



Personal data in the cloud:

The importance of trust



shaping tomorrow with you

Foreword Cloud computing is heralding a new information age. We wander the web, carefree, creating and consuming data as we go. But further than that; our daily movements, even our thoughts are leaving behind a trail of data in their wake. Cloud computing is changing the way we live our lives, putting information into the heart of everything we do, wherever we go.

So just how comfortable are we in this changing world? And what do we need to equip ourselves?

In order to answer these questions, we realized that we needed to put ourselves in the shoes of consumers and citizens to find out what they value and what they fear. We believe that the relationship between the individual and their data is absolutely crucial to the path that information technology will take over the coming years. So we commissioned research into the views of individuals from all over the world. This research has given us the unique insights which we are able to share in these reports.

Our earlier report explored how we are moving into a see-through society, one in which information about us may be widely accessible but where individuals enjoy material benefits for doing so. There were strong grounds for optimism in the fact that many people believed these benefits outweighed the risks. We concluded that the challenge is to find ways to empower individuals with respect to their own data. To let them define the boundaries between private and shared.

Since the first report, we have been reflecting on the issue of trust and the relationship that individuals have with those organizations that hold or process their data. This report focuses on the extent to which we do – and don't – trust governments and large corporations to protect our interests where data privacy is concerned. It highlights how important trust is – as both an enabler and a blocker. But it goes further and makes practical recommendations about what organizations and institutions should be doing to build trust.

It may seem paradoxical in this technological age that trust matters at all. After all, systems have become so sophisticated that surely protection of confidential information should be guaranteed? In fact, it is technical change that is driving the importance of trust.

Where data controls were once simple and highly visible, technology has created complexity and the security of systems – effective or otherwise – is often obscured from us. Meanwhile our daily activities rely more on electronic transactions and we generate ever more personal data.

Investing the necessary time to understand the controls that are protecting our information and the implications of what we do carries a high cost for most of us. Do we really read all the terms and conditions that are put in front of us when it is so much easier to just tick the little box? We don't have the time. In short, we have to trust – whether we like it or not.

Indeed, we have found that not only are there a wide variety of attitudes to trust in different countries, but also that attitudes vary between individuals and demographic groups. And trust itself means many different things to different people; there is no one common definition. But the nature of trust is not random. This research shows that it is based on observable human traits and cultural characteristics.

So how do you build trust? The requirements of trust may be different for government organizations over private ones, but trust is always something that needs to be developed, it can't be bought or turned on like a switch. Trust is about being responsible and responsive. Above all it is about understanding people's needs and fears. We believe our research gives us a valuable starting point.

Masaharu Sato
President, Fujitsu Research Institute

Introduction

Transparency does not equal trust

Trust. One word that carries so many different meanings across the world. In French it's *confiance*, in German *Vertrauen*, both of which imply confidence. In Japanese, it's *shinrai*, a word that has its roots in reliability. In English, there are connotations of transparency: we trust people whose motives we understand. But trust has a darker side: we take things on trust when we lack solid evidence.

Our recent report, 'Personal data in the cloud: a global survey of consumer attitudes', explored people's attitudes to cloud computing across the world. Based on an online survey of 6,000 people in 12 countries, we found that, where they could see material benefits for themselves and those around them, people thought that the benefits of cloud computing – being able to have instant access to medical records irrespective of our location, for example – would outweigh the potential dangers of our data falling into the wrong hands or being exploited by business or governments for their own ends. But an increasingly see-through society, one in which information about us may be widely accessible, creates genuine dilemmas and sparks understandable fears about how that information should be stored and who should have access to it.

Society may be more transparent today, but can we trust it?

The challenge, we argued, is to find a way of putting people in control of their own data. The boundaries between what we're prepared to share and what we want to keep private are ones we should be able to draw for ourselves, not ones that should be drawn for us by a government or corporation.

We now want to explore the issues surrounding data privacy further, again taking consumers' views as our starting point. For governments and business, struggling to develop an appropriate response to widespread public fears, the problem is complicated by a wide variety of attitudes in different countries: there isn't a one-size-fits-all solution to data privacy. But the picture is by no means random. Our research suggests that two factors, explored in further detail in the following pages, account for much of this variance:

- The complex nature of trust itself – the extent to which people find themselves relying on institutions even when they don't trust them.
- Different attitudes to cloud computing – we identified three distinct consumer groups whose willingness to adopt new technology also determines their levels of trust where data privacy is concerned.

Understanding how these two factors interact provides, we believe, important guidance for governments and private companies as they deal with the challenges posed by our see-through society.







The importance of trust

The many faces of trust

Attitudes towards data privacy illustrate the complexity of trust

Nowhere is the complexity of trust more evident than in consumers' attitudes towards data privacy. Fujitsu's research shows that feelings run high on this issue: 89% of the consumers we surveyed said they were concerned about who had access to their data, and a similar number said they were becoming more security conscious. However, almost three quarters were worried that there was nothing they, as individuals, could do to control what happens to their data. In this context, people expect governments and large companies to act responsibly, although they don't necessarily trust them to do so. The picture is further complicated by the extent to which levels of trust vary from country to country.

89% of consumers are concerned about who has access to their data

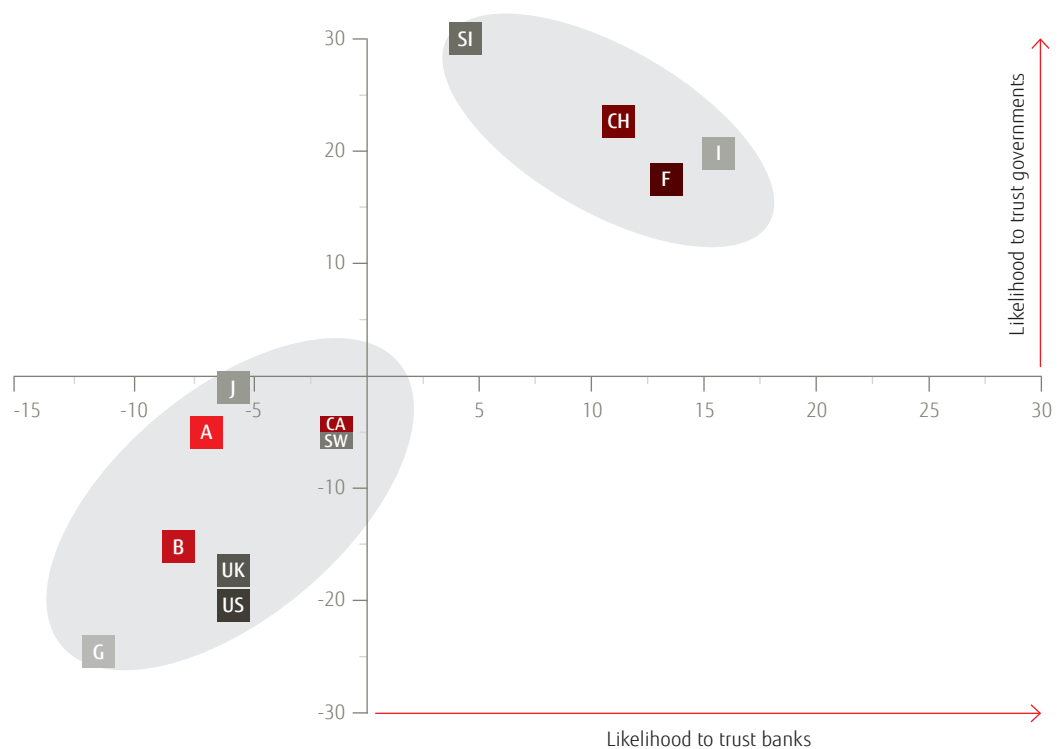
One of the ironies highlighted by our research is that consumers would be more willing to trust their bank to keep their data secure than their government – despite the reputational damage many banks incurred during the financial crisis. Perhaps that's not too surprising: personal data is like money – it can be kept safe or spent; it may have a value that can grow or shrink – and the idea that banks are a safe place to store our money is clearly deeply engrained in most societies. However, there are few institutions in few countries that escape censure. Only four countries – India, Finland, China and Singapore – exhibited a general bias towards trusting institutions, both private and public sector. All the other countries studied were cynical about both banks and governments, Germany and the US particularly so. In fact, our research suggests that countries can be divided into two distinct groups, those whose population are more likely to respect institutions in general, and those more likely to be cynical about them. History may play a role in explaining this, but so too will cultural attitudes, seeing a society as a whole rather than the sum of millions of individuals.

Consumers are more willing to trust their bank to keep their data secure than their government





Comparing trust in government to trust in banks by country (in %)



A Australia	B Brazil	CA Canada	CH China	F Finland	G Germany
I India	J Japan	SW Switzerland	SI Singapore	UK UK	US USA

In government we don't trust...

Of course, just because we don't trust someone, doesn't mean that we won't – admittedly reluctantly – rely on them to do something. Often, at home, at work or in society at large, we depend on people when we'd rather not; we don't have a choice. The same is true when we look at consumers' attitudes to the role governments could play in protecting personal data.

When we compare the comparative willingness of people in different countries to trust their governments, to the extent to which they think their government should have an active role in protecting their data privacy, three attitudes emerge.

Mapping countries' expectations about government intervention against their trust in government (in %)



State-reliant countries are those where people are more predisposed both to trust government institutions and to believe that the government should do so. Chinese consumers, for example, are around 25% more likely to trust their government than the average across all countries and are 20% more likely to believe that the government should play a role in facilitating data sharing – something consumers in many other countries were wary of. At the other end of the spectrum, consumers in **self-reliant countries** were far more likely to be cynical about their governments, but equally had little expectation that the latter should be actively intervening. US consumers, in particular, were 20% less likely to trust their government with their data but also 10% less likely to think that the government should be imposing penalties on companies that misuse data.

Consumers in the US are 20% less likely than those other in countries to trust their government with their data

There is a clear lesson here when it comes to formulating and enforcing data privacy controls. Some societies – the state-reliant, in our terminology – expect governments to play an active role and trust them to do so appropriately. Others – the self-reliant – neither want nor expect government to intervene.

There is, however, a group of countries where the lessons are far less clear, because their citizens find themselves in the difficult position of doubting their governments' motives while simultaneously depending on them to intervene. These countries – **the state-doubters** – pose a much greater data privacy problem: consumers here will demand government intervention but never be satisfied by it, creating constant tension which will inevitably inhibit their ability to exploit the economic potential of cloud computing.

But do we trust the large-scale private sector organizations any better?

Applying a similar analytical process to people's expectations about large private sector organizations results in a distinctly different grouping of countries. Germans, for example, are significantly more likely to trust corporations with data than their government.

Corporate-minded countries, of which Germany is one, alongside China and Japan, have comparatively high levels of trust in companies and, as a consequence, are relying on them to act on data privacy issues. People in **independent-minded countries**, such as Canada and Brazil, prefer to rely on their own resources and are much less willing to trust private sector organizations on this issue. **Corporate-truster countries** – Australia, India, Singapore, the UK and the US – tend to think highly of private sector companies (often more so than their governments) but still have a bias towards taking responsibility for protecting their own data. Finally, we have the **corporate-doubters** (Finland and Switzerland) which want and expect companies to act but doubt their integrity.

Germany, China and Japan all have comparatively high levels of trust in companies and are relying on them to act on data privacy issues



Mapping countries' expectations about how corporations will act on data privacy issues compared to their trust in corporations (in %)



For corporations trying to find an appropriate stance on data privacy, one that meets their commercial needs while allaying the concerns of their customers, several messages emerge from this. Companies operating in corporate-minded countries clearly have a mandate to take an active stance: their customers will not be expecting them to sit idly by while their data is stored and accessed in ways beyond their control. In independent-minded and corporate-truster countries, the message is very different, one of empowerment and transparency rather than paternalism. Corporate-doubter countries may pose a greater challenge: how can you develop an approach to data privacy which your customers expect you to do, even though they won't trust you when you have?



The importance of trust

Advocates, objectors – and fence-sitters



Attitudes to the benefits and pitfalls of cloud computing vary by country

Countries differ, not just in the extent to which their citizens are predisposed to trust public and private institutions, but also in attitudes towards the benefits – and pitfalls – of cloud computing and data sharing.

Our research suggests that consumers across the world fall into three distinct categories so far as data privacy is concerned.

Sachin is an **advocate**. He's a 32-year-old graduate now working as software engineer and living in Mumbai. Like other people in this group, he is passionately excited by the benefits of cloud computing and is prepared to share his data, at least on his own terms. He's an optimist, believing that his data is secure and that cloud computing creates opportunities for him to save money and time. But what he likes most about it is its convenience: as a heavy internet user, he relishes the prospect of being able to access his data wherever and whenever he needs to.

Advocates are 41% less likely than the average consumer to worry about the loss of personal data

Attitudes to data sharing: advocates (in %)

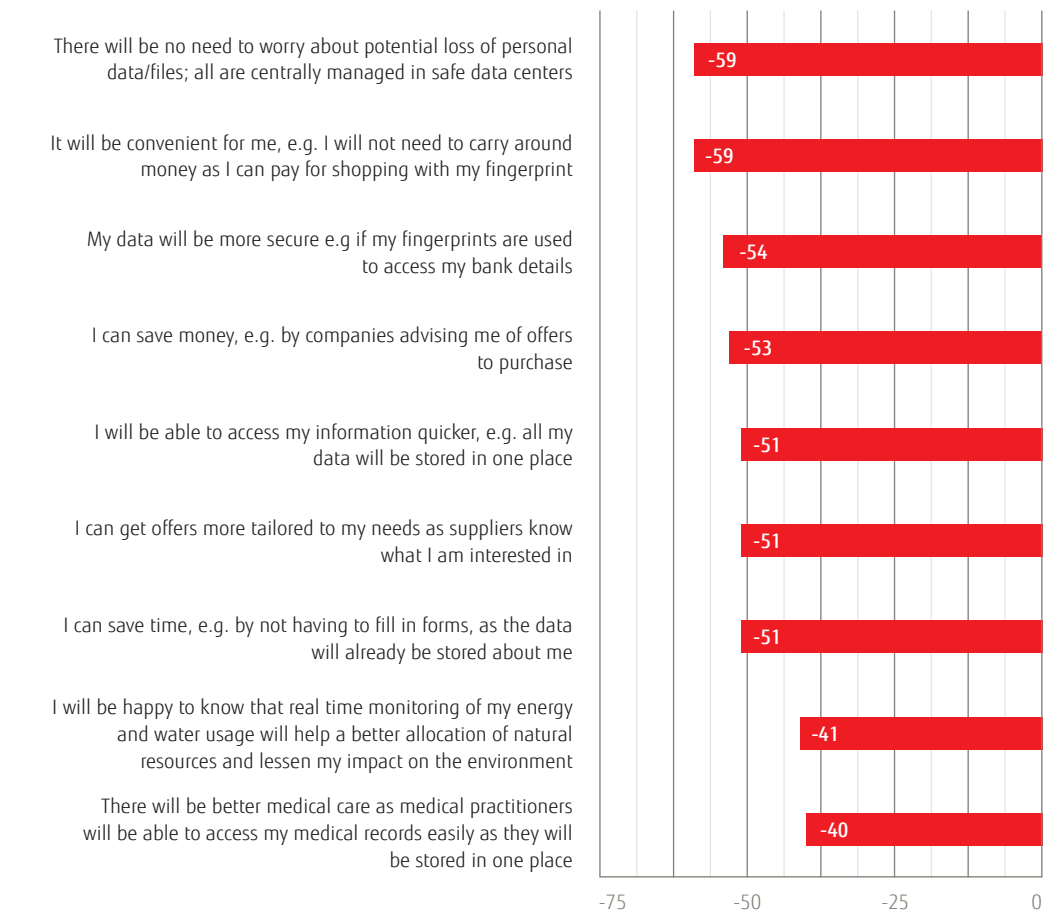


— % higher than the average across all consumers



Living in Munich, Christiane is an **objector**. Future scenarios about the application of cloud computing worry her, as she can foresee a world – as she watches her teenage children grow up – in which personal data, financial records and medical history can be accessed by private sector organizations without people’s knowledge or permission. That the government may be able to monitor data, even for ostensibly benign reasons, she views as a potential infringement of her civil liberties. Even though she uses the internet almost as often, she is 60% more likely to be concerned about where her data is stored than Sachin, and foresees no benefits to her in terms of convenient access to that data.

Attitudes to data sharing: objectors (in %)



— % higher than the average across all consumers

To some extent, advocates and objectors are mirror images of each other – younger generation versus older; men versus women; excited by the possibilities of technology versus worried by them – but they are not rigid stereotypes. Our research still found older people who were very positive about the benefits of cloud computing, and men who were concerned about it.

Objectors are 59% more likely than the average consumer to think we should be worrying about the security of our personal data

If anything, being an advocate or objector is an attitude of mind more than a demographic group – and what distinguishes it is trust. Advocates are ten times more likely to trust institutions to look after their data than objectors. They are, for example, around 50% more likely to want governments to play a role in connecting data in order to make it more accessible; something that particularly scares objectors.

We believe that these attitudes will set the agenda for data privacy and storage across the world. Even taking demographics into account, some countries, such as India, China and Brazil, have on average almost twice as many advocates in their population and four times fewer objectors, compared to the more mature economies of North America and Western Europe. It may be that the BRIC countries, developing so quickly in economic terms, also enjoy accelerated rates of adopting new technologies. Such attitudes should mean that the standards governing data protection in these countries will be easier to establish and more effective, enabling the take-up of cloud computing applications to be faster – and the economic benefits to be greater – than in the other, more mistrustful parts of the world.

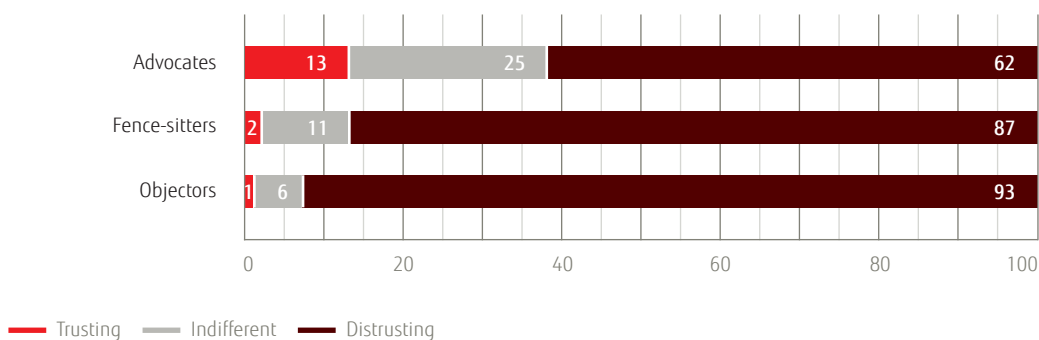
However, there are two caveats to this, which make the picture far more complex – especially for those government and corporate institutions which have a stake in resolving data privacy issues.

India, China and Brazil have almost twice as high a proportion of advocates amongst their internet users and four times fewer objectors than North America and Western Europe

The first is that overall levels of trust, while they may be higher in some countries than others, are still very low. Even among advocates, the most trusting group, only 13% actively trust institutions to look after their data; a further 25% could be described as “indifferent”, neither trusting nor distrusting.

The second caveat relates to our third group of consumers, the fence-sitters. These straddle all demographic groups: fence-sitters are just as likely to be men as women, and of any age (if anything, slightly more of them are students). They share some characteristics with objectors (they’re a little less likely to be in full-time employment) and some with advocates (a relatively high proportion are graduates). They have mixed views about how cloud computing may be used in the future, but overall think the benefits (just) outweigh the concerns it raises about data access and security. However, they are – and this is crucial – almost as likely to be distrustful as objectors.

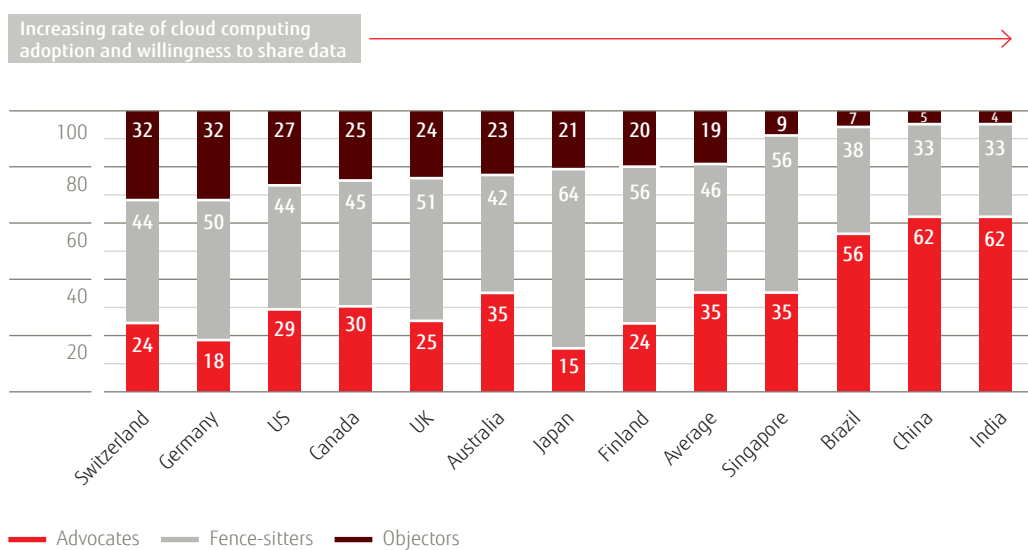
Level of trust (in %)



Fence-sitters are the biggest group of consumers – 46% of the population – while advocates outnumber objectors by approximately two to one (35% to 19%). However – and here again there are major implications for data privacy laws – the proportion of fence-sitters varies from country to country. Once again, the BRIC economies appear to have the edge: not only do they have more advocates than other countries, but they also have fewer fence-sitters. Singapore, by contrast, has half as many advocates, but 50% more fence-sitters, putting it on a slightly slower journey so far as clouding computing and the acceptability of wider data sharing is concerned. German-speaking economies in Europe would appear to be on the slowest journey of all: here objectors outnumber advocates and almost half the population is undecided.

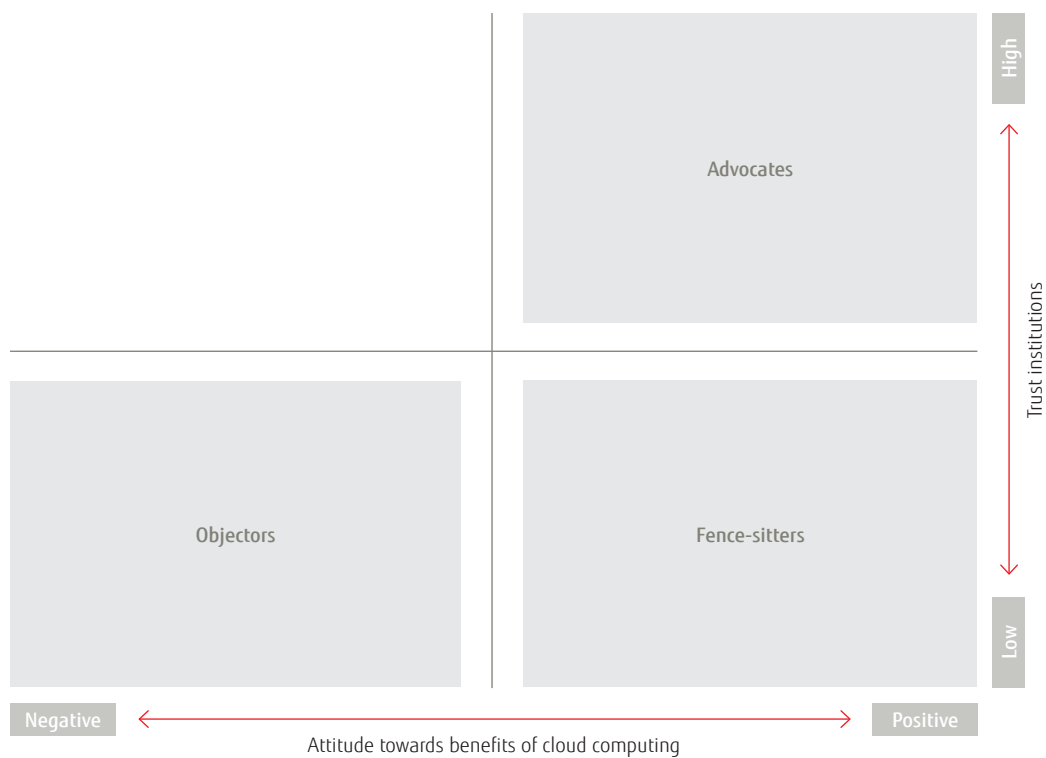
On average, 46% of consumers are fence-sitters

Breakdown of attitudes towards cloud computing and data sharing by country (in %)



Fence-sitters may well hold the key to adoption rates in the future. As their soubriquet suggest, they're pulled in two directions: positive about the benefits of cloud computing but concerned about data privacy. Successful data privacy strategies will focus on winning this group over, converting them into advocates by communicating the benefits even more clearly and by allaying the fears they have.

Classifying consumers according to their trust in institutions and attitudes towards cloud computing





The importance of trust

What makes a trusted government?



People don't like extremes

Our research highlights not only how consumers' trust of and reliance on government varies from country to country, but also how attitudes vary within each country.

The result appears to be a tangled knot of almost Gordian proportions: how can governments satisfy the quite widespread belief that they should play a role in protecting the personal data of their citizens when they're not trusted to do so? A heterogeneous problem needs a heterogeneous solution.

To understand what this might look like in practice, we asked consumers, across the 12 countries in our study, to evaluate four different types of response governments could make to data security issues, ranging from the hands-off to direct intervention.

Comparing attitudes towards different types of government intervention

	Types of intervention	Score out of 10	Rank
Hands-off	Not pass on data	7.95	4
	Keep out of data	7.26	9
Positive, but mostly passive	Provide advice	7.66	8
	Be clear what do with data	7.82	7
	Keep data secure	7.95	4
Negative, but mostly active	Keep laws up to date	8.18	2
	Organize international laws	7.87	6
	Create strict laws	8.15	3
	Impose penalties	8.31	1
Active interventionist	Connect all data	6.38	10

The first lesson from this is that people don't like extremes. On one side of the spectrum, few countries, irrespective of their level of cynicism, wanted their governments to wash their hands of data protection issues completely. Switzerland and Germany were the outliers here: with the highest proportion of fence-sitters and objectors, both countries appear to be cynical of any form of government intervention, however detached.



Few countries want their governments to wash their hands of data protection issues ...

China, however, appears to be a special case. Elsewhere, most people were even more uncomfortable with the other extreme – governments playing a substantial role by, for example stepping in to facilitate data sharing – than they were with a hands-off approach. Only in China, Singapore and Brazil – all countries with high proportions of advocates – was such active participation in data protection by governments favored.

The idea that governments could instead adopt a positive but passive approach, relying on issuing guidance and setting standards, was disliked by almost as many people as a hands-off attitude. Overall, however, most people favored an approach in which governments establish and police local and international laws, perhaps very strict ones, for data security.

Once again, the profiles of people in Switzerland and Germany were slightly different: although, like China, they were strongly in favor of the punitive legal measures for organizations caught breaking data protection rules, they also thought that governments have important work to do around transparency and guidance.

The only country to buck almost all of these trends was the US where there is clearly a substantial cultural bias towards constraining the scope of government in data privacy issues.

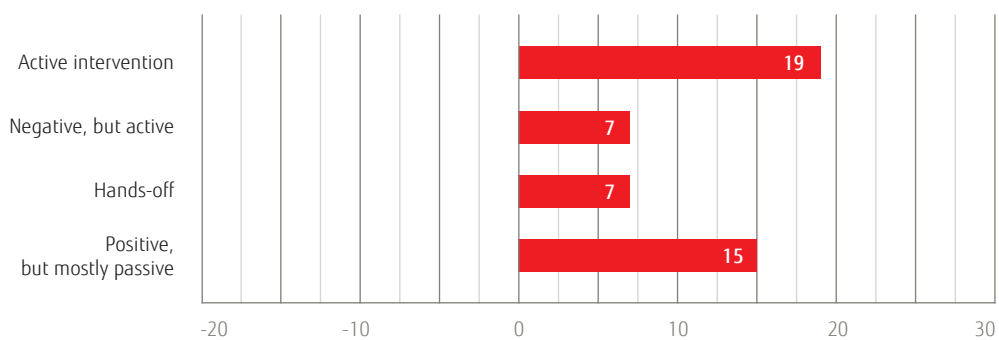
In practical terms, this means that governments and other public institutions caught up in the data privacy debate should not adopt a completely detached, disinterested stance or confine their involvement to guidance and being a role model for other organizations. They should, however, resist the temptation to carve out an active role in the data-sharing market. Most of their citizens want governments to do what governments do best: developing and policing laws that protect the security of their citizens' data.

... But governments should also resist the temptation to carve out an active role in the data-sharing market

But this overall perspective needs to be tempered with an acknowledgement of the different needs and perceptions of different countries. Returning to the three classes of country outlined earlier in this report:

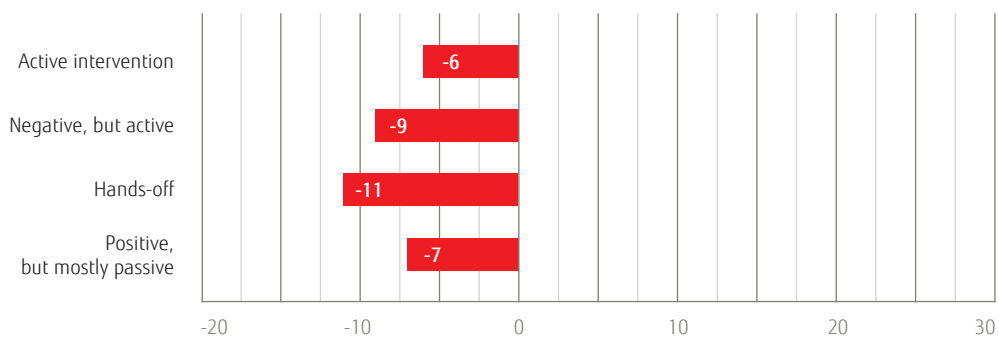
- For governments in state-reliant countries (Finland, China, India and Singapore), the message is clearly the more intervention the better. With many advocates among their citizens, the priority for these governments should be to make rapid progress where data-sharing is concerned, even if this involves taking a lead in connecting disparate sources of data.
- The opposite is true for governments in self-reliant countries (Brazil, Canada, the UK and – particularly – the US). Here, less intervention is the order of the day: in so far as citizens in these countries have any bias in favor of government action then their preference is for guidelines and transparency, rather than legal changes.
- Governments of state-doubter countries (Japan, Australia, Switzerland and Germany) face a more complex challenge if they're to address the contradictory signals given out by their citizens. Guidelines are particularly popular, but active intervention is viewed far more negatively than elsewhere. The key to success here will be to find a middle way, one that combines some legal changes and advice, with clear statements about where the government will not interfere.

China: A state-reliant country (in %)



More likely to favor

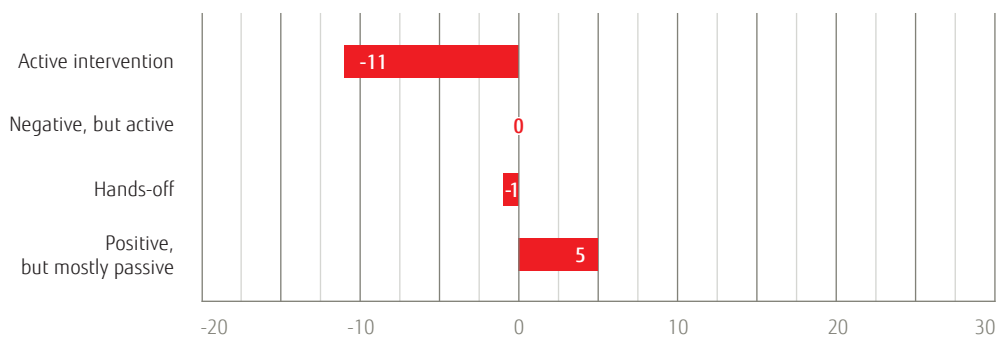
USA: A self-reliant country (in %)



Less likely to favor

In Finland, China, India and Singapore, the message is clearly the more intervention the better

Japan: A state-doubter country (in %)



Less likely to favor – More likely to favor





The importance of trust

What makes a trusted corporation?

What can companies do to earn consumers' trust?

As with modes of government intervention, we asked people what role large companies should play in data privacy. That they have a role is not in question. Indeed, the expectation here is slightly greater than it is for public bodies, perhaps because people suspect that commercial organizations will try to make money from their personal data, either selling it to others or by trying to promote their goods and services to specific groups of customers.

We asked our respondents to consider three different approaches: greater transparency so that companies become more open about what they do with data; a moral stance, respecting the fact that some data is more personal than others; and positive action, using data responsibly and ensuring their IT systems are secure. All of these options received support, but sentiment was strongest when it came to the most direct actions: consumers expect companies to have secure systems and act appropriately where data is concerned. People were generally more cynical about corporations' willingness to resist the temptation of exploiting personal data.

Comparing attitudes towards the actions corporations can take to instill trust on data privacy issues

	Types of corporate action	Score out of 10	Rank
Transparency	Be clear what do with data	8.19	5
	Communicate who has access	8.11	6
	Clear security measures	8.21	3
	Written guarantees	8.20	4
Moral stance	Keep out of personal data	7.78	7
Positive action	Secure IT systems	8.39	1
	Use data responsibly	8.26	2



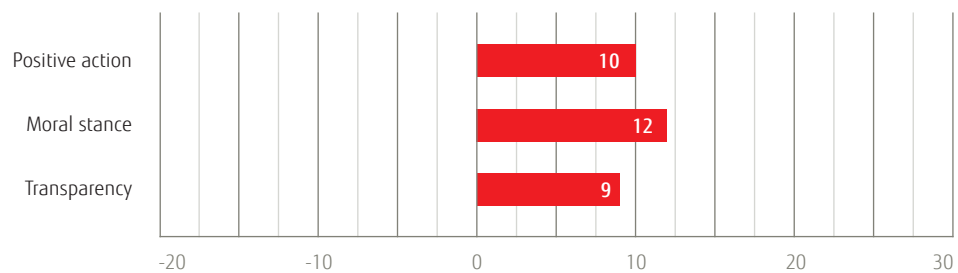
China has one of the highest proportions of advocates among its citizens

But, once again, the picture varies from country to country:

- Corporate-minded countries are a relatively homogenous group, generally in favor of corporations taking action in all three of the areas we identified. However, people in the two countries with the strongest views (China and Germany) are approaching the issue from different directions. China has one of the highest proportions of advocates among its citizens – individuals who are excited by the opportunities of cloud computing – so greater corporate intervention may be viewed as a means of accelerating the pace of technology change. People in Germany, by contrast, where advocates are far thinner on the ground, may be looking to corporations to control change, not fuel it. Japan is a different case altogether: with the largest percentage of fence-sitters in its population, the preference for corporate action is apparent, but only just.
- Independent-minded countries (Brazil and Canada) and corporate-truster countries (the biggest group including India, Singapore and the USA) share a desire to minimize corporate involvement, even though they have widely different views about the extent to which corporations can be trusted. Companies here need to be careful not to overstep the mark, championing too many initiatives, because their customers may doubt their motives. Less is probably more where these countries are concerned.
- Corporate-doubter countries are more of a mixed bunch, the difference again being explained by the varying balance of advocates, objectors and fence-sitters in their population. Switzerland has the greatest proportion of objectors.



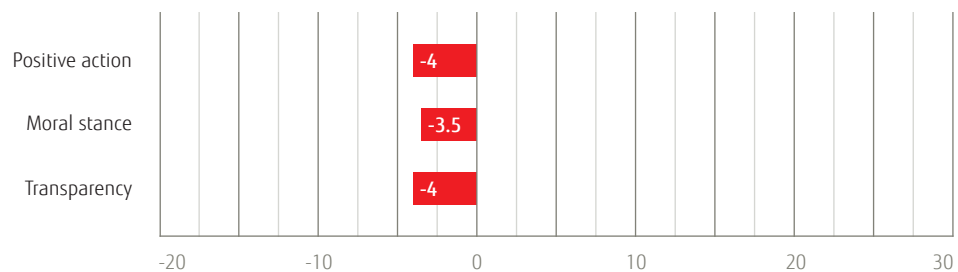
Germany: A corporate-minded country (in %)



Companies here need to be careful not to overstep the mark in some countries, championing too many initiatives, because their customers may doubt their motives

More likely to favor

Singapore: A corporate-truster country (in %)



Less likely to favor

One-size data privacy rules will not fit all

The aim of this series of reports is to examine how attitudes towards data privacy vary across the world and give some clarity for governments and private sector institutions on where the common themes are and where the local differences should be noted, as they look to the future of cloud computing.

In this report we have seen that some of the differences are driven by two factors:

- The extent to which trust in the state and/or business is matched by a willingness to rely on institutions to take responsibility for ensuring data privacy.
- The balance of feeling for or against cloud computing and data sharing in the population.

In considering these findings we should acknowledge the variance in internet penetration in some of the developing populations. For example India, China and Brazil had relatively low penetration, so those responding to our online survey for this research are likely to be early adopters and technology enthusiasts – and therefore advocates of cloud computing, with less concerns around sharing their data.

But even in the rest of the countries we sampled, where internet penetration is over 70% of the population, there are significant differences between countries in attitudes and expectations with regard to trust and data sharing.

There is no one global path to realising the social benefits or creating the new business scenarios that cloud computing can enable. Governments and private institutions can use our research to make an informed judgement as to where their countries are today, and where they might be in the future. The decisions they make today regarding the cloud and data regulation will feed back into how these consumer and citizen attitudes and expectations develop over the coming years.



	Trust vs. reliance		Consumer groups		Role in ensuring data privacy	
	Attitude to government intervention in data privacy	Attitude to corporate intervention in data privacy	Proportion of advocates	Proportion of fence-sitters and objectors	Government	Corporations
India	State-reliant	Corporate-truster	High	Low	■ Provide advice	■ Keep out of personal data
China	State-reliant	Corporate-minded	High	Low	■ Play a role in connecting data ■ Provide advice	■ Provide written guarantees of data privacy ■ Ensure secure IT systems ■ Have clear security measures ■ Use data responsibly
Brazil	Self-reliant	Independent-minded	High	Low	■ Be clear about data handling	■ Have clear security measures ■ Be clear what happens to data
Singapore	State-reliant	Corporate-truster	Medium	Medium	■ Play a role in connecting data	■ Provide written guarantees of data privacy
Finland	State-reliant	Corporate-doubter	Low	High	■ Keep own data secure ■ Not pass on own data	■ Keep out of personal data
Japan	State-doubter	Corporate-minded	Low	High	■ Impose penalties ■ Do not become involved in connecting data	■ Have clear security measures ■ Use data responsibly
Australia	State-doubter	Independent-minded	Medium	Medium	■ Keep laws up to date	■ Use data responsibly ■ Keep out of personal data
UK	Self-reliant	Corporate-truster	Low	High	■ Organize international laws ■ Provide advice	■ Ensure secure IT systems ■ Have clear security measures
Canada	Self-reliant	Independent-minded	Medium	Medium	■ Organize international laws ■ Provide advice ■ Impose penalties	■ Communicate who has access to data ■ Be clear what happens to data ■ Provide written guarantees of data privacy
US	Self-reliant	Corporate-truster	Medium	Medium	■ Minimize intervention	■ Keep out of personal data
Germany	State-doubter	Corporate-minded	Low	High	■ Not pass on own data ■ Not access information from private companies ■ Do not become involved in connecting data	■ Keep out of personal data ■ Communicate who has access to data ■ Be clear what happens to data ■ Provide written guarantees of data privacy
Switzerland	State-doubter	Corporate-doubter	Low	High	■ Not pass on own data ■ Not access information from private companies	■ Keep out of personal data

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The research was conducted from June to September 2010 using online bulletin boards, focus groups and quantitative research. Participants from Australia, Germany, Japan, Singapore, the UK, the USA, Canada, India, China, Brazil, Finland and Switzerland were screened to ensure a broad sample in terms of age and gender. There were 500 respondents from each country for the online quantitative research – 6,000 in total.

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