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THE CLOUD: A SILVER LINING FOR FINANCIAL INSTITUTIONS?

PUBLIC CLOUD INVESTMENT BAROMETER - 2019 REPORT

08

Tackling data residency requirements

22

Datasets in the public cloud

30

Overcoming barriers

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Contributors

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Marion is responsible for delivering award-winning market data, platforms and services to the global financial markets. Leading global businesses and operations at scale, with a strong emphasis on data and technology, are the hallmarks of her 20-plus years in the financial services sector.

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Gavin has 20 years' experience in the Financial Technology sector, he has held roles spanning general management, strategy, business development, product development, service management, program management and software development.

**Hanna Helin, head of enterprise
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Hanna has worked in a variety of positions ranging from innovation strategy to business development and sales. In her current role she is responsible for driving Refinitiv's cloud strategy from the business proposition perspective globally. Hanna has a keen interest in innovation, new technologies and the FinTech industry. She has two Master's degrees from ESCP Europe and University of Vaasa.

RESILIENCE, EFFICIENCY AND INNOVATION: THE PROMISE OF PUBLIC CLOUD

Last year's *Public Cloud Report* revealed that enthusiasm for public cloud projects was on the rise. This trend continues in 2019, but are public cloud projects delivering on their promise?

With ever-greater proportions of budgets allocated to public cloud services (figure 1), companies know that this investment will be crucial to maintaining profitability, delivering innovation, enhancing business resilience and ensuring future scalability.

As financial services firms build their future IT strategies, they are more aware than ever of regulatory pressures. Cloud providers are responding and have been on the front foot to ensure companies have options to overcome data residency issues and ensure compliance with rules on outsourcing reporting.

However, developing IT strategies that recognise the accelerating migration to public cloud solutions can be a tricky exercise. Knowing how to quantify cloud economics is an increasingly important skillset for C-suite executives with a technology brief.

While cost reductions are often earmarked as a reason to embrace public cloud solutions, it can take years for organisations to quantify or realise these gains. In addition, the motives for moving forward with public cloud initiatives are likely to be multidimensional, with future profits, scalability or the impact of quicker product deployment times among the benefits. It is also vital to recognise that shifting infrastructure spend from a capital to an operational expenditure

(capex to opex) will have an impact on the investment planning process. In short, the organisation as a whole will need to review practices.

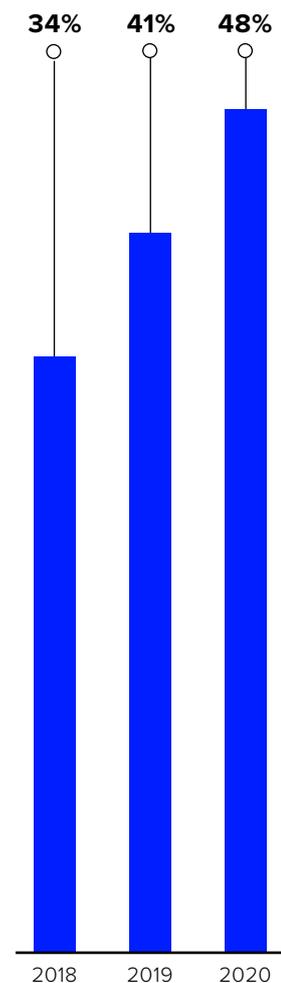
Refinitiv's research, of 300 senior stakeholders within the financial services industry, including chief technology officers (CTOs), chief information officers (CIOs) and chief data officers (CDOs), shows that those who have taken the plunge and embraced public cloud offerings are extremely pleased with the results. Three quarters of the respondents to this year's survey said that their cloud project cost reductions had exceeded expectations, with the rest saying the results were in line with expectations.

This begs the question whether those who have been slow to full scale adoption of public cloud solutions, could learn from those that have already done so. The answer is almost certainly yes, though some subsets of financial services, such as hedge funds and private equity houses, have been keener than others, meaning the crossover with day-to-day business priorities is likely to be very different to those of retail or commercial banks, for example.

That said, the benefits of public cloud solutions are real, and a little industry collaboration may further fuel the already rapid levels of innovation. ▀

Marion Leslie,
managing director, Refinitiv

Figure 1

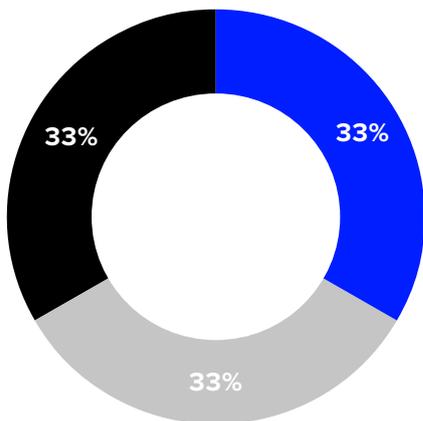


Average investment in public cloud as a proportion of IT budget

DEMOGRAPHICS

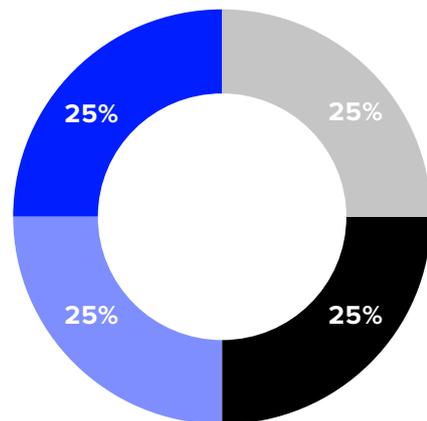
INDICATE THE REGION YOU'RE BASED IN

● North America ● Europe ● Asia



SELECT THE JOB TITLE WHICH MOST ACCURATELY REPRESENTS YOUR JOB ROLE

● Chief technology officer ● Chief information officer
● Chief data officer ● Head of market data



SELECT THE FINANCIAL INSTITUTION WHICH MOST ACCURATELY REPRESENTS YOUR ORGANISATION

● Real money (mutual fund, pension fund, endowment)
● Hedge fund ● Private equity or VC fund
● Other asset manager

● Stock brokerage ● Commercial bank
● Investment bank ● Full-service bank

BUYSIDE



SELLSIDE



Numbers may not add up to 100% due to rounding

FINANCIAL SERVICES EMBRACE THE CLOUD

Financial services companies' adoption of public cloud solutions and services has grown substantially in recent years

Findings from Refinitiv's 2019 *Public Cloud Report* show that public cloud is now integral to the day-to-day operations of most major financial services businesses. Asset managers, banks, custodians, hedge funds, fintechs and trading groups are spending more than ever before on using public cloud to enhance their businesses (figure 2).

"Cloud providers are providing scale to financial institutions, which many of them didn't have before," says Marion Leslie, managing director at Refinitiv.

"Ultimately, they are getting some significant benefits. We are seeing a maturing of that adoption. In some cases, there are cost of ownership benefits, as well as agility benefits."

Public cloud adoption is having a transformative effect on financial institutions, says Marion Leslie, acting as a catalyst for leaps forward in artificial intelligence and machine learning technologies.

The average percentage of financial companies' IT budgets committed to public cloud services, including apps and solutions, stood at 41 per cent, according to this year's survey, which was expected to be up from 34 per cent in 2018. The research, which was conducted among 300 senior financial services executives, found that this figure is likely to grow further next year, with respondents expecting to dedicate 48 per cent of their IT budgets to public cloud solutions in 2020 (figure 1).

Looking at budget allocations in 2019 in isolation, 12 per cent of full-service banks, one in ten asset managers, and 10 per cent of stockbrokers were allocating at least half their IT budgets to public cloud services. The respondents envision this allocation increasing considerably by 2020, with 55 per cent of hedge funds spending more than half their budget on cloud services at that time, as will more than a third of asset managers and commercial banks.

Stephen Murphy, chief executive of Genesis Global Technology, says the

64%

of respondents felt that cloud will be significant, or transformational, for their sector over the next 5-10 years



94%

of respondents felt that their organisation is limiting the use of cloud because of regulatory concerns

Figure 2

WHAT PERCENTAGE OF RESPONDENTS' IT BUDGET WAS / IS / WILL BE COMMITTED TO PUBLIC CLOUD?

● 2018 ● 2019 ● 2020

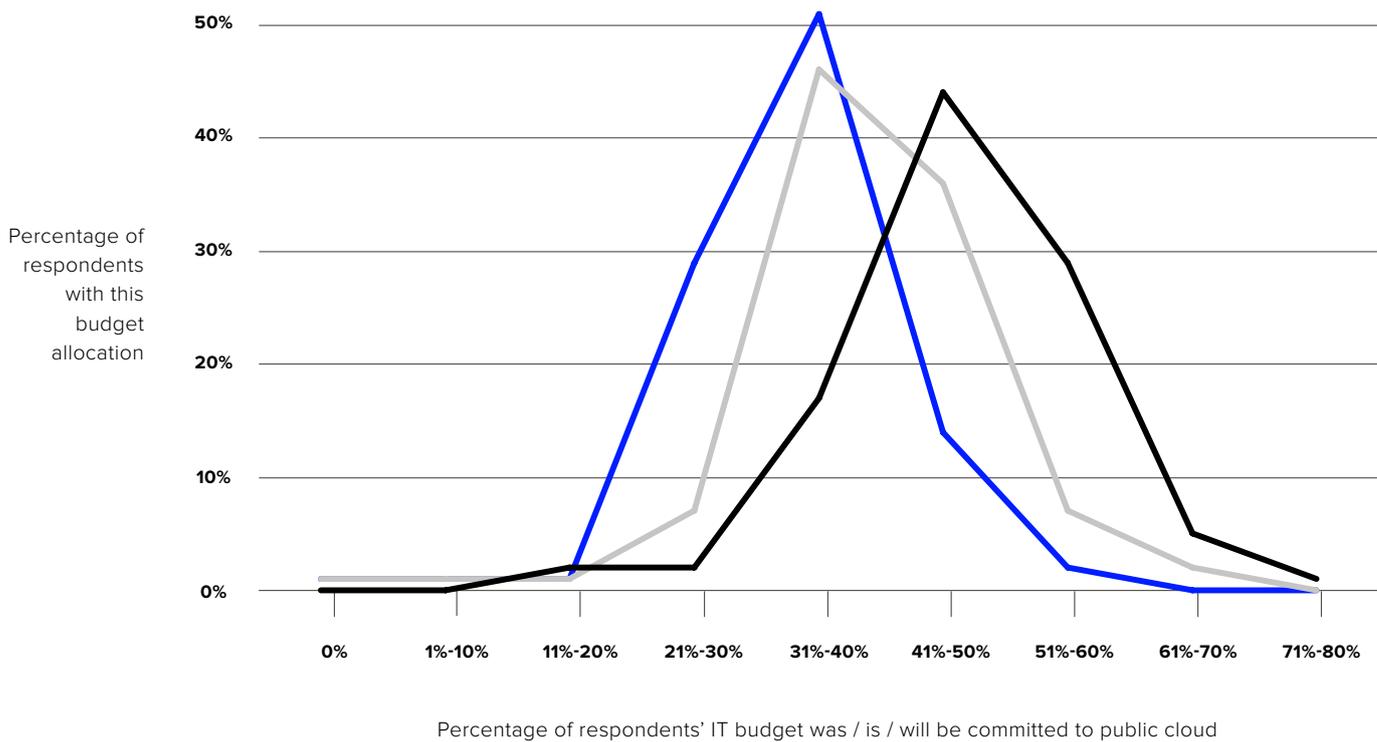
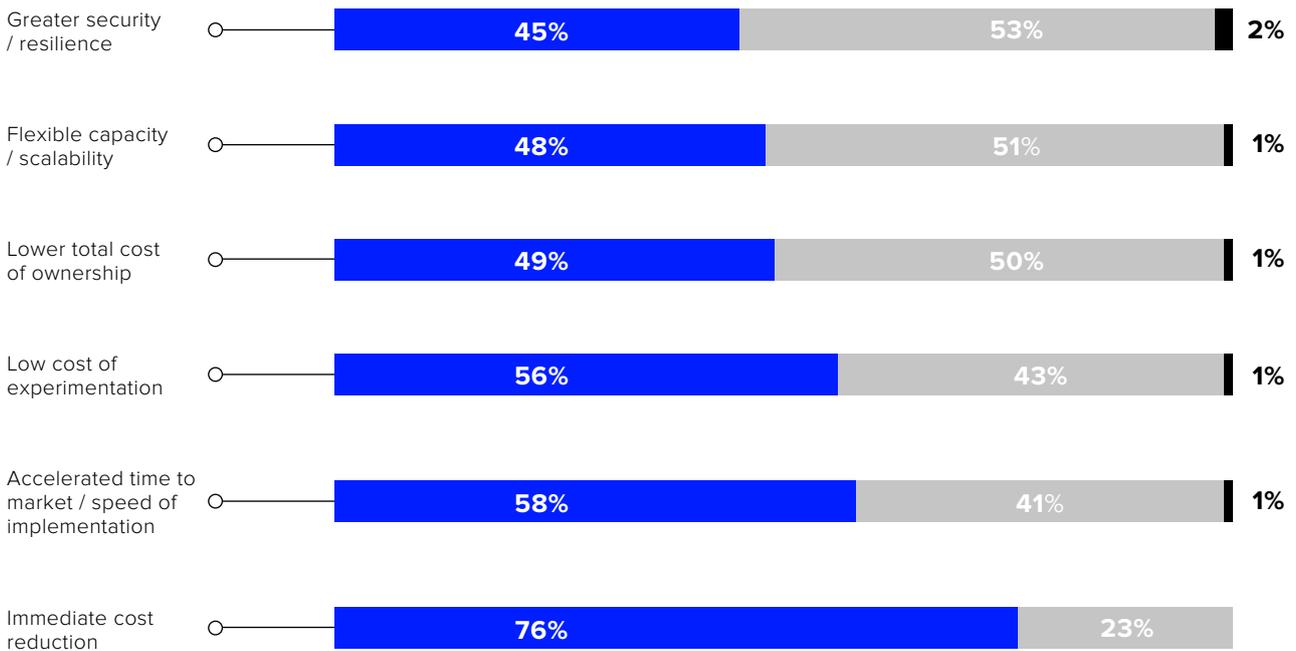


Figure 3

FOR RESPONDENTS' COMPLETED PUBLIC CLOUD PROJECTS, DID THEY PERFORM BETTER OR WORSE THAN EXPECTED ACCORDING TO THE FOLLOWING MEASURES?

● Better than expected ● As expected ● Worse than expected



Numbers may not add up to 100% due to rounding

adoption of public cloud solutions is now inevitable. The cost for a company of building and maintaining its own infrastructure will simply be too expensive in future, he says.

“But I can go to any one of the cloud providers and load up a piece of infrastructure in seconds. You can’t do that if you are using your own infrastructure because there are operational costs and risks. On the cloud, I can log on to my account and instantly have that ability.”

Interestingly, there is no significant link between the size of the company and the percentage of IT budget they commit to public cloud services, suggesting this is a truly universal step change in industry thinking.

Migration can take longer in the largest financial firms, says Hanna Helin, head of enterprise transformation,

cloud strategy at Refinitiv, which could explain the slightly lower percentage of budgets they expect to allocate to the area next year.

“When a bank decides it wants to adopt a new technology, they are not going to adopt it all at once,” she explains. “They are going to want to pilot it in one area, learn, gain experience and only then roll it out.

“Smaller firms are able to adopt very quickly because they tend to be smaller, less risk-orientated and more innovation-orientated.”

When all respondents were asked to rate the significance of cloud technologies, 64 per cent felt that the cloud will be significant or transformational for their sector over the next five to 10 years.

Part of the growing popularity of public cloud has been down to how

well existing public cloud projects have performed (figure 3). Of those companies that embraced public cloud solutions for cost reduction programmes, 76 per cent said they were performing better than expected, with the rest saying that the projects had performed in line with expectations. Crucially, none thought their public cloud projects had performed worse than expected.

The results were positive for other projects too. When firms were asked about projects that were implemented to accelerate time to market, or improve implementation speeds, 58 per cent said their projects had performed better than expected, with a further 41 per cent saying they performed in line with expectations. Just 1 per cent of those polled said they had performed worse than expected. ▀

TACKLING DATA RESIDENCY REQUIREMENTS



Despite their enthusiasm, financial services firms are still cautious about certain aspects of public cloud adoption, with our research showing particular nervousness around data residency requirement risks

Data residency means the physical place in which the data resides, with some geographies enforcing certain regulatory requirements when it comes to the location of data.

Asked what the biggest data management challenges were across public, private and on-premises (figure 4), 51 per cent of respondents identified managing data privacy controls across multiple datasets in multiple locations. This came ahead of the other challenges facing firms, including reducing the total cost of ownership for data (23 per cent) and managing entitlements and permissioning so that usage can be tracked (14 per cent).

When broken down by geography, European respondents were more

likely to cite data privacy controls as the biggest operational barrier at 54 per cent, versus 49 per cent of respondents in Asia and 50 per cent in North America (figure 5). One possible reason for this is the EU-wide GDPR, which came into effect on May 25, 2018 and effectively aligns European countries when it comes to data privacy.

Nervousness among firms can be segmented by the type of institution or type of data, according to Refinitiv's Marion Leslie. Some institutions, particularly banks, must adhere to regulatory obligations. "They tend to be very cautious about those obligations and one of those, at least in many countries, is data residency."

Interestingly, not all of these data residency requirements extend to

'How do they move [public cloud] around if regulations change? To me it's the more pertinent question'

Bart McDonough, Agio

Figure 4

BIGGEST DATA MANAGEMENT CHALLENGES ACROSS PUBLIC, PRIVATE AND ON-PREMISES

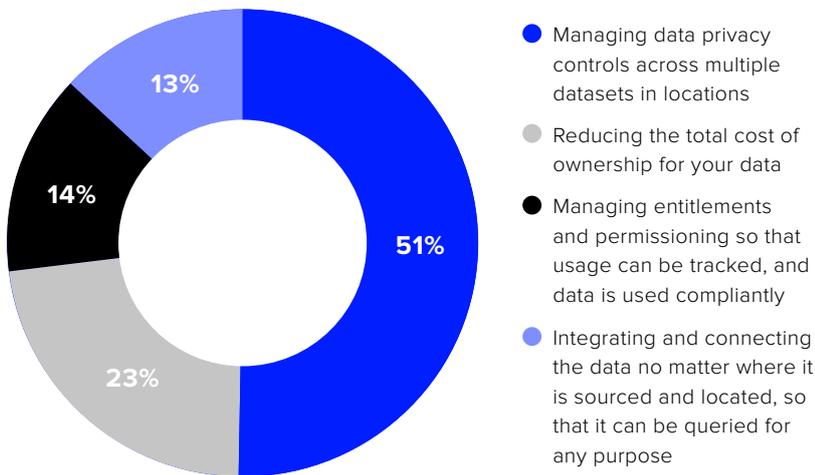
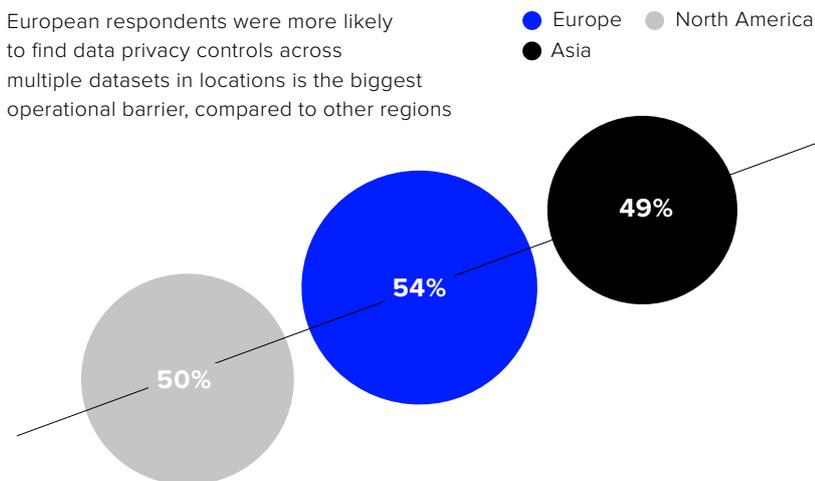


Figure 5

European respondents were more likely to find data privacy controls across multiple datasets in locations is the biggest operational barrier, compared to other regions



What could data providers do to help you more easily manage data in the cloud?

‘Provider must comply with data storage regulations’

all types of data, Marion Leslie says. So while they might cover customer data for privacy reasons, data that is broadly available, such as market data, will not fall under the requirements.

Bart McDonough, chief executive and founder of managed IT and cybersecurity firm Agjo, says that because certain geographies have rules around data residency, implementers of public cloud need to understand not just the data residency requirements as they stand today, but the implications of any

61%

of heads of market data agreed that managing data privacy controls across multiple datasets in locations was their greatest data management challenge

potential changes. Bart McDonough explains: “How do they move data around if regulations change? To me it’s the more pertinent question.”

Cloud providers are helping to ease any concerns firms might have about the location of their data by building data centres worldwide.

“We see Amazon, Microsoft, Google, even Alibaba, they’re building data centres all over the world and some of that is because of economics and access to cheap electricity, but a fair amount of it is because of data residency requirements,” says Marion Leslie.

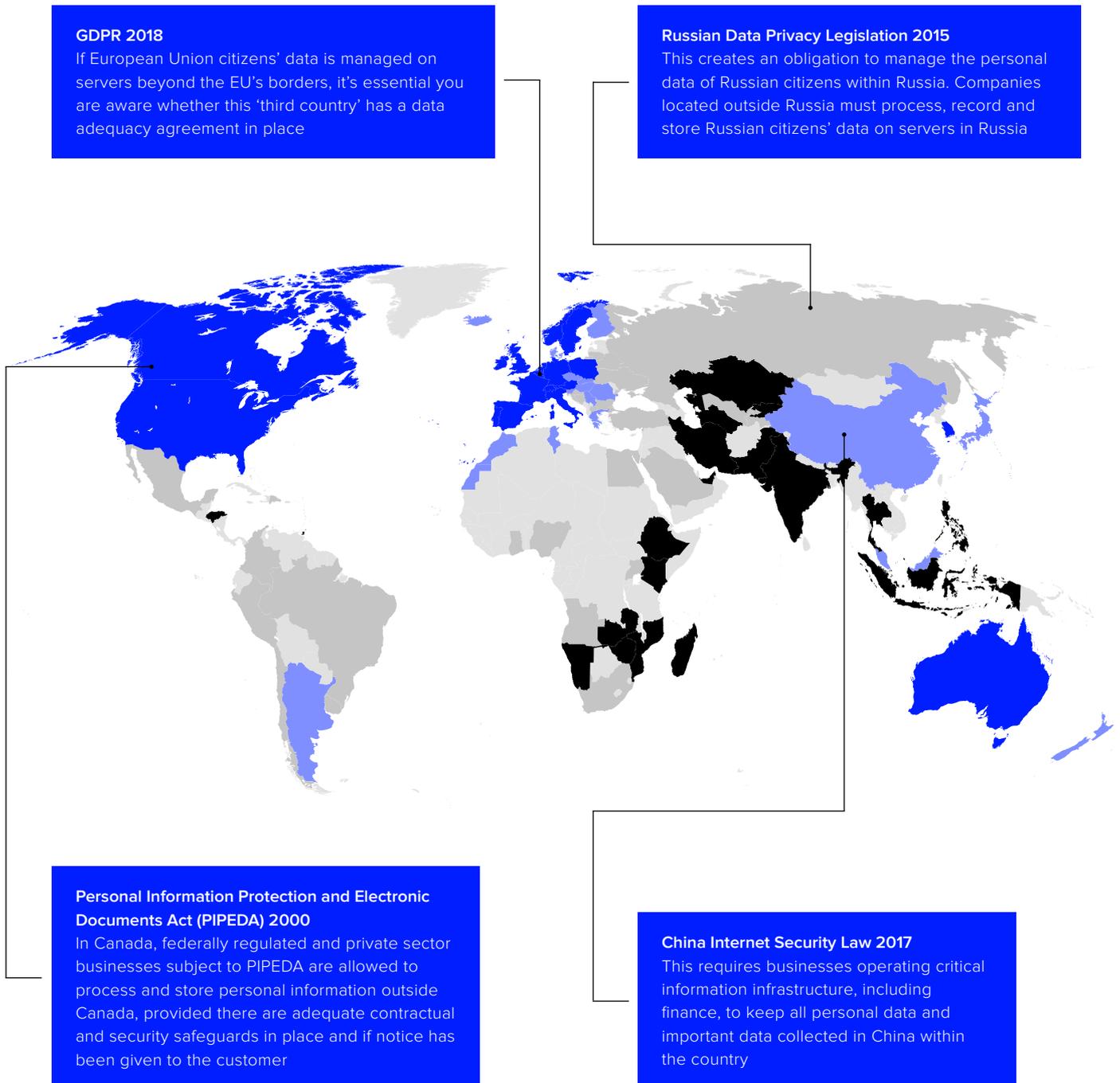
Some geographies retain a data residency requirement (figure 6), Marion Leslie says, but currently lack the scale of demand to justify cloud providers building datacentres there.

A few years ago, she says, there were regional hubs for data centres, such as Virginia in the United States, where there was sufficient telecommunications infrastructure. “But I think we’re past that stage now,” according to Marion Leslie. “A lot of them have located data centres either at or in very close proximity to exchange colocation facilities.”

Figure 6

DATA PROTECTION LAW WORLDWIDE

● Heavy ● Robust ● Moderate ● Limited



CHALLENGES OF MULTI-CLOUD ADOPTION



Financial services companies have increasingly embraced multi-cloud arrangements. What challenges does this bring for organisations?

In theory, the advantage of running a multi-cloud model is it allows firms to pick and choose the cloud services that best fit their business, in locations which suit their customers.

According to Intel's 2018 *Multi-Cloud Strategy Drives Financial Services' Digital Transformation* report, 85 per cent of financial services companies now use more than one cloud service, compared to just 5 per cent that use a single, private cloud.

"Sometimes there are obligations for businesses to have things running in multiple places, all at once, for reasons such as business continuity," explains Refinitiv's Hanna Helin. "Smaller firms are able to adopt very quickly because they tend to be smaller, less risk-orientated and more innovation-orientated."

Regulatory pressures sometimes drive multi-cloud adoption. In some jurisdictions, regulators stipulate that organisations must have data operations in the locations where their customers are based, or where they do business.

However, regulatory insistence on multi-cloud could be slowing the wider adoption of cloud services overall. Refinitiv's latest survey asked financial services companies whether they were limiting the use of the cloud because of regulatory pressures to adopt a multi-cloud approach. Nearly a third of respondents (30 per cent) said they were; while their regulator required a multi-cloud approach, this was inconsistent with what they wanted to do (figure 7).

This view was particularly pronounced among businesses

'If you are a regulated financial institution you have obligations for issues such as the confidentiality of data and business continuity'

Marion Leslie, Refinitiv

identifying as “real money” managers, a category that includes pension funds, endowments and mutual fund institutions. Among the 71 respondents in this group, 41 per cent said that they were limiting the use of the cloud for this reason. There were also a significant number of private equity managers (35 per cent) and “other” asset managers (34 per cent) who agreed.

However, employees of hedge funds, stockbrokers and full-service banks responded very differently. Just 9 per cent of hedge funds said they were limiting their use of cloud

because their regulator requires a multi-cloud approach, along with 10 per cent of stockbrokers and 12 per cent of full-service banks.

Along with company type, the geographical split of respondents was almost as illuminating in this research. Refinitiv’s survey clearly shows that Europe-based respondents were more likely to label regulatory requirements around multi-cloud as “inconsistent with what they do” and a reason for limiting their use of cloud, compared to their peers in Asia or North America.

In July 2018 the UK’s Financial

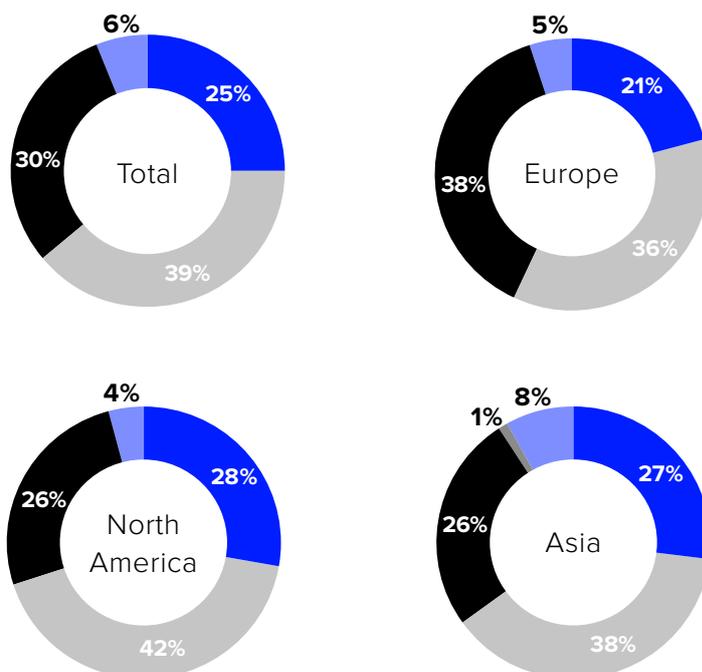
30%

of respondents felt that the regulator requires organisations to be multi-cloud and this is not consistent with what they want to do

Figure 7

ARE ORGANISATIONS LIMITING THEIR USE OF THE CLOUD BECAUSE OF REGULATORY CONCERNS?

- Yes - regulators mandating data residency requirements
- Yes - regulator requires organisations to be multi-cloud and this is not consistent with what they want to do
- Yes - differing regulatory approaches prevent organisations from implementing a global programme
- Yes - other
- No



Numbers may not add up to 100% due to rounding

Conduct Authority (FCA) published guidance for firms outsourcing to the cloud. The regulator said that financial firms remain liable for meeting FCA rules even when they outsource to multiple entities. It also made clear that firms are obliged to know whether the cloud provider is using any other companies in supplying the service. If so, the financial company is responsible for ensuring regulatory compliance “throughout the supply chain”.

In terms of published guidance, “one of the best was from the FCA”, says Marion Leslie. The paper said that from a regulatory perspective, cloud is no different to any other form of outsourcing, Marion Leslie explains.

“If you are a regulated financial institution you have obligations for issues such as the confidentiality of data and business continuity. You remain accountable for those obligations regardless of whether you outsource that to a third party or not.”

UNDERSTANDING THE COMMERCIAL REASONS FOR PUBLIC CLOUD ADOPTION



Making the business case for public cloud migration can be challenging, particularly if managers are asked to isolate exact costs and benefits

 f the 300 individuals polled for this year's Refinitiv survey, there were several commercial reasons identified for embracing public cloud services now. Respondents were asked to rank these in order from one to five, with one being the most important.

Looking only at the reasons that were awarded a score of one, 15 per cent of those polled said that moving operations to the cloud would accelerate the time to market and speed of implementation of new initiatives. A further 14 per cent cited cost reductions and business resilience as the appeal.

Full-service banks were the most likely to cite cost reductions as the primary driver for moving to public

cloud services. In fact, more than a third of those polled highlighted the cost benefits of the move, though this assumption may warrant further exploration, according to experts.

"Cloud economics are very different to running your own infrastructure on-premises," explains Marion Leslie, managing director at Refinitiv. "You do need to understand the cost economics of cloud in order to get the full benefits."

Chief technology officers and chief information officers (at 19 per cent each) were the most likely respondents to cite cost reduction as the most important reason for moving to cloud services, with chief data officers (12 per cent) and heads of market data (8 per cent) at the other end of the spectrum.

'Cloud economics are very different to running your own infrastructure on-premises'

Marion Leslie, Refinitiv

“Many companies go in with some expectation that there will be cost benefits,” says Refinitiv’s Hanna Helin. “As they mature, they realise it isn’t as simple as that. It is an operating expense cost, as opposed to a capital expenditure cost. It’s not like you can say, ‘I’ll lift and shift to the cloud and all my costs will go down.’”

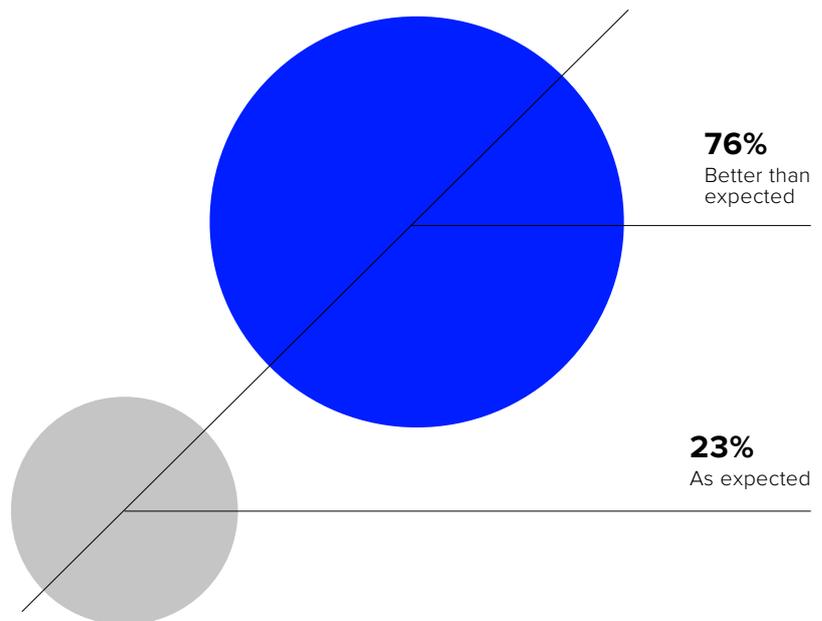
Around 5 per cent of this year’s survey participants said that the primary benefit of moving to public cloud services was the attraction of the infrastructure cost moving from capex to opex. Interestingly, commercial banks were the most likely group of financial companies to cite this factor, with just over one in ten respondents saying this was the case. Among stockbrokers, 10 per cent cited the cost switch from capex to opex as the primary driver. A smaller number of respondents representing asset managers and private equity firms gave the same response.

65%

of respondents felt that short-term targets were the biggest operational barrier to projects

Figure 8

A MAJORITY OF PUBLIC CLOUD PROJECTS ARE DELIVERING BETTER THAN EXPECTED RESULTS FOR IMMEDIATE COST REDUCTIONS



“It is important to note that that shift from a capex approach to an opex model has an impact on their investment planning processes,” explains Gavin Carey, head of enterprise, Europe, Middle East and Africa, price history feeds at Refinitiv. “It can be quite a challenge.”

Marion Leslie agrees, noting that financial services businesses need to understand what they are trying to achieve by moving to public cloud services before embarking on the project.

“You have to ask what the business objectives of the firm are,” she says. “If you look at the banking market, you have challenger banks and established banks, and they all have very different drivers.

“Large banks, typically, are seeking a combination of cost savings and innovation. They are in a market where there is a lot of competition so it is essential that they can get products and services to market more quickly.”

In late-2018 Microsoft published a guidance paper on common cloud migration myths. According to the paper, the belief that “operating a datacentre in the cloud is always cheaper than on-premises” is a myth. “While this may be true, it’s not always the case,” it warned.

Refinitiv’s Marion Leslie says financial institutions should urge leadership teams to consider multiple business consequences, not just cost savings, to calculate the net impact that public cloud services could have on their bottom line.

“If I was at a large bank, I would lead with a combination of cost savings and innovation,” she says.

“If I was at a smaller hedge fund, I would lead with the fact there are tools and capabilities in cloud, that allow me to apply machine learning, artificial intelligence and large datasets to identify trends which will improve alpha of the fund.”

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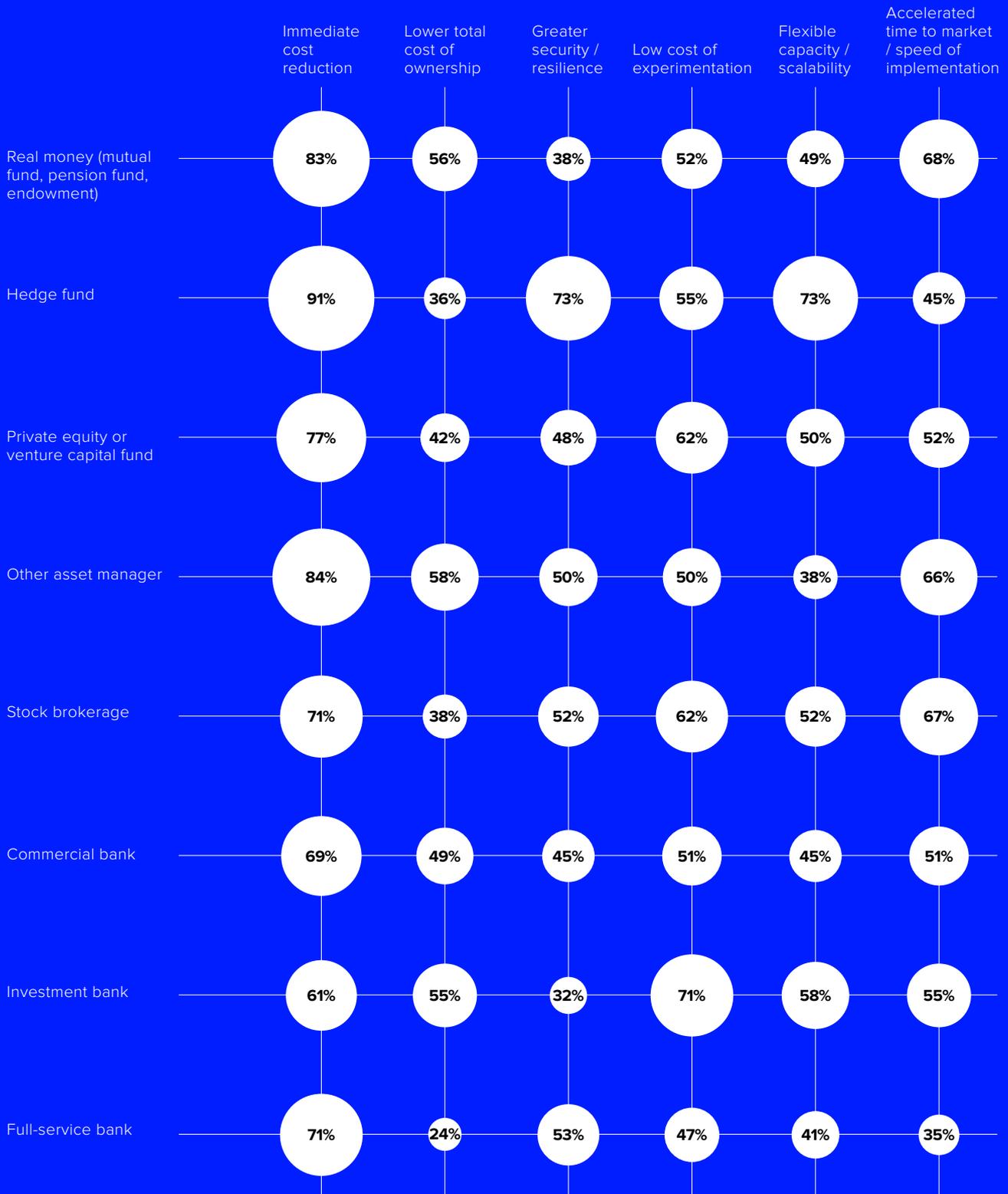
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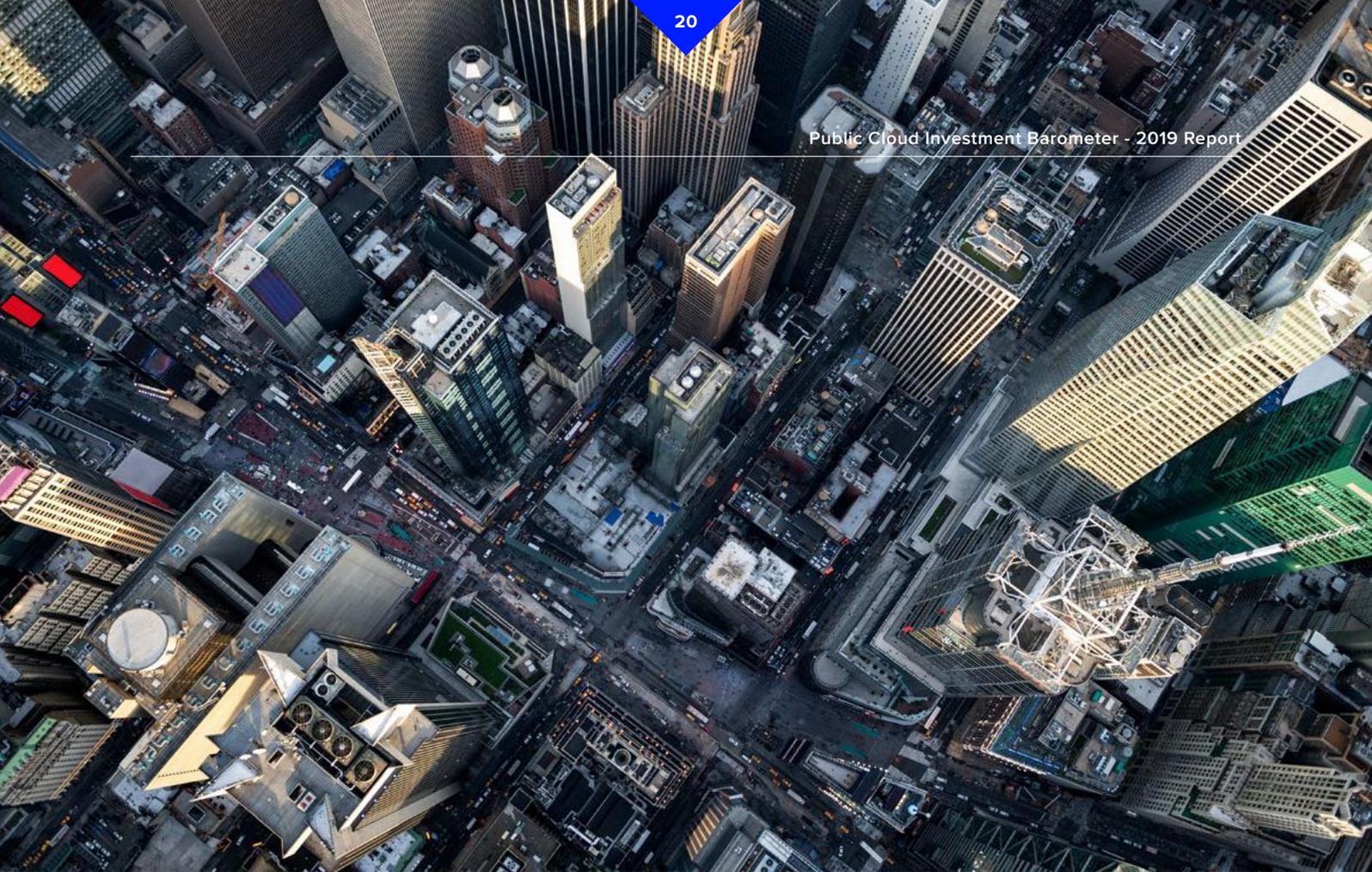
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Figure 9

EXCEEDING EXPECTATIONS

PUBLIC CLOUD PROJECTS THAT PERFORMED BETTER THAN EXPECTED, ACCORDING TO THE FOLLOWING MEASURES, ACROSS ORGANISATION TYPES





Public cloud projects are already exceeding expectations in several ways, delivering better than expected value for financial firms across a range of measures

‘Refinitiv’s research shows that those who have taken the plunge and embraced public cloud offerings are extremely pleased with the results’

Marion Leslie, Refinitiv

The research shows that public cloud projects were fairly consistent in generating immediate cost reductions, with 91 per cent of hedge funds saying that such efforts had performed better than expected on this measure (figure 9). Among real money firms like pension funds, 83 per cent saw their cloud projects deliver on cost reduction more quickly than predicted.

The data shows that hedge funds and real money asset managers were able to capture the cost reductions faster than investment banks, where fixed costs are harder to pare back, says Marion Leslie.

Public cloud projects exceeded expectations when it came to greater security, according to 73 per cent of hedge funds. This compared with just 32 per cent of investment banks, which are likely to already

have better security measures.

Hedge funds were also more likely to see a gain when it came to flexible capacity and scalability of public cloud projects. More than two thirds of real money asset managers and stock brokerage firms (68 and 67 per cent respectively) said that the projects performed better than expected in terms of “accelerated time to market and speed of implementation”, compared to just 35 per cent of full-service banks.

“It’s all about what the starting point for the bank or institution is. You have your primary reason to adopt cloud, and everything else becomes an upside,” says Marion Leslie.

Another measure – low cost of experimentation – performed better for 71 per cent of investment banks, compared with 52 per cent of real money asset managers. ▀

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DATASETS IN THE PUBLIC CLOUD



The various use of datasets within the public cloud differ across organisations, as does their potential impact when hosted this way

Market data and pricing was the dataset that most firms thought would offer the greatest benefit to their business when hosted in the cloud (figure 10), at 69 per cent of respondents. The research found that 53 per cent are currently using this dataset in a public cloud environment.

Refinitiv has one dataset of stock price movements, or “tick history”, which dates back more than 22 years and is about six petabytes in size, says Gavin Carey. This comprises “every price movement throughout every trading day for millions of financial instruments” and has seen huge interest from Refinitiv’s customers since customers’ use of cloud has increased.

“We’re seeing huge growth in that business,” Gavin Carey says. Refinitiv expects this to be followed by interest in several of its other databases and those of other companies as firms get to grips with their value, looking to adjacencies in areas like reference data and terms and conditions information.

An interesting aspect of the research on datasets in the public cloud, says Marion Leslie, was that market data and

pricing really come in two forms. “We have real-time market data and pricing, and then we have historic market data and pricing,” she says.

“What we’re seeing is more adoption of the historical pricing in cloud, and not yet seeing as much adoption of the real-time pricing, although we are seeing some updates there.”

Respondents viewed risk and regulation datasets as having the least potential benefit to a business when hosted in the public cloud. Just 20 per cent of financial firms saw benefits to hosting this data in the cloud, with 46 per cent of respondents actually using this dataset in a public cloud environment.

This is not surprising, given what the research has already shown about regulatory concerns.

“If you think about KYC - know your customer - there is a lot of sensitive data there, and government regulations make it a little bit harder to use those in the cloud,” says Hanna Helin. “You’re seeing more adoption of use cases in data that are not governed by regulation, less adoption where there are regulatory constraints”

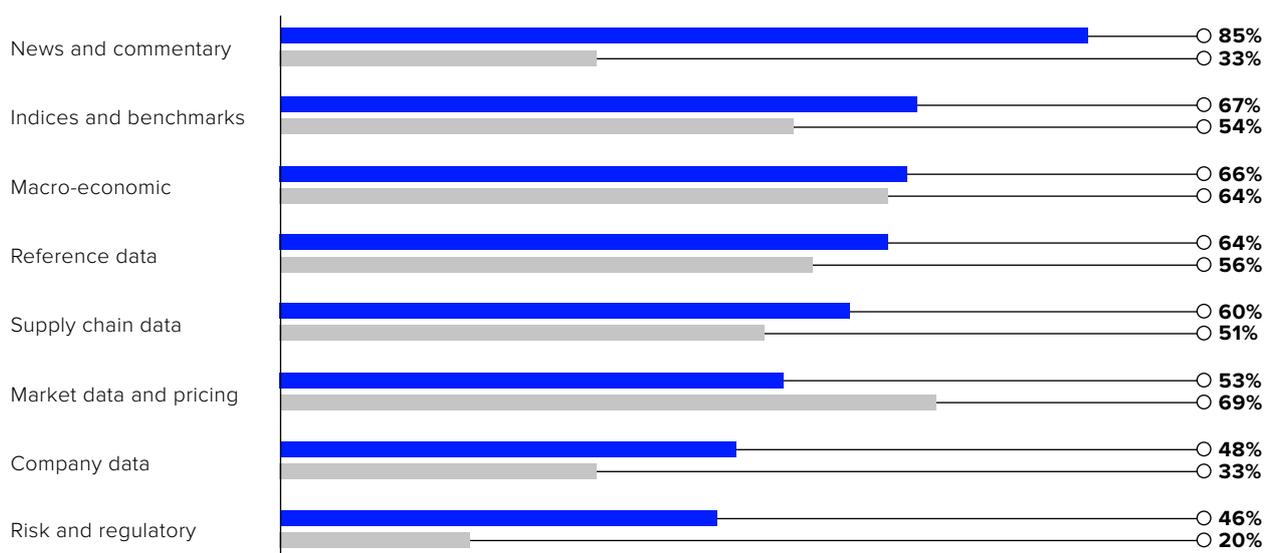
‘You’re seeing more adoption of use cases in data that are not governed by regulation, less adoption where there are regulatory constraints’

Hanna Helin, Refinitiv

Figure 10

USE AND GREATEST BENEFIT OF DIFFERENT DATASETS BEING HOSTED IN THE CLOUD DIFFERS

- Percentage of respondents using these datasets in a public cloud environment
- Percentage of respondents who believe this dataset offers the greatest potential benefit to their business when hosted in public cloud



‘There’s a clear use case for being able to access and use, but not necessarily carry the costs of hosting, owning, managing [the datasets]’

Marion Leslie, Refinitiv

Just 33 per cent of respondents see benefits to placing company data in the public cloud environment, although 48 per cent use this dataset in the cloud. “For internal company data, that’s where the sensitivities and the confidentiality becomes more of a challenge for adoption of cloud,” says Marion Leslie.

Respondents were more enthusiastic about hosting macro-economic data in the cloud, with 64 per cent seeing potential benefits and 66 per cent already using the dataset in that environment. It is not a particularly sensitive dataset, Marion Leslie explains, but is valuable for quantitative and systematic types of investment strategies. “You’re seeing a high level of adoption there,” she says, adding that as customers adopt the cloud for one use case or dataset, they see the value and are encouraged to do more.

It is possible to access this data without actually hosting it, as Refinitiv’s Marion Leslie points out.

“There’s a clear use case for them to be able to access and use, but not necessarily carry the costs of hosting,

owning, managing [the datasets] in the same way they do today in their on-premise environment,” she explains.

As financial firms no longer need to bear the burden of hosting these datasets themselves, they are likely to see immediate cost reductions when they switch to cloud. Gavin Carey says this is likely the explanation for why hedge funds are seeing such immediate cost reductions.

Marion Leslie highlights yet another change as datasets make their way into the public cloud environment. Where previously financial firms would purchase content for a specific use case, now they are asking cloud providers for “the full depth and breadth of content”, she says.

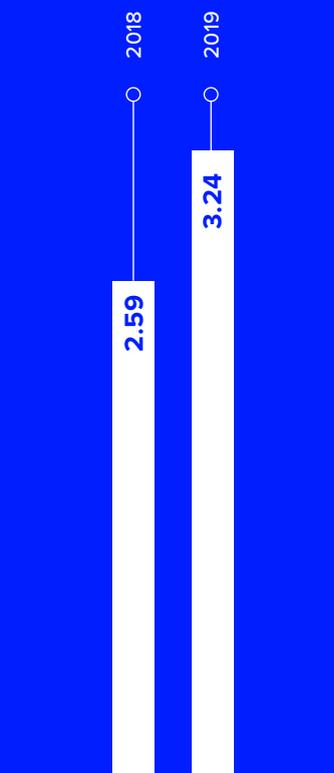
“They’re not saying, ‘I want datasets for this use case’. They’re effectively saying, ‘I want the full buffet menu; I want my data scientists, my research analysts to look at different data and combine it in different ways,’” she explains. “It’s a very different consumption of data. It is changing how people consume data and making those new use cases possible.”

BACK-OFFICE CHALLENGES

Financial services companies' adoption of public cloud solutions and services has grown substantially in recent years

Figure 11

HOW LONG WILL IT TAKE FOR FULL MIGRATION OF BACK OFFICE / TECHNOLOGY FUNCTION TO THE PUBLIC CLOUD ON AVERAGE (IN YEARS)?



Respondents last year said the back-office would be quickest to migrate to the cloud, taking 2.59 years. This year's findings, however, tell a different story. This part of the business is now deemed the slowest by far to migrate, at 3.24 years (figure 11). It seems that a cloud-based back-office function is appealing to financial services companies, but there are hurdles to moving the operation.

The opportunity for cost reduction appeals to firms like banks and asset managers, says Marion Leslie.

"It is attractive to firms to look at moving back-office processes to cloud as it can represent a huge cost, and cloud provides an opportunity to change the way things are done. With freed up capital, people and greater efficiency, you can focus efforts on value add," she says.

While firms may be prepared to face some hurdles to cloud migration, the data suggests they were caught out by the challenges thrown up by back-office transition. It is possible that as firms tackle these cloud projects, they realise they have underestimated the difficulties involved.

"Because those back-office systems are often some of the older systems within the organisation, they are often things that have developed organically over long periods of

time," she says. "So unpicking them can become a painful task and make the task of moving it to the cloud a slower one."

Firms believed the back-office was the obvious place to start with cloud migration, says Refinitiv's Marion Leslie, because the cloud was more suited to static reference data.

"It would feel obvious that you're first of all going to start with your large infrastructure databases," she points out. "However, it is quite complex, so actually unpicking those processes and managing those migrations in a way that is effective with the economics of cloud is not a quick effort for the more established institutions."

The slower uptake may also reflect the methods that firms have chosen. Marion Leslie says companies could "lift and shift" the application. This would be quicker, though it might not allow companies to leverage the full benefits of the cloud, particularly if processes and cloud economics have not been optimised.

Alternatively, "you can totally rewrite and start again in cloud", Marion Leslie says. "So depending on which method you have taken, you'll realise some degree of benefit sooner, but you may find yourself getting caught out further down the line." ▽

HEDGE FUNDS LEADING THE WAY



Hedge funds have blazed a trail in adopting public cloud technologies. What is it that sets them apart?

Research for this report conducted with senior executives at hedge funds in North America, Europe and Asia found that every firm polled was currently in the process of migrating, or had completed migrating, to public cloud for all functions of the business.

Of all financial institutions, hedge funds were also the most likely to have a dedicated board-level technology-focused director, such as a chief technology officer (CTO). Every hedge fund interviewed had an executive in a CTO role or equivalent position.

For most hedge funds, the decision to embrace public cloud services is driven not purely by cost efficiencies but by necessity. In the race to identify and isolate a trading advantage, they need to crunch huge amounts of data and lay large analytical programmes over the top.

Doing this with their own infrastructure would be costly and eat into their margins. As a result, hedge funds have been quick to embrace the opportunities that public cloud can offer and are now considered leaders in cloud migration within the wider financial services sector.

“One of the things hedge funds do very well is that they experiment a lot when it comes to accessing datasets,” says Refinitiv’s Marion Leslie.

Hedge funds have benefited because they have embraced the full gamut of services that cloud providers can offer. Other parts of the investment management industry are starting to notice, as specialist smart beta and quant strategies account for an increasing percentage of market share.

“The enablers around cloud and scalable computing, along with the tools to investigate correlations within innovative datasets, are key benefits

‘One of the things hedge funds do very well is that they experiment a lot when it comes to accessing datasets’

Marion Leslie, Refinitiv

100%

of respondents in hedge funds were currently migrating/have already migrated across every business function

of cloud adoption,” Marion Leslie says. “That kind of practice is starting to become more common in asset management and across buy side more generally, allowing firms to extract more value from their data assets.”

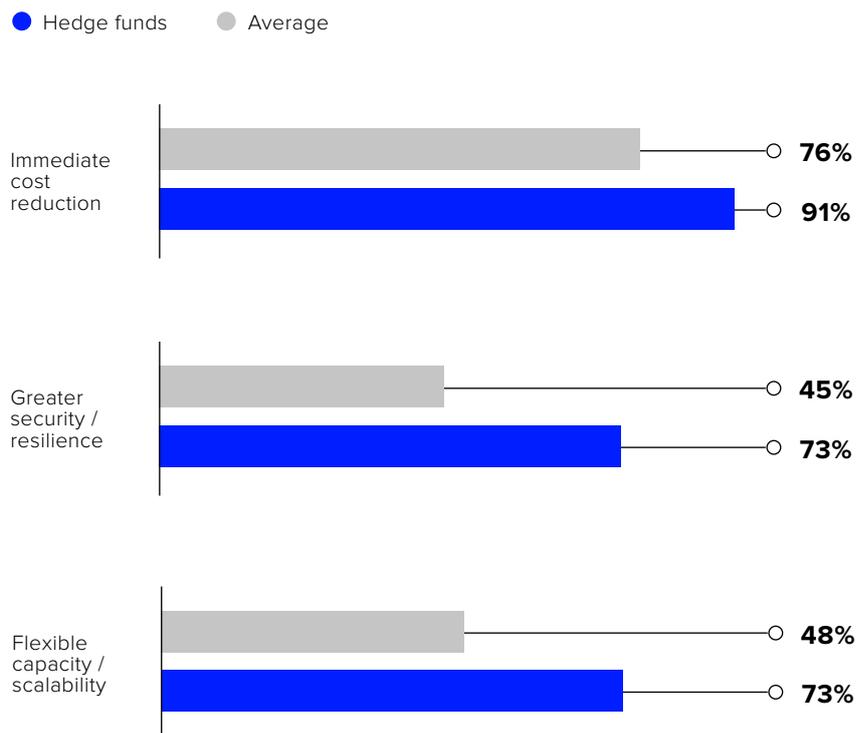
Hedge funds have demonstrated the commercial benefits of cloud migration, which partly explains the interest now being shown by businesses in other areas of financial services. Genesis Global’s Stephen Murphy says the benefits to hedge funds have been enormous.

“Everyone is talking about public cloud as a cost reduction play, but hedge funds have recognised it is a great way to generate revenue and, importantly, to generate alpha,” he says. “They have been very savvy.

“What they have been able to achieve in terms of functionality and the use of alternative data sources is impressive. They are able to deploy new platforms in a far more agile way. Hedge funds are able to take large amounts of data and place analytics over the top, all because they are doing so in the cloud.”

Figure 12

PERCENTAGE OF RESPONDENTS WHO BELIEVE PUBLIC CLOUD PROJECTS HAVE PERFORMED BETTER FOR



HARDER THAN EXPECTED

Full migration to the cloud is taking longer across all business functions than respondents envisaged last year

The number of years until full migration of pre-trade function has gone up slightly, from 2.36 in 2018 to 2.73 in 2019. For the trading function, full migration is now expected to be complete after 2.79 years, rather than the 2.49 estimated last year. Back-office and tech functions have seen a marked jump in expected migration time, from 2.59 years to 3.24 in 2019.

Migration of the middle-office and compliance functions in financial services firms has changed the least. Fully migrating the middle office was expected to take 2.84 years in 2018 and has remained steady at 2.85 years in 2019.

Refinitiv's Marion Leslie is unsurprised by the findings, noting that middle office and compliance is a well-defined task in firms. "When we started talking to customers about this stuff four years ago, that was the area they were going to start with," she recalls. "So they have presumably been working on this for the longest and have the most experience with these datasets and these workflows."

Trading activity may be taking longer to move to the cloud due to regulatory and security concerns, Marion Leslie says. It would be sensible to ensure that all of these have been addressed before moving anything connected

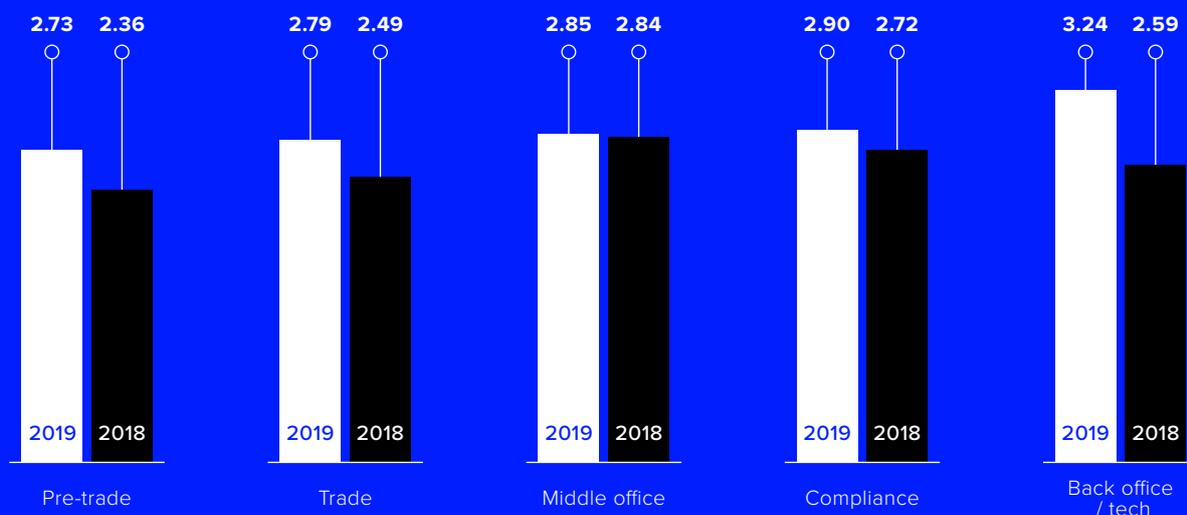
to trading activity to the cloud, she emphasises. "Maybe that is taking longer to get the relevant sign-offs in some of the larger customer firms."

Marion Leslie thinks there has been a fair amount of discovery for financial services firms so far in the process, which has resulted in an adjustment to timelines.

"As with all these things, there's an initial estimation of what the target is and how you're going to meet it. Then you start unpicking and cataloguing your infrastructure, your applications, your systems and your dependencies. Then you suddenly think, actually, this kind of timeline would be more realistic." ▽

Figure 13

TIME UNTIL FULL MIGRATION TO PUBLIC CLOUD, ACROSS BUSINESS FUNCTIONS (AVERAGE IN YEARS)



2018 figures referenced are findings from *The true state of public cloud 2018* report from Refinitiv. Whilst this research is not an identical demographic breakdown, it also represents a fair sample of the financial services industry

OVERCOMING BARRIERS



Refinitiv's research shows financial firms have realised some of the benefits that migrating their operations and datasets to the cloud can bring. There remain operational barriers to further investment

The findings indicate that compliance concerns, which were the number one operational barrier to the adoption of public cloud last year, have dropped to third in the list for 2019, at 62 per cent (figure 14).

Marion Leslie attributes this to the lobbying and other work that cloud providers have conducted, not just with regulators but with firms as well. "There is, I would say, a lot more clarity about where the lines are from an implementation perspective than before," she says.

But incompatibility with traditional network security tools has risen as a barrier, from number six in 2018 to second in the ranking this year (63 per cent). Gavin Carey puts this down to increased knowledge and growing experience.

"Larger clients have not necessarily seen the greatest improvements from cloud in the security area", he says.

"They have large, well-established IT security teams with very strong, formalised processes built around certain behaviours on the network and particular tools. This means there is a good deal of security process re-engineering required if they are to make the move."

Smaller firms, by contrast, "are often more nimble: they can move across and take advantage", he explains. "In many cases, security processes will be being developed alongside deployment."

Gavin Carey thinks that customers are likely to be in this "hybrid mode" for some time.

In last year's survey, a lack of human resources or expertise was identified

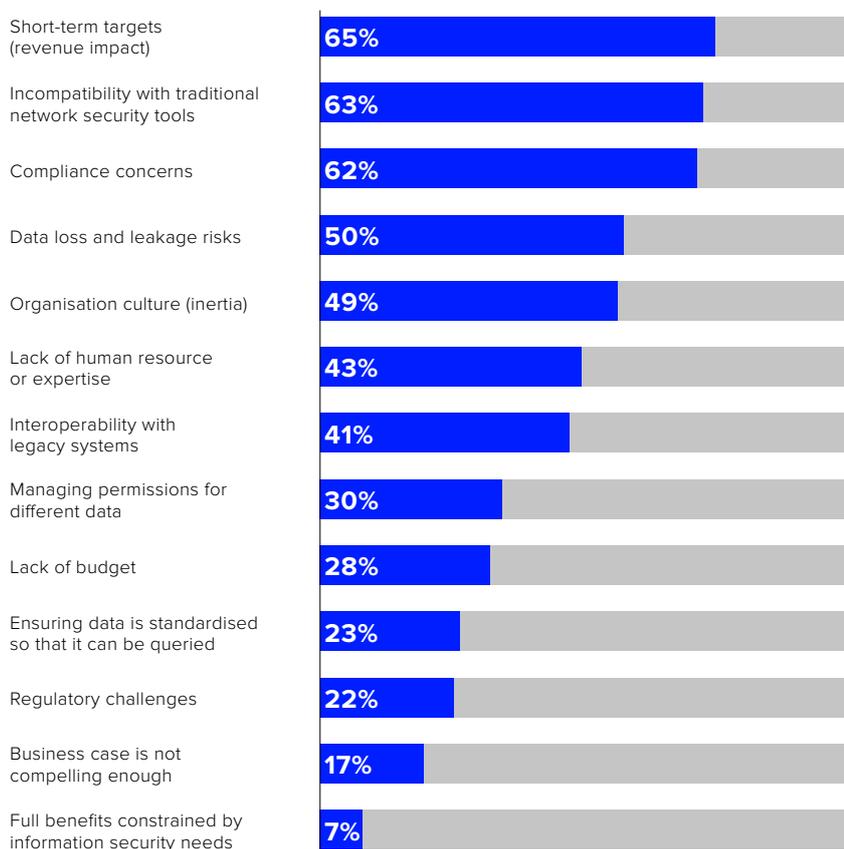
2018 figures referenced are findings from *The true state of public cloud 2018* report from Refinitiv. Whilst this research is not an identical demographic breakdown, it also represents a fair sample of the financial services industry

'There is a lot more clarity about where the lines are from an implementation perspective than before'

Marion Leslie, Refinitiv

Figure 14

TOP OPERATIONAL BARRIERS TO (FURTHER) INVESTMENT BY ORGANISATIONS IN PUBLIC CLOUD



What could data providers do to help you more easily manage data in the cloud?

‘Data providers must be able to recover the latest versions of the data in case of an on-site system failure or a disaster’

‘More variety of tools is needed that data provider offers as a service.’

‘Data security is the main issue. We need more reliable and secured tools for any security breach’

by respondents as the second main operational barrier to further investment by their organisation in public cloud. But in 2019, this is less of a hurdle for firms to overcome, having slipped to sixth place in the list.

Gavin Carey says he suspects financial firms are “building muscle” in this area of their business and that as teams begin to pursue these types of cloud projects, they “make mistakes, learn and eventually get better” at them.

From a recruitment point of view, “any computer science graduate coming out of university at the moment is going to have experience of public cloud and is going to have certifications”, Gavin Carey notes.

However, existing teams in larger firms will take time to skill up, he says. “We’ve seen quite a lot of our customers investing significant sums of money and effort doing that, so that will drive project delivery times down. But I’m pretty sure it’s an underpopulated resource pool at the moment.”

Agio’s Bart McDonough says the human element is improving, though this is truer on the provider side than for companies. “I think providers are hyper focused on the public cloud so they are much more knowledgeable and capable of moving firms to the public cloud.”

Finally, respondents were asked how transformational they expect the cloud to be over the next five to ten years. The results showed 64 per cent thought it would be significant or transformational over that period, leading to new ways of delivering on core business value and creating winners and losers, depending on how well firms navigate the journey (figure 15). However, 36 per cent believe the promises of public cloud are over-hyped and that any changes will be incremental at best.

Gavin Carey says the results are in line with what he has heard from the industry. “The middle ground is probably right – you will see a lot of dramatic change in the fintech space.

“But ultimately, it’s the same as when we originally computerised the industry. That was transformational

for the industry, but now we treat it as a very normal thing.”

The marketplace now is “very close to the tipping point”, Bart McDonough says. “We’re seeing an avalanche of adoption of cloud technology”.

Why do some respondents expect the transformational potential of public cloud to be minor over the coming decade? Bart McDonough believes that security remains a sticking point for many financial services firms.

“I think there is still a lot of concern – whether it’s valid or not – around the security of data that’s outside firms’ own four walls,” he explains.

Marion Leslie says firms have come to realise that the public cloud does not fix everything.

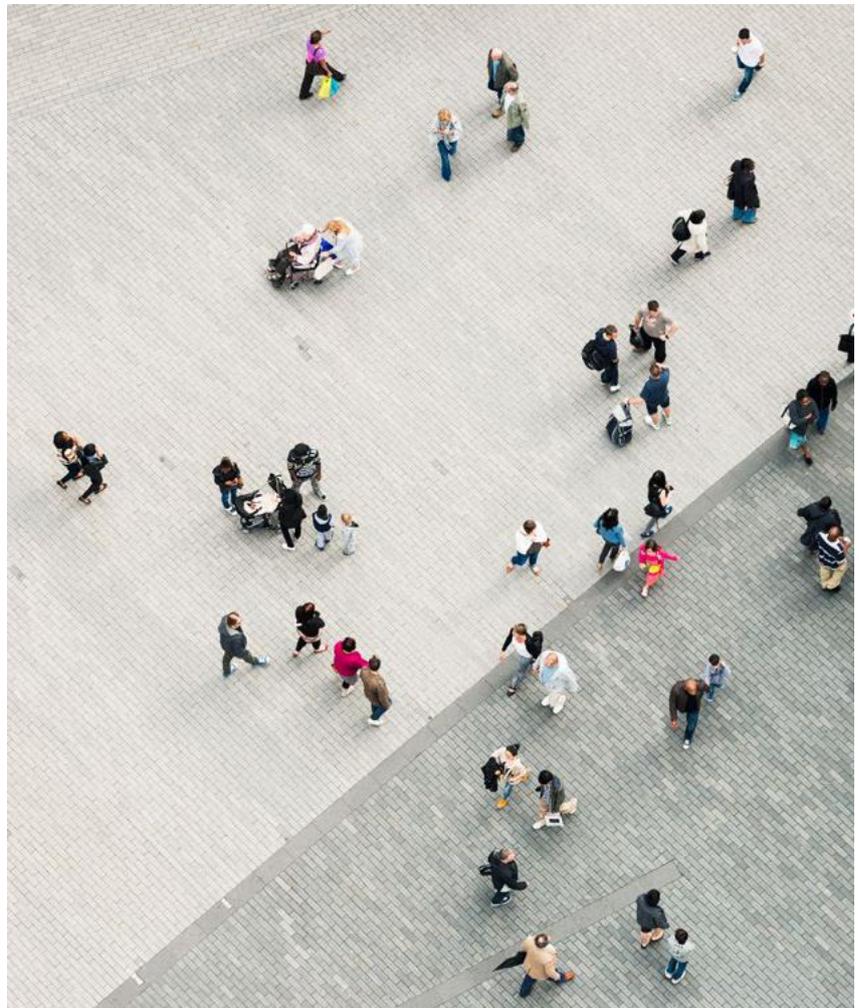
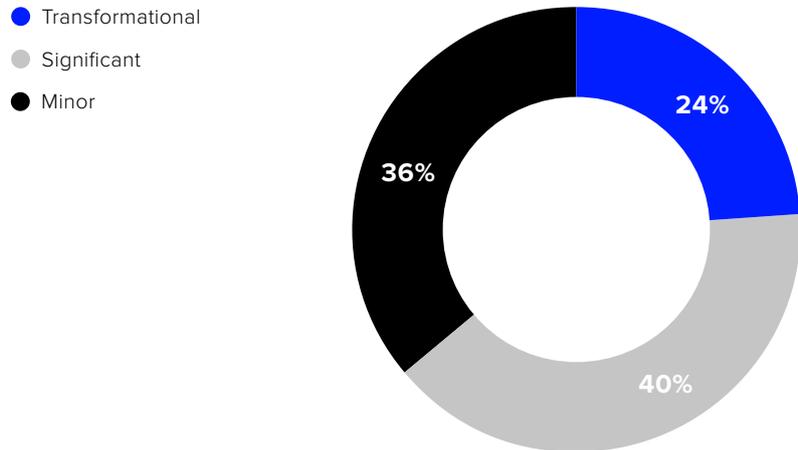
“It doesn’t make your data any better,” she says. “If you use it incorrectly it won’t be any cheaper and so I think there is a growing understanding of what it will and won’t do. At the end of the day, it’s an enabler. It’s a means of getting the outcome that you want and not an end in and of itself.”

What could data providers do to help you more easily manage data in the cloud?

‘Data should possess more actionable insights and [be] relevant to our business vision’

Figure 15

HOW TRANSFORMATIONAL WILL THE CLOUD BE OVER THE NEXT 5-10 YEARS?





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THE BEGINNING

