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Executive summary

Companies that have a mature organisational approach to cloud computing are more focused on business growth than cost reduction and are more likely to have achieved that growth as well. They use a more diverse range of cloud services and are seeing improvements in the relationship between IT and the rest of the business. But while they say they have the required data-governance measures in place, privacy, security and compliance will continue to challenge even high-maturity organisations in the near future.

These are the findings from Mapping the cloud maturity curve, an IBM® research project conducted by The Economist Intelligence Unit. The project defines ‘maturity’ as it relates to the use of cloud computing (henceforth referred to as ‘cloud’) and measures how mature organisations are today.

A previous report, entitled The fundamental five, drew on interviews with IT leaders to identify the core components of cloud maturity. Organisations’ progress along this maturity curve was then investigated through a global survey of 784 IT and business executives (see ‘About the study’ for a detailed description of how maturity was scored). This report is an in-depth analysis of the findings of the

survey and incorporates further insights from senior IT leaders to identify how they are moving their organisations up the cloud maturity curve.

The key findings are as follows:

Cloud is about to become the dominant model for the delivery of IT services. The majority of organisations use cloud services in some way today and most expect their IT infrastructure to be predominantly cloud-based in the near future. A mature approach to cloud, which maximises its potential benefits while minimising the risks, should therefore be the aim for any organisation that aspires to making safe and effective use of technology.

Organisations with a mature approach to cloud tend to have a growth-oriented mindset. Respondents that score highly on the cloud maturity scale identify ‘boosting customer demand’ and ‘expanding sales channels’ among their top drivers for cloud adoption, while low-maturity companies are more focused on cost reduction and efficiency. High cloud maturity companies are also more likely to say they have experienced revenue growth as a result of their use of cloud, in part reflecting a more strategic approach.

High cloud maturity organisations in particular have seen cultural resistance to cloud, especially in the IT function. Cultural resistance is the number-one barrier to cloud adoption among high cloud maturity organisations, along with data security. IT leaders consulted for this project say this resistance is most acute within the IT department itself, as cloud requires both new technical skills and a more collaborative approach. This resistance is expected to decline in the near future as IT workers adapt to the new reality.

Cloud is beginning to improve the IT-business relationship. The most commonly cited cultural benefit of cloud is that it allows employees to make greater use of technology. Meanwhile, chief information officers (CIOs) report that by simplifying technical infrastructure considerations, cloud allows business units to play a greater role in IT projects and helps IT staff to focus more on business value.

High cloud maturity organisations tend to use a more diverse portfolio of cloud services. Private cloud is the preferred deployment option, but mature organisations have a more diverse infrastructure. High-maturity organisations are also more likely to use public, community and hybrid cloud models. Nevertheless, few organisations believe their IT infrastructure is well optimised for their business strategy.

High cloud maturity organisations say they have data-governance measures required by cloud in place – but security, compliance and privacy will remain challenges in future. Even high cloud maturity organisations, which are more likely to say they have the necessary measures in place to ensure compliant handling of data, nevertheless expect these to remain as barriers to cloud adoption in future. IT departments have a role to play in educating their peers about the risks and realities of cloud. ■

About the study

Mapping the cloud maturity curve is a multi-phase research project designed to define an effective organisational approach to cloud (cloud maturity) and to investigate how far companies have progressed in establishing that approach.

The project began with a series of in-depth interviews with IT leaders and experts to identify five fundamental components of a mature organisational approach to cloud, in which risks are managed and the benefits are maximised.

The five fundamentals are as follows:

- **Aligned strategy:** Aligning cloud strategy to business objectives
- **Organisational harmony:** Fostering greater collaboration between business and IT
- **Digital culture:** Developing a culture that promotes the effective use of digital technology
- **Dynamic infrastructure:** Matching IT infrastructure to business requirements
- **Good governance:** Developing the data-governance processes required by cloud.

In February and March 2015 IT and business executives were surveyed to determine how well their organisations performed on these criteria.

The following definition of cloud was included in the survey: “Cloud computing is a model for on-demand network access to a shared pool of configurable computing

resources (eg networks, servers, storage, applications and services) that can be rolled out with minimal management effort or service provider interaction. Organisations may use private, community, public or hybrid cloud infrastructures.”¹

The survey was completed by 784 respondents globally, with 30 percent drawn from North America, 30 percent from Europe, 30 percent from Asia-Pacific and 10 percent from the rest of the world. More than one-third (39 percent) of survey respondents represent companies with less than USD500m in annual revenue, while 22 percent hold positions in companies with revenue of USD500m–1bn; 17 percent in companies with revenue of USD1bn–5bn; 10 percent in companies with revenue of USD5bn–10bn; and 13 percent in companies with revenue of more than USD10bn. Of these, 9 percent are chief executive officers (CEOs) and board members, 8 percent are chief finance officers (CFOs), 14 percent are CIOs or chief technology officers (CTOs), 16 percent are other C-level executives, 27 percent are heads of business units or at SVP/VP/director level, 8 percent are department heads, and 17 percent are managers or hold other positions. The banking and financial services industry contributed 17 percent of respondents and retail 16 percent, while telecommunications and consumer electronics were each represented by 13 percent.

¹ US National Institute of Standards and Technology.

A maturity score for every respondent was calculated based on their answers to the following six survey questions:

- How extensive is your organisation’s use of cloud technologies now?
- Which of the following best describes your organisation’s approach to the cloud?
 - We have a well-defined cloud strategy for the entire organisation
 - We have a well-defined cloud strategy for certain functions
 - We use cloud technologies tactically
 - We use cloud technologies on an ad-hoc basis
 - What are the most important ways that cloud technologies have changed the culture of your organisation over the last two years?
- How well has the IT department at your organisation served the business needs of the organisation in the last two years?
- To what extent has your organisation optimised its infrastructure for its business strategy and needs to date?
- How well does your organisation manage its cloud risks?

Respondents were assigned points based on their answers to each question. These points were translated into scores out of five, based on how many points each respondent earned relative to the group, so that the top 20 percent of respondents were

given five out of five, followed by four for the next 20 percent, etc. These scores were combined to create an aggregated maturity score. Respondents who scored either four or five on this aggregated scale were deemed to be ‘high maturity’, while those who scored one, two or three were deemed to be ‘low maturity’.

The Economist Intelligence Unit (EIU) invited the following IT leaders to provide insight and comment on the results of the survey analysis.

- Richard Atkinson,
CIO, JustGiving
- Richard Hodgkinson,
chief technology officer, DWF LLP
- Paul Lucas,
senior technology director, Expedia
- Daniel Richardson,
director of engineering, JustEat
- Phil Parkin,
CIO, TNT
- Roland Schütz,
CIO, Lufthansa
- Mark Vickery,
CIO, Premier Foods
- Ravi Waran,
CIO, Albemarle

The EIU would like to thank all of these participants for their time and insight. This report was written by Stuart Lauchlan and edited by Pete Swabey. The IBM Institute for Business Value provided assistance in the development of the survey and feedback on the report. ■

Introduction

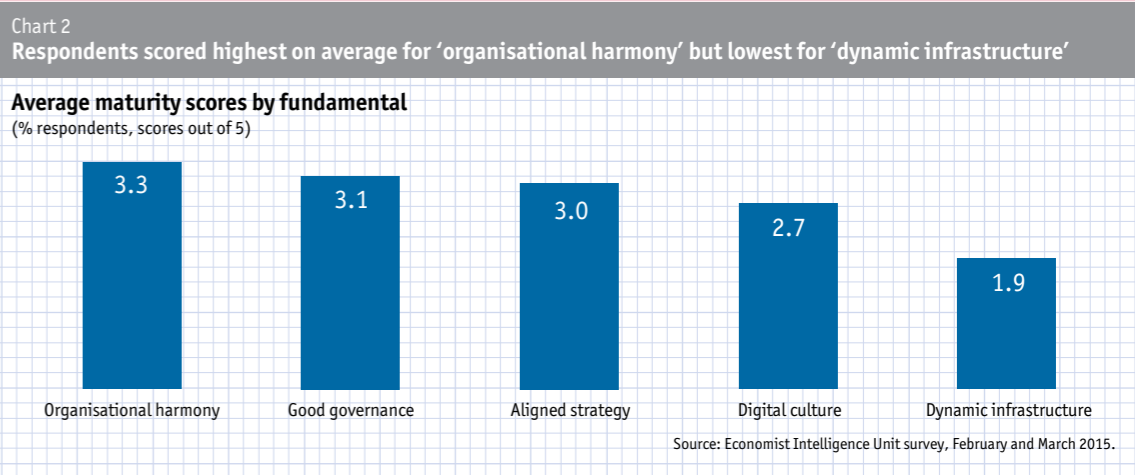
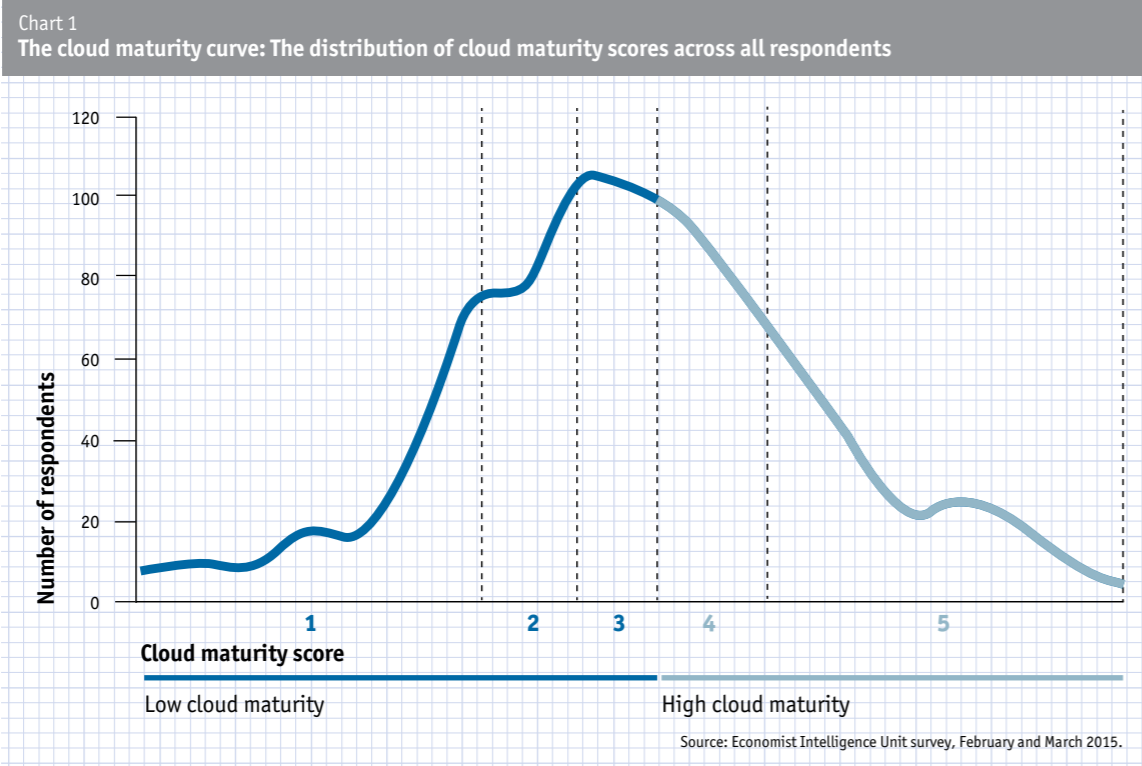
With cloud poised to become the dominant model of IT service delivery, it is increasingly vital that organisations manage the technology in a way that draws maximum benefits while minimising risk. But what defines a mature organisational approach to cloud? How do highly mature organisations differ from their less mature peers and what benefits do they receive as a result of their maturity?

These are the questions that inspired Mapping the cloud maturity curve, an IBM research project conducted by The Economist Intelligence Unit (EIU).

The answers are revealed in this report.

To define cloud maturity, the EIU interviewed a number of IT leaders and experts, asking them to identify the core ‘fundamentals’ of an effective approach to cloud. The five fundamentals were identified as follows:

- Aligned strategy: Aligning cloud strategy to business objectives
- Organisational harmony: Fostering greater collaboration between business and IT
- Digital culture: Developing a culture that promotes effective use of digital technology



- Dynamic infrastructure: Matching IT infrastructure to business requirements
- Good governance: Developing the data-governance processes required by cloud.

A detailed description of these can be found in the previously published report, The fundamental five.

To assess the maturity of organisations today and evaluate how maturity impacts organisational performance, the EIU conducted a survey among 784 IT and business executive from across the globe.

Five questions in the survey assessed the maturity of each respondent, according to each of the above fundamentals and another question measured the extent to which they use cloud. Each respondent’s answers were used to calculate their aggregate maturity score, out of five.

This methodology reveals the state of cloud maturity today. Chart 1 depicts the cloud maturity curve—the distribution of cloud maturity scores—showing that companies are clustered around the middle of the scale. The study also assesses organisations’ relative maturity in each underlying fundamental. So far, they have made better progress in achieving a strategic approach to cloud and improving their IT-business relationship than they have in aligning their cloud infrastructure with their business strategy (see chart 2).

The remaining questions in the survey explored other organisational qualities, such as the benefits they derive from cloud, their business performance and their management of risk.

This analysis allows us to compare the attributes of “high cloud maturity” organisations (those that scored four or five on the maturity scale) with those of ‘low cloud maturity’ ones (with scores of one, two or three). As this report explains, there is a marked difference in outlook between high- and low-maturity organisations with respect to cloud. Most notably, high cloud maturity is associated with business growth, as opposed to cost reduction, both as a driver for and an outcome of cloud adoption.

Cloud, this study shows, is about to become the dominant delivery model for IT services. One-third of organisations say that 60 percent or more of their technology is delivered ‘via the cloud’ today. Nearly twice as many (62 percent) believe that this will be the case in two years’ time. The insights into cloud maturity and its benefits contained in this report provide useful guidance for any organisation that seeks to master this increasingly prevalent platform.

1

A platform for business

The shift from cost reduction to business growth

Cloud rose to prominence against a backdrop of economic crisis. IT departments were almost universally ordered to ‘do more with less’. In that context, the relatively low capital expenditure requirements of public cloud (services delivered by a third-party from shared infrastructure) and the improved infrastructure utilisation of private cloud looked to be their most compelling attributes.

But times have changed. Efficiency remains a crucial consideration, of course, but as economic conditions have improved, many companies have turned their attention to opportunities for growth.

This study reveals that organisations with a

high cloud maturity score view cloud as a platform which supports that growth.

When asked what the drivers to cloud adoption are, high-maturity organisations are most likely to reply ‘boosting customer demand’ (50 percent). ‘Expanding sales channels’ is another highly rated driver (39 percent). Among low-maturity organisations, by comparison, ‘improving internal business-process efficiency’ (41 percent) and ‘reducing costs and/or liabilities’ (38 percent) are the most common drivers (see chart 3).

This move beyond efficiency as the driver to cloud was evident in CIO interviews conducted for this report. “Cloud adoption is not about

cost reduction,” says Richard Atkinson, CIO at JustGiving, a global online social platform for charitable giving. “Lots of people have set about their projects from that perspective, but that’s definitely less of a driver [now].”

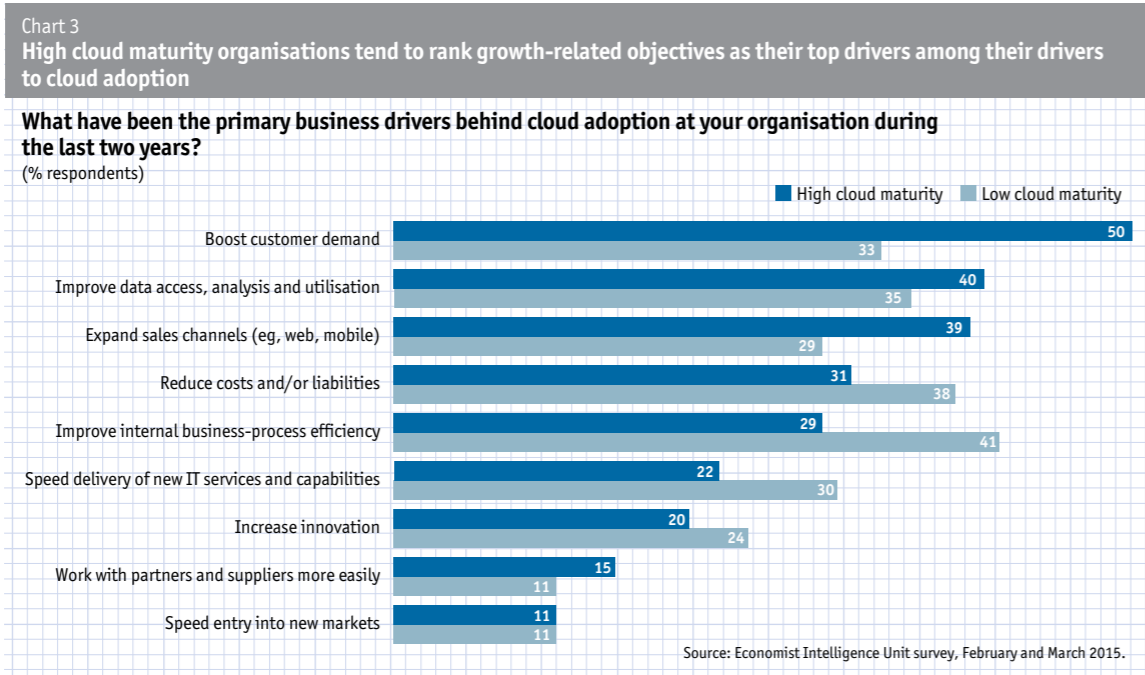
High cloud maturity organisations are also more likely to have experienced revenue growth as a result of their use of cloud (51 percent, versus 39 percent among low-maturity organisations).

These findings may reflect mature organisations being well run in general, having their cost base in order and so being more focused on growth. Equally, organisations that are still working to reduce costs may not be free to focus on IT transformation. But the figures nevertheless raise the question: what is it about the way mature organisations approach cloud that is associated with revenue growth?

One difference may be their strategic approach to cloud – one of the measures used

to calculate cloud maturity. CIOs report that a clear, cross-functional strategy helps the IT organisation to focus on business objectives.

“We have a really clear strategy: everything we do is moving to the cloud,” says Daniel Richardson, director of engineering at online takeaway brokerage JustEat. “We want our engineers and the money that we invest in them, to be focused in the right areas. We don’t want them to be focusing on the infrastructure, we want as much of their time to be focused on building improvements for our customers and our restaurants. The cloud helps us do that. It takes away a lot of the things that engineers otherwise have to think about.” ■



2 Healing the rift

The beginning of the end to IT-business antipathy?

A crisis of confidence swept through IT management circles around 2010, as it became clear that some cloud providers were circumventing IT departments and selling directly to other business units. If these divisions can procure technology from providers themselves, what need is there for IT?

This study reveals that the situation is more nuanced than this. While there is still plenty of room for improvement, the signs are that a mature approach to cloud is in fact helping to resolve the long-standing antipathy between many IT departments and their peers in other divisions.

For example, high cloud maturity organisations are more likely than those with low maturity scores (68 percent versus 53 percent) to agree somewhat or strongly with

the statement: “Our cloud efforts start with stating business problems, then we find cloud services that help us tackle them” (see chart 4).

At DWF LLP, a London-based law firm, the advent of cloud has improved the IT-business relationship by allowing departments to focus on what they know best. In the past, the high-level technical knowledge required by any software implementation meant that the IT department had to take the lead. By removing or simplifying the technical considerations around deploying and managing infrastructure, cloud is shifting responsibility for selection and design to business units, explains CTO Richard Hodgkinson.

“I’m not an HR expert or a finance expert,” he says. “So you [functional departments] pick

your system, you manage your data and I’ll just wire it up for you. I’ll advise what it might look and feel like technically, but that’s where it ends.”

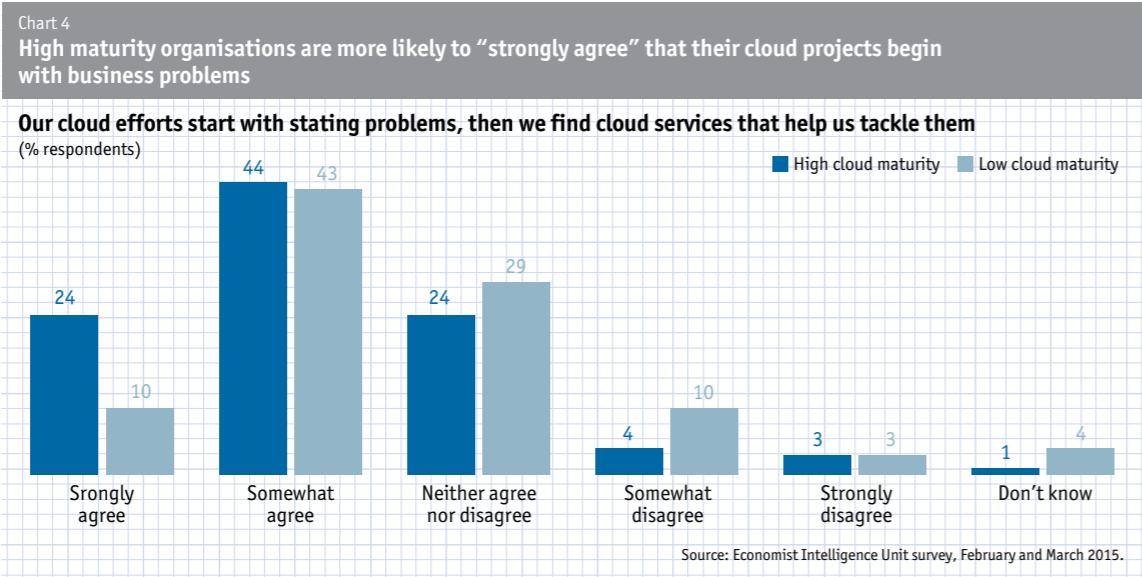
Of course, giving non-IT divisions a greater role in system selection is not without its risks, especially in the absence of a cross-functional cloud strategy. “The requirement for the direction of the business units may lead to a clash of technologies,” explains Ravi Waran, CIO at chemicals manufacturing company Albemarle.

IT’s role, therefore, is to provide the support and supervision to ensure that departmental cloud deployments do not endanger cross-functional integration, or expose the organisation to security or compliance risks.

This role is enforced at just over half of

high-maturity organisations (51 percent), which report that “all cloud technologies are approved by IT as part of a centralised IT strategy”. This proportion is 39 percent among low-maturity organisations.

This changing role applies all the way to the top of the IT department, and CIOs report that it requires some adjustment. “The role of the CIO has certainly changed,” says Mr Atkinson. “You can’t sit in your IT castle and say ‘I control everything’. You do need to be more collegiate. I spend more time brokering around the board table.” ■



3

The cultural context

How cloud and company culture interact

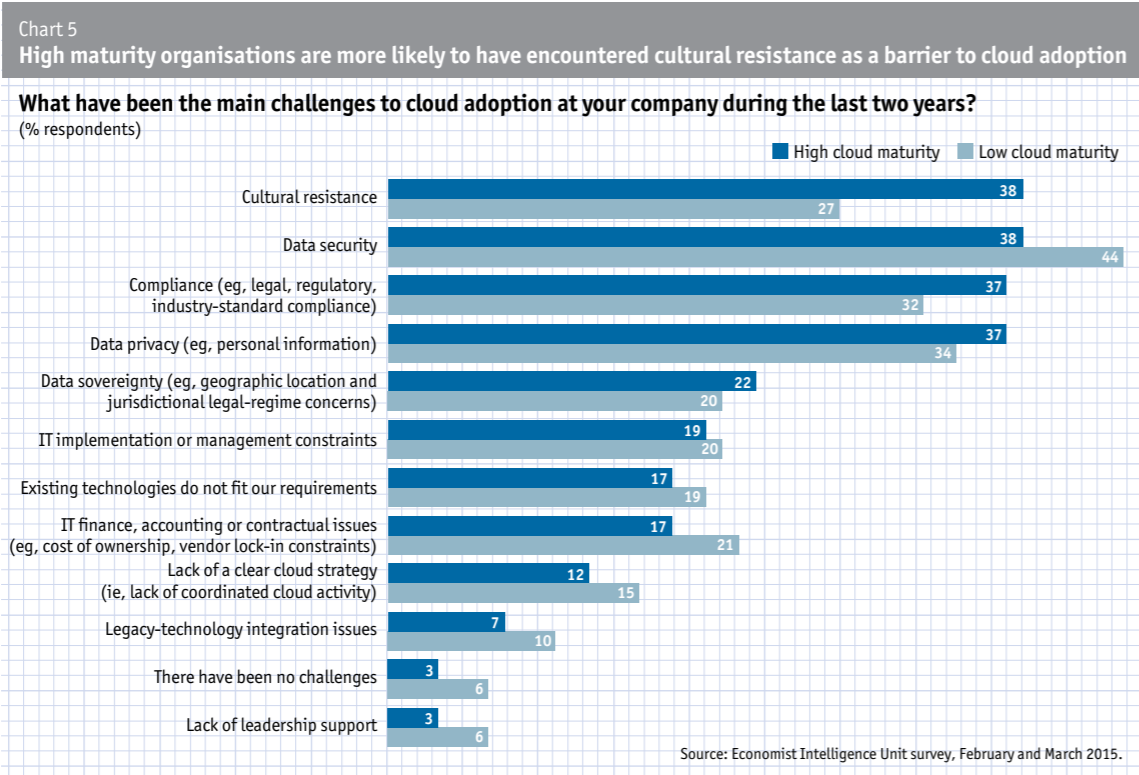
One of the most surprising findings from the study is that among high-maturity organisations, ‘cultural resistance’ has been the joint most common barrier to cloud adoption in the last two years. It is cited by 38 percent of high-maturity respondents, tied with data security (see chart 5).

According to the IT leaders consulted for this report, this resistance is most common within the IT department itself. “If I’ve seen cultural resistance, it would be the resistance of my own team,” says the IT director of a European bank. “You have very bright people

who simply will not get it. You need to move [those who don’t get it], and it’s very difficult to get rid of [the resistance].”

Cloud platforms require IT staff to work in new ways, both technically and in how they collaborate with their peers. Such resistance is perhaps more pronounced among high-maturity organisations, because they also tend to use more cloud services.

This resistance is expected to abate in the near future, however. When asked what the barriers to cloud adoption will be in the next two years, the proportion of high-maturity



organisations citing cultural resistance drops to 16 percent. The hold-outs are adjusting or moving on, this suggests.

Outside the IT department, meanwhile, cloud has been well received. “There has been no negativity towards cloud,” reports Mark Vickery, CIO of Premier Foods, one of the UK’s largest food manufacturers. “[It has] probably [been] the reverse because people are talking about the cloud.”

The survey asked respondents to identify cloud’s positive cultural contribution at their organisation. The most common response, identified by 44 percent of the sample, was that ‘employees use technology more readily’, followed by ‘the pace of work is faster’ (39 percent) and ‘employees are more empowered’ (31 percent) (see chart 6).

“On the business side, you see people being very technologically savvy,” says Paul Lucas, senior technology director at travel website Expedia. “You see people who know how things work and how things are put together.”

Cultural benefits that apply at an organisational level are less common. Only 18 percent of respondents say that “the organisation is more agile and flexible” as a result of cloud and just 23 percent say that the

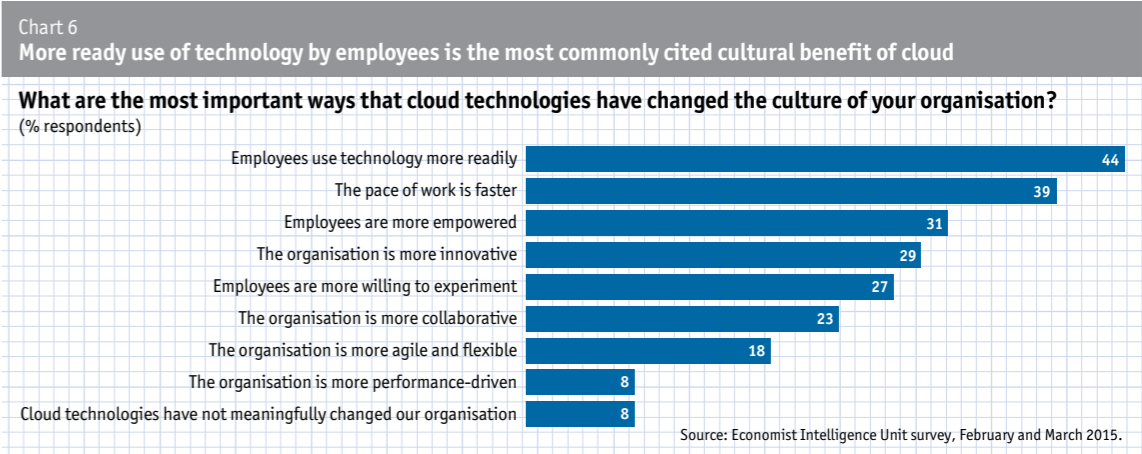
“the organisation is more collaborative”.

There is ample anecdotal evidence that cloud is supporting cultural transformation on an organisation-wide scale, however. Take Lufthansa, for example. Under growing pressure to innovate, the German airline needs to collaborate with an ecosystem of partners to offer customers seamlessly integrated services.

“Airlines will not be able to provide all the relevant services on their own,” says CIO Roland Schütz. “Successful airlines will be able to integrate services beyond the boundaries of their products, building on their own assets.”

Cloud is helping to deliver this, Mr Schütz explains. “Projects are based on the cloud because we have to provide a seamless experience and integrate partners from other industries as well.”

Indeed, for Lufthansa, cloud is making it possible to adopt an entirely new approach to innovation. “We have founded an innovation hub in Berlin which is funding start-ups and is working on new third-party business models,” says Mr Schütz. “This is only possible via cloud. The cloud is really removing barriers for us in collaborating beyond the boundaries of our enterprise.” ■



4

Finding a balance

Matching cloud infrastructure to business strategy

One of the fundamental tenets of cloud maturity, as defined by this study, is the ability to align cloud infrastructure with the strategic needs of the business.

However, the average score for the ‘dynamic infrastructure’ fundamental based on how well organisations have optimised IT systems for their business strategy is the lowest of the five. Only one-third of respondents say their infrastructure is ‘completely’ or ‘significantly’ optimised.

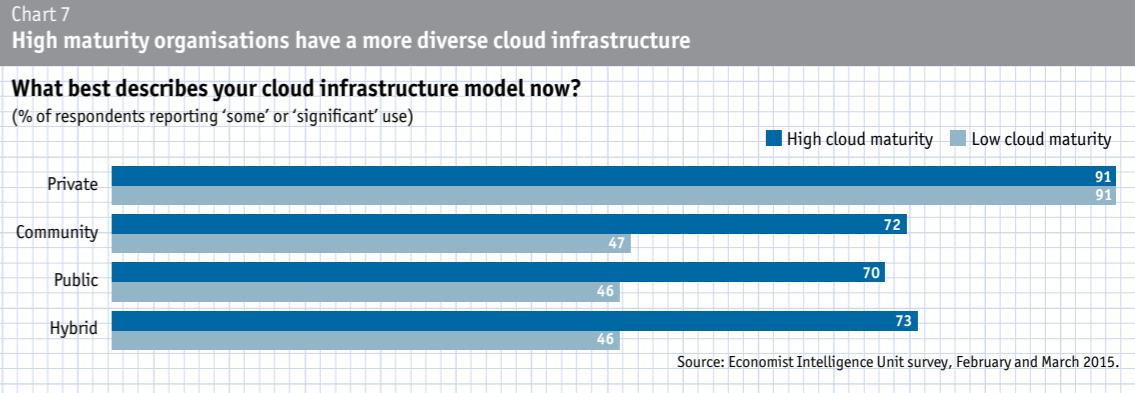
One significant difference between high- and low-maturity organisations is the diversity of their cloud infrastructure. Nine out of ten respondents say their organisations make ‘some’ or ‘significant’ use of private cloud, which is by far the most common cloud infrastructure model today (see chart 7). While this proportion is the same among both high- and low-maturity organisations, high-maturity users are much more likely to use other infrastructure models, such as community, public and hybrid. The majority of organisations (68 percent), both high- and low-maturity, also prefer to deploy private cloud infrastructure within their own premises.

This preference is unlikely to change dramatically in the near future. Many of the IT

leaders interviewed for this study say that there are some applications or datasets which cannot leave the private cloud any time soon. “It will take quite a long time to completely get rid of private cloud,” says Mr Schütz with reference to Lufthansa. “That’s not possible in the next ten years.”

However, high-maturity organisations are significantly more likely to have adopted each of the other cloud models public, community and hybrid in addition to using private cloud. This is in part because these organisations, by definition, use a greater degree of cloud in their IT infrastructures.

Looking forward to the next two years, take-up of public and hybrid cloud is set to grow faster than the other models. Organisations are evidently adopting the hybrid approach to accommodate the fact that some of their data must remain on premises for regulatory reasons. “Some areas of our business are regulated,” explains JustGiving’s Mr Atkinson. “We still have a five-year horizon of needing to have a data centre of our own, [so] we are firmly in the hybrid cloud box.”



5

The security issue

The cloud’s biggest challenges remain

Security, compliance and privacy have been the biggest challenges to cloud adoption to date, among both high and low cloud maturity organisations alike.

Despite the fact that the majority of high-maturity organisations claim to have the policies, practices and people required to govern data effectively ‘completely’ or ‘largely’ in place, these concerns will continue to be the biggest challenges to cloud adoption in the near future for both groups (see chart 8).

If anything, the fears are growing, CIOs report. “There is an increase in the concern around what could go wrong,” says Mr Atkinson. “Concern on the compliance side is certainly far greater now than it was two years ago.”

Less than one-third of organisations say they manage any of their cloud risks ‘very well’. The industry with the highest proportion of respondents who claim to manage data security risks “very well” is telecommunications (at 33 percent, versus a cross-industry average of 26 percent). For privacy risks, it is healthcare (also at 33 percent versus 26 percent).

Some industries are less prone to security concerns than others. “I can understand why CIOs in certain sectors are concerned about security, but we aren’t in finance or insurance,” says Phil Parkin, CIO at courier firm TNT. “We move parcels. The data that we hold about customers are typically their addresses. There

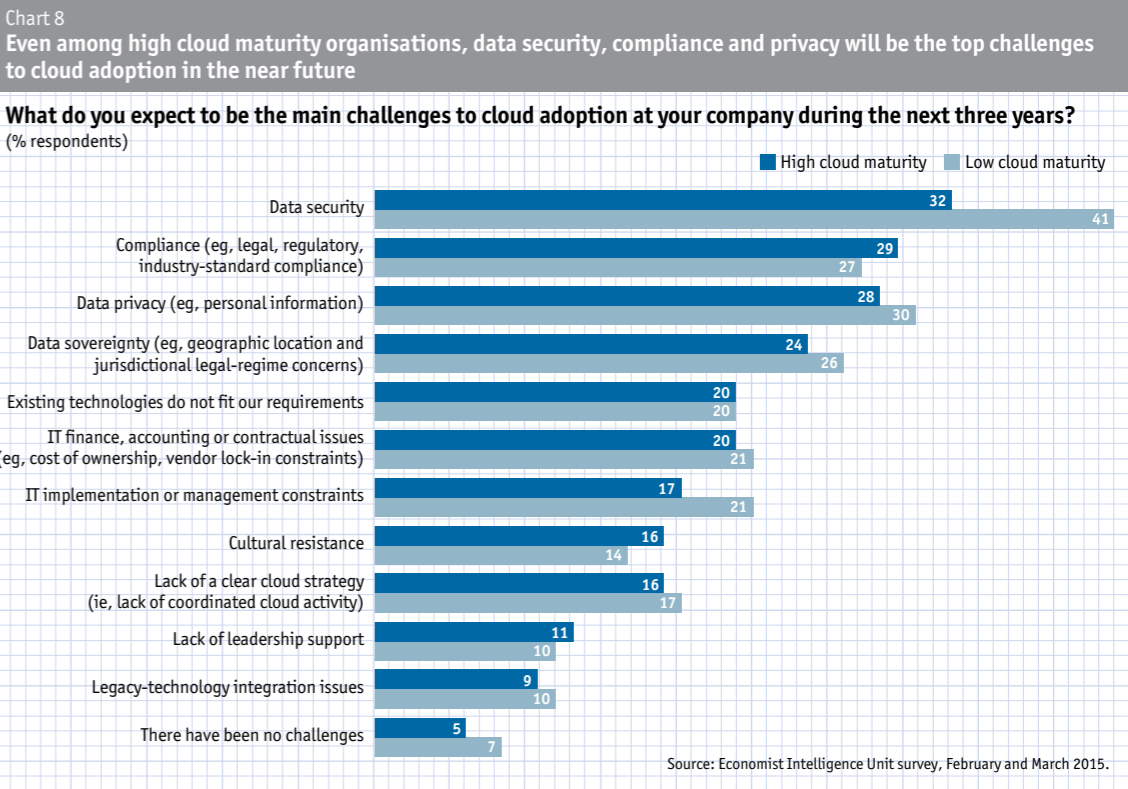
is of course the risk of reputational damage if we lost people’s data, but so far it’s not been an issue.”

However, TNT has no plans to move some critical systems into the cloud. Were it to do so, security concerns would be greater, Mr Parkin admits. “If we started talking about moving our enterprise resource planning (ERP) systems into the cloud which we are not then that would be a different argument.”

When JustEat moved its IT infrastructure from an on-premises data centre into the public cloud, getting the security right required IT to play the role of educator for colleagues and third parties involved in compliance. “We did a very thorough audit of security,” recalls Mr Richardson. “We had to take our auditors on a journey of understanding, many of whom hadn’t been involved in cloud-based services in the past. That was probably the trickiest part from a security perspective.”

Having been through that process, however, JustEat’s security posture is, if anything, stronger than it was with on-premises systems. “We were able to get very effective controls that are probably better than what we had before.”

IT departments must have the patience and discipline to lead their organisations on this journey if they are to achieve a more mature approach to cloud. ■



Conclusion

IT has historically been seen as a cost centre, whose financial burden on the organisation should be kept to a minimum. This has arguably been a symptom of the disintegration between the IT department and other sections of the business, which meant that technology’s contribution to business growth was poorly understood and virtually impossible to measure.

A mature approach to cloud, this study shows, can help to resolve that situation. High-maturity organisations are more likely to identify growth-related objectives among their drivers to cloud adoption; they are more likely to enjoy growth-related benefits; and their benefits are more likely to be ‘transformative’.

Organisations hoping to boost their maturity, and therefore maximise the benefits of their cloud investments, should focus on the following:

- | A cloud strategy that allows IT staff to focus their efforts on contributing to the business as opposed to managing infrastructure
- | A working relationship between the IT department and other business units that

allows both parties to bring their domain expertise to bear

- | An organisational culture that translates ready access to technology services into meaningful innovation.

All of these positive contributions, however, are being held back by concerns about security, privacy and compliance. Even among the most mature organisations, which claim to have the necessary data-governance measures in place, these will continue to be the biggest fears in the near future.

IT departments must engage with their peers so that the security and privacy practices required by cloud are well understood and more importantly, enforced. If they get this right, they have the chance to reinvent their role within the organisation. If they get it wrong, they may restrict their organisation’s ability to participate in the digital economy. ■

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