand over their data.

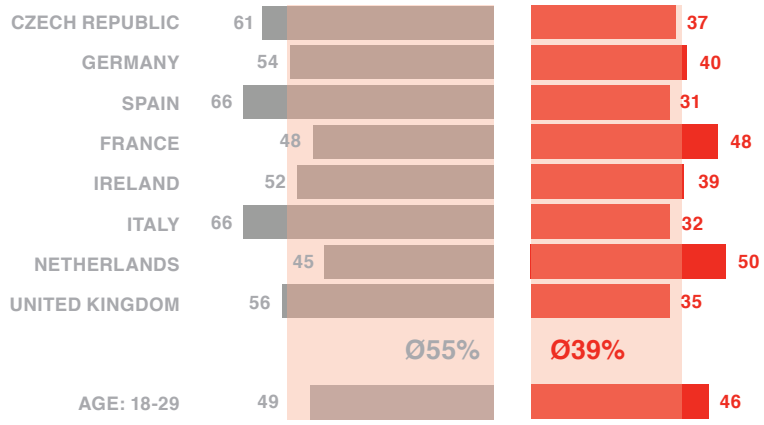
If we compare the countries with one another, it emerges that the Dutch and the French are fairly generous with their data, while by their own accounts Italians and Spaniards on the other hand clearly prefer to pay for a service. According to a German study by IfD Allensbach[1], mobile internet users use just under three times as many free apps as ones they have to pay for. This is an indicator that in reality a very large number of people still use apps and services without paying for them, and in return frequently also ultimately accept the use of their own data by the providers – partly also due to a lack of alternatives.

Over half

of all the Europeans (55 percent) would prefer to pay money to use a service rather than permit their data to be collected and used by the provider (39 percent).

[1] IfD Allensbach, 2015. Allensbacher Computer- und Technik-Analyse - ACTA 2015. Source: http://www.ifd-allensbach.de/acta/ (last accessed December 2015)

Use of online services – pay money or hand over your data?



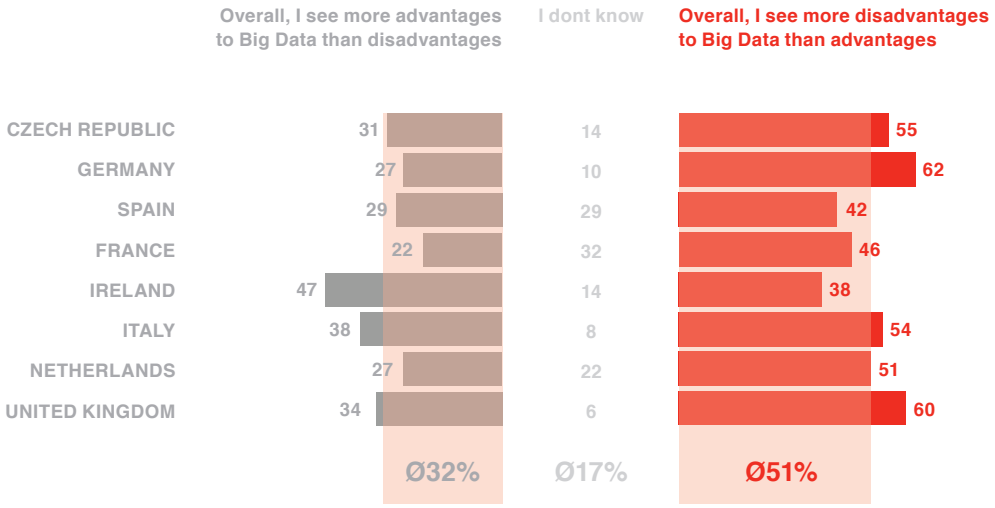
In general, I would rather prefer to pay for the service than allowing the supplier to use some of my personal data for commercial purposes.

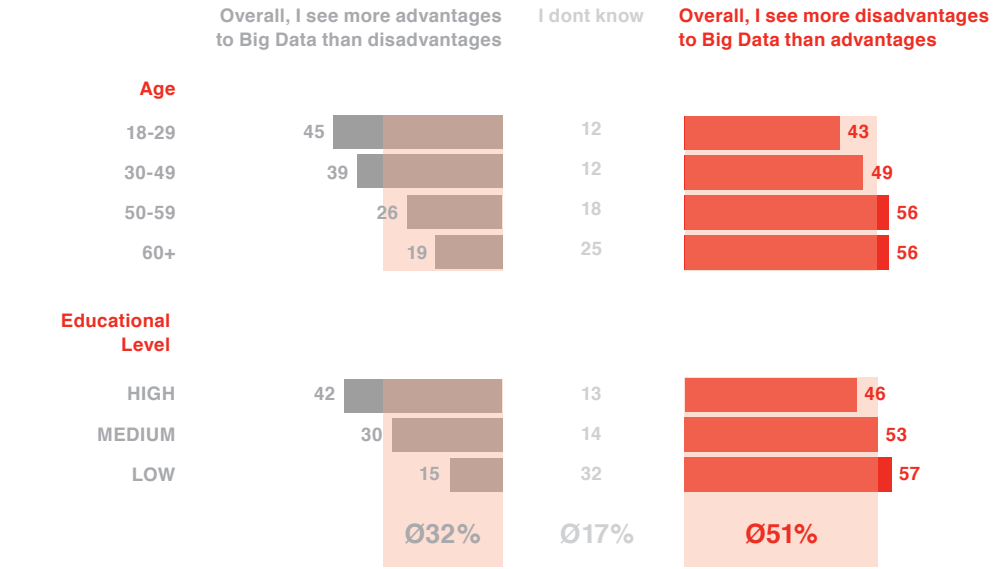
In general, I would rather prefer to pay nothing for the service – but understand that in return the supplier is going to collect and use some of my personal data for commercial purposes.

If you use a digital service (e.g. email, apps), which of the following options do you prefer? Missing values to 100%: no answer. Base: Internet users (n= 6.979).

General attitude to big data

Advantages and disadvantages of big data





New ways of collecting, analysing and comparing data that result from people's usage of the internet and mobile phones – a phenomenon called big data – can help to improve products and services, boost academic research, help in curing diseases or solve social problems. On the other hand, it is argued that the massive collection analysis of personal data brings risks. What do you think about the big data phenomenon? Base: All respondents (n= 8,256)

> „I think a lot of people see the advantages and forget about anything else.“
> PARTICIPANT FOCUS GROUP QUALITATIVE SURVEY

32%

of all respondents see more advantages than disadvantages to big data.

Half of all those questioned (51 percent) see more disadvantages than advantages to big data, with just under a third (32 percent) seeing more advantages. 17 percent say they don't know.

On a country by country comparison, only the Irish see more advantages (47 percent) than disadvantages (38 percent). In all the other countries – and especially in Germany (where 27 percent see more advantages and 62 percent more disadvantages) – a critical attitude predominates among the people.

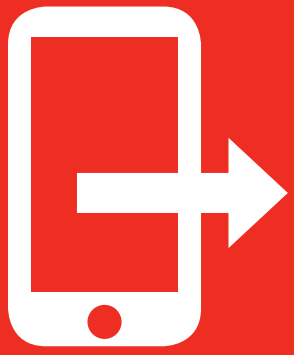
A positive attitude to big data is slightly more common in the 18-29 age group, and declines sharply with increasing age. The picture is similar when different levels of education are compared: while roughly equal numbers of people with a higher educational level see both advantages and disadvantages to big data, amongst less educated people the disadvantages clearly predominate – and in addition around one third of this group are in two minds about what to make of the big data phenomenon at all.

This shows that there is still a need to better educate society in this respect: on the one hand the risks of big data and on the other hand the opportunities need to be more clearly communicated by politicians and companies, especially the digital service providers. People need to know about the collection, use and extensive analysis of their personal data, and the associated advantages and disadvantages.

Scenarios

- Within the quantitative part of the survey, four different scenarios about data usage and big data analytics were evaluated.

- Each respondent was presented with at least one of four scenarios.
- The scenarios describe a situation in an everyday setting that can involve the usage of big data. Each scenario is introduced with a short description.
- For each scenario, the respondents were asked to evaluate how comfortable they felt with five to six statements and situations.
- These statements/situations represent different levels of data usage and intrusion into people's privacy.



Connected Cars, GPS, Mobility

Cars generate a huge amount of data today thanks to their sophisticated electronic systems, much of which is used for diagnostic behaviour in order to ensure the car is performing correctly, or can be repaired. Given the amount of data that is generated how comfortable would you be with this data being used in any of the following ways?

To what extent are you comfortable with the following scenarios?

very comfortable | comfortable | neutral | uncomfortable | it should not be allowed

The car manufacturer uses data such as the overall-status of the car and your driving behaviour order to optimise the service they offer and to improve the running of your car.

The suppliers of navigation systems use your data generated to analyse traffic in real time and provide you with individualised traffic advice.

Your data is shared with the local authority or relevant government department in order to enable them to improve the road network, flow of traffic and public transport infrastructure.

Your data is shared with the police which use it to identify traffic violations.

Your data is used by your insurance company to make individual offers or premiums based on your driving behaviour.

Your data is sold by one of the companies mentioned above to a third party on an anonymised and aggregated basis.

Cars generate a huge amount of data today thanks to their sophisticated electronic systems, much of which is used for diagnostic purposes in order to ensure the car is performing correctly, or can be repaired. Given the amount of data that is generated, how comfortable would you be with this data being used in any of the following way? Missing values to 100%: no answer. Base: Respondents answering scenario (n= 2.625)

Scenarios

Digitisation has long since penetrated a wide variety of mobility concepts, and our vehicles produce ever larger quantities of data. From automotive manufacturers, suppliers of positioning services and tour operators to public authorities: they all use data aggregation and analysis to generate their offers and innovations. The respondents support the innovative opportunities depending on the personal benefit to themselves, although their agreement to this is somewhat cautious.

43 percent of respondents could envision the idea of improved service from automotive manufacturers based on their own driving behaviour and the condition of the car. Above all people from Spain stand out as particular advocates of this idea, with two thirds of the Spanish respondents feeling comfortable with the scenario (67 percent), while less than a quarter of Germans take to the idea (22 percent).

27%

of people would feel comfortable with insurances using their data to make individual offers based on driving behaviour.

Navigation systems suggesting optimised routes on the basis of the driver's own mobility data and that of other people are meanwhile common across Europe. This is accepted by more than half of the respondents (55 percent). On the other hand, there is somewhat less support for data being passed on to public authorities to improve traffic situations, with only 45 percent of respondents agreeing with this. While Italians (61 percent) and Spaniards (58 percent) are especially enthusiastic about this concept, Germans in particular display a much lower level of agreement (26 percent).

The use of personal data for identifying traffic violations finds many more opponents than advocates. Less than a third of respondents feel comfortable with this idea (29 percent), while in contrast half are negative and 20 percent claim that this use by the police should not be permitted. Here too it is primarily Italians (47 percent) who are open to the idea, while Germans show the lowest acceptance with 13 percent agreement.

The possibility of passing personal traffic data on to insurers so they can adjust their premiums meets with similar dislike. Almost half of the respondents voted against this, with 16 percent advocating that this should not be allowed.

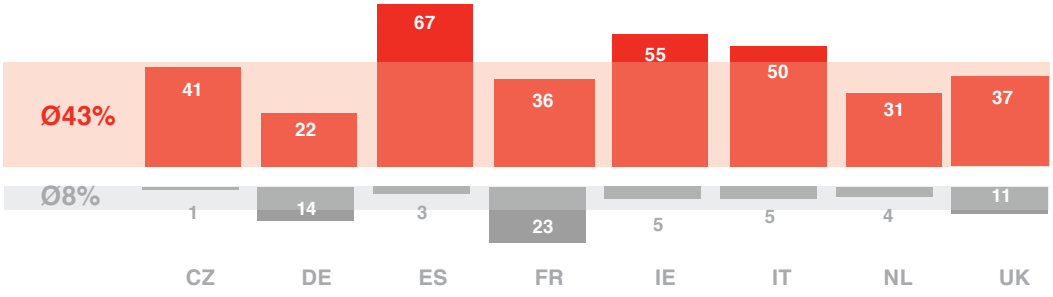
When it comes to the sale of personal traffic data to third parties, respondents displayed the lowest acceptance (eleven percent agreement), even if data is anonymised and aggregated. Two out of five (41 percent) called for this to be banned, and over a third (37 percent) feel uncomfortable with this.

„Going

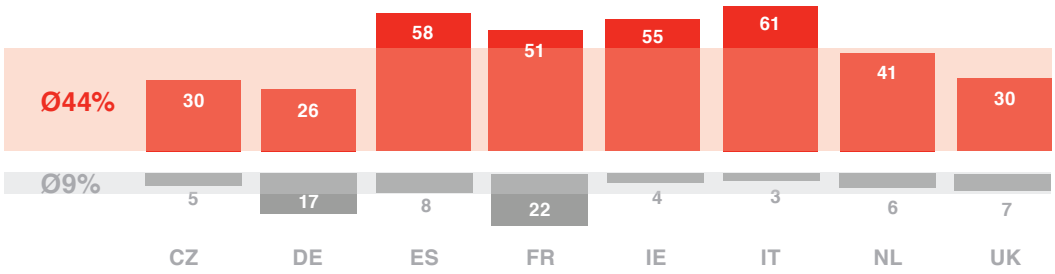
from one place to another is easier with a map that shows you what the traffic is like and helps you change your route… that might make driving around the city easier."

PARTICIPANT FOCUS GROUP QUALITATIVE SURVEY

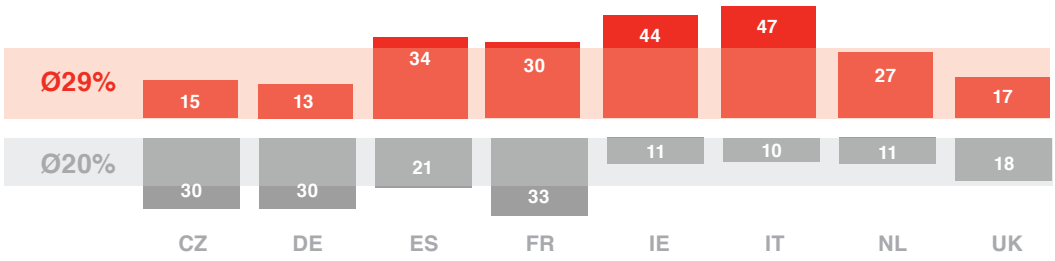
The car manufacturer uses data such as the overall-status of the car and your driving behaviour in order to optimise the service they offer and to improve the running of your car.



Your data is shared with the local authority or relevant government department in order to enable them to improve the road network, flow of traffic and public transport infrastructure.



Your data is shared with the police which use it to identify traffic violations.



Cars generate a huge amount of data today thanks to their sophisticated electronic systems, much of which is used for diagnostic purposes in order to ensure the car is performing correctly, or can be repaired. Given the amount of data that is generated, how comfortable would you be with this data being used in any of the following way? Base: Respondents answering scenario (n= 2.625)

Scenarios

E-Commerce, Shopping, Loyalty Cards

Please imagine that you regularly visit a shop or use store loyalty cards. You have accepted to be contacted by the company.
To what extent are you comfortable with the following scenarios?

To what extent are you comfortable with the following scenarios?

very comfortable | comfortable | neutral | uncomfortable | it should not be allowed

The shop uses the data they collect to improve their service or product portfolio and adapt it to the customers' preferences.

The shop uses the data they collect to send you personalised offers or special deals on products that would be interesting to you based on your shopping patterns in the past.

The shop sells your data for advertising and marketing purposes to a third party.

The shop uses the data they collect and is able to realise that a change in your life has occurred (e. g. a child is born) and offers you special products based on this data.

very comfortable | comfortable | neutral | uncomfortable | it should not be allowed

The shop uses the data they collect from your shopping habits to estimate your income and offers you suitable products based on that estimation.

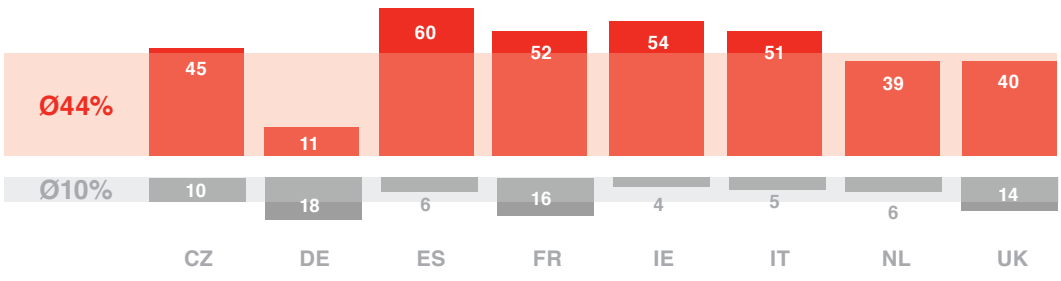
You use the smartphone app of a shop, e .g. a supermarket chain. The app has access to your location and sends you special offers or information when you get close to a branch of the chain.

Please imagine that you regularly visit a shop or use loyalty cards of a store. You have accepted to be contacted by the company. To what extent are you comfortable with the following scenarios? Missing values to 100%: no answer. Base: Respondents answering scenario (n= 2.671)

Customers are only happy to give shops details of their purchasing behaviour if they can derive a personal benefit from this. Well over 40 percent of users have a positive attitude to improved service and product quality that is customised to their own needs (45 percent) and personalised offers based on their own purchasing behaviour (44 percent), and are willing to provide their data in return. In particular, personalised offers are popular with six out of ten Spanish citizens (60 percent), while the figure for Germans is only eleven percent. The respondents display a strong aversion to their details being sold to third parties, with 45 percent stating that this should be banned and 32 percent feeling uncomfortable with this scenario.

The aggregation and evaluation of personal data can enable providers to tailor their advertising to their customers. However, respondents tend to be critical of this. A third of them feel uncomfortable when shops use their personal data to draw conclusions about their personal situation (31 percent) or their income (32 percent). Approximately a quarter argue that these activities should be banned (23 and 28 percent respectively). The prospect of using an app that will identify your location and will send you offers from a store when you are close to it also does not go down very well. Only 28 percent of respondents feel comfortable with this option.

The shop uses the data they collect to send you personalised offers […] based on your shopping patterns in the past.



very comfortable or comfortable

it should not be allowed

Please imagine that you regularly visit a shop or use loyalty cards of a store. You have accepted to be contacted by the company. To what extent are you comfortable with the following scenarios? Base: Respondents answering scenario (n= 2.671)

Scenarios

Health, Clinical Diagnostics

Many experts say that the collection and analysis of patients' data will fundamentally change and improve medical research leading to the development of new andimproved treatments, and thus help thousands of patients, while others see risks and potential disadvantages for individuals. How comfortable are you with the following scenarios? Imagine your health data is to be shared with other companies, such as insurance companies, gyms and other health and lifestyle institutions.

To what extent are you comfortable with the following scenarios?

very comfortable | comfortable | neutral | uncomfortable | it should not be allowed

Large amounts of people's health data should be collected and analysed on an anonymous basis by health institutions, […], to enable improvements in the detection and treatment of diseases.

You would give these institutions access to your health data as long as it is amalgamated, anonymised and only used for statistical/research purposes.

You would give these institutions access to your health data and trust that they would store and use it appropriately.

You would give these institutions permission to store and analyse your data as personal and identifiable data as this could help to cure a disease you or others might have.

Would you give permission for your insurance to access your health and fitness data so they can adapt your insurance rate according to your health behaviour and fitness level, i.e. you pay more or less depending on your lifestyle?

Would you be happy for your health and fitness data to be analysed by a special health programme or smartphone app, and to receive recommendations on how to live a healthier life and prevent the onset of certain diseases?

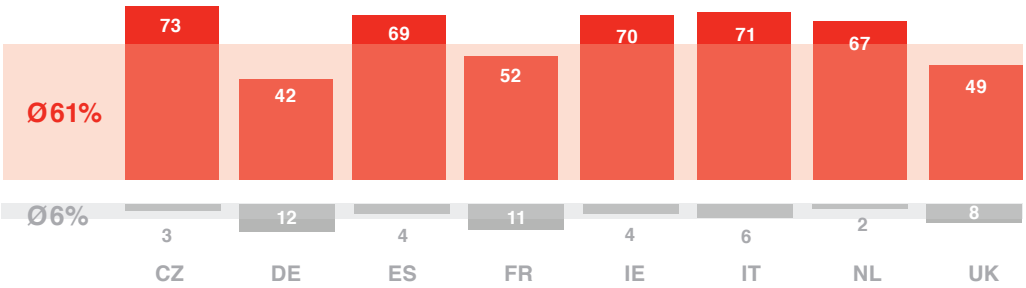
yes no

Many experts say that the collection and analysis of patients' data will fundamentally change and improve medical research leading to the development of new and improved treatments, and thus help thousands of patients, while others see risks and potential disadvantages for individuals. How comfortable are you with the following scenarios? // Imagine your health data is to be shared with other companies, such as insurance companies, gyms and other health and lifestyle institutions. Missing values to 100%: no answer. Base: Respondents answering scenario (n= 2.650)

To improve prevention and treatment of diseases, health research is reliant on the collection and analysis of individuals' health data. Two thirds of respondents (65 percent) feel comfortable with this scenario, and almost as many (62 percent) would be prepared to provide their own data for this in anonymised form.

More than half of the respondents (52 percent) expect their data to be securely stored by health institutions, and would trustingly provide their data to these institutions. Approximately the same number of people (53 percent), especially those aged between 18 and 29, would make personal and identifiable data available to health institutions to enable them to cure their own illnesses or those of other people. On the other hand, it is apparent that 72 percent of the respondents would not give insurance companies access to their health or fitness data if the latter were going to use this to adjust their premiums accordingly. The use of health programmes or apps that provide health recommendations on the basis of collected data is also rejected by a majority of respondents (59 percent).

You would give […] your health data as long as it is amalgamated, anonymised and only used for statistical/research purposes.



Many experts say that the collection and analysis of patients' data will fundamentally change and improve medical research leading to the development of new and improved treatments, and thus help thousands of patients, while others see risks and potential disadvantages for individuals.How comfortable are you with the following scenarios? Base: Respondents answering scenario (n= 2.650)

Scenarios

Smart Meter, Smart Home

In many countries smart meters have been installed in people's homes. They automatically send your energy company the amount of power you use. If such a device were installed in your home, to what extent would you be comfortable with the following scenarios? Programmable thermostats are now also available along with other devices which can be used remotely to control the use of functions such as lighting, heating and the ability to turn appliances on and off.

To what extent are you comfortable with the following scenarios?

very comfortable | comfortable | neutral | uncomfortable | it should not be allowed

The smart meter measures precisely your daily household consumption and bills you accordingly.

Your energy supplier uses the data generated to offer you special rates based on your individual consumption pattern and makes recommendations about your energy use.

Your energy supplier sells your data to a third party on an anonymised and aggregated basis.

Using the data generated by the use of these products, the software knows when you are at home, when you are up or asleep and when you are on holiday and adapts your heating and/or lighting accordingly.

The software of the thermostat is tracking your location and begins warming your house as soon as your car approaches.

Smart meters for heating are a good thing, because they help to evaluate your energy consumption and help to save the environment through reduction of the use of natural resources.

In many countries smart meters have been installed in people's homes. They automatically send your energy company the amount of power you use. […], to what extent would you be comfortable with the following scenarios? // Programmable thermostats are now also available along with other devices which can be used remotely to control the use of functions such as lighting, heating and the ability to turn appliances off and on. // Smart meters for heating are a good thing, because they help to evaluate your energy consumption and help to save the environment through reduction of the use of natural resources. Missing values to 100%: no answer. Base: Respondents answering scenario (n= 2.653).

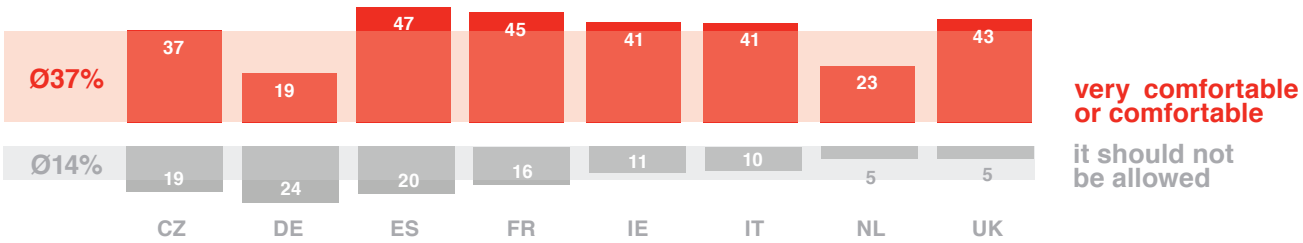
The internet of things is making ever greater inroads into our lives, and there are now other electronic devices online alongside computers and smartphones. Intelligent domestic appliances for example, such as washing machines and fridges that can communicate via the internet with one another, the manufacturer or external service providers, have been less widespread until now. In addition, intelligent electricity/gas/water meters (smart meters) have already made their way into a number of households.

Approximately half of all the Europeans questioned (47 percent) are in favour of a household's daily energy consumption being precisely measured and calculated by means of a smart meter. The same is true of special tariffs and recommendations from the energy supplier corresponding to the individual energy consumption (50 percent agreement). On the other hand, a large proportion of them reject the sale of data to third parties, while more than one third (35 percent) think this should be outright prohibited.

The use of programmable thermostats offers the option of adjusting our domestic appliances to our own rhythm of life. The appliances can aggregate and evaluate data and independently adjust the control of heating and lighting, for instance, to the users' habits. While over a third of respondents (37 percent) feel comfortable with this, on the other hand rather more people (40 percent) have a negative attitude.

A similarly polarised picture (37 percent agreement and at the same time 37 percent disagreement) becomes apparent in the case where the thermostat's software tracks a person's location and switches the heating on as soon as their car approaches the house. Around two thirds of respondents (68 percent) feel that intelligent electricity meters offer an opportunity to critically evaluate personal energy consumption, while also enabling them to improve their environmental impact.

[...] The software knows when you are at home, [...] and adapts your heating and/or lighting accordingly.



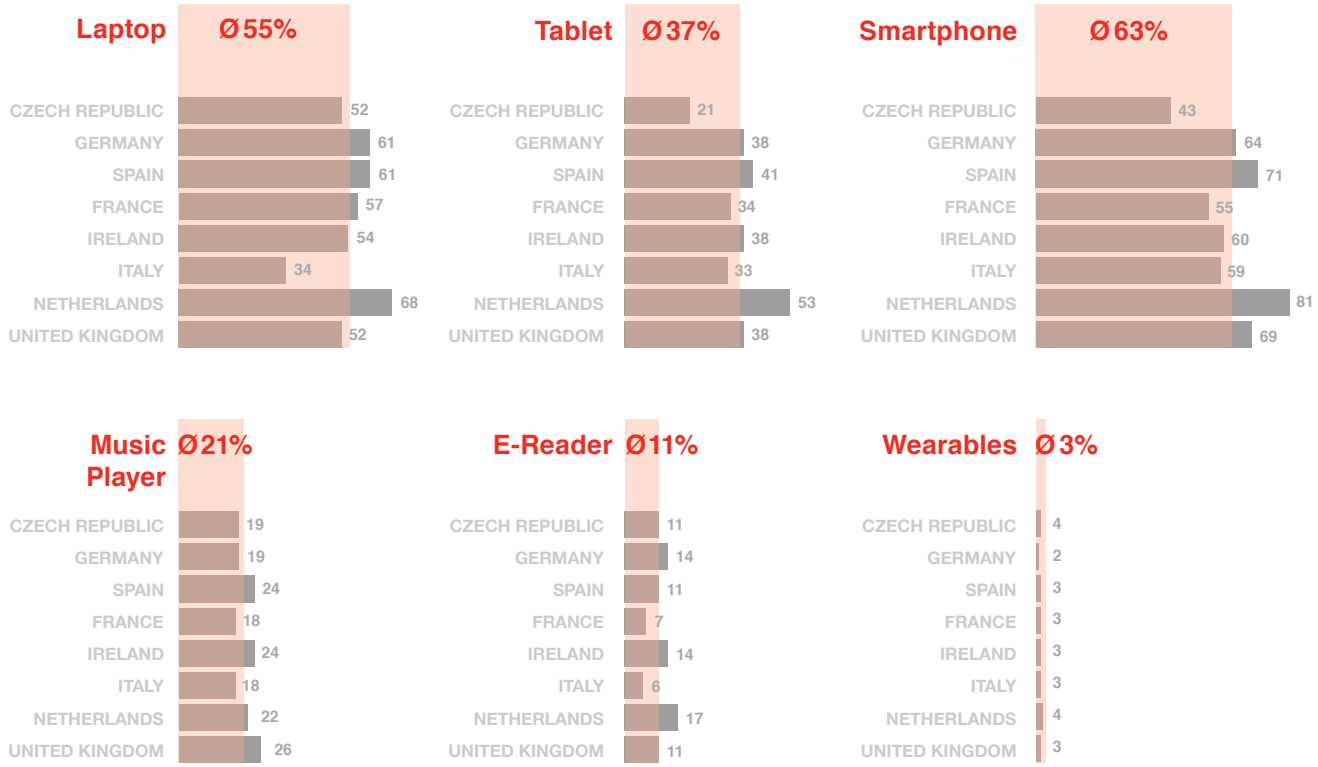
Programmable thermostats are now also available along with other devices which can be used remotely to control the use of functions such as lighting, heating and the ability to turn appliances off and on. Thinking about these kinds of products, how comfortable are you with the following scenarios? Base: Respondents answering scenario (n= 2.653)

Usage of Devices

Smartphones are the most popular electronic devices among the European population: almost two out of three respondents own respectively use one (63 percent). More than half of the respondents use a laptop (55 percent), whereas tablets are ranked third with a usage of 37 percent. One out of ten respondents reads on an E-reader (11 percent) and only three percent utilize wearables. When comparing the countries covered in the survey, the Dutch appear particularly open to using all of those devices, while Italians use laptops less frequently and Czech people own fewer tablets and smartphones.

Which of the following mobile electronic devices do you use for private and/or work purposes?

Percentage shown = "yes"



Which of the following mobile electronic devices do you use for private and/or work purposes? Base: All respondents (n=8,256)

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