Microsoft

White Paper

Measuring the value of cloud adoption

Contributions

Microsoft

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As financial institutions drive their digitalization processes forward, it has become clear that success will be tightly linked to their cloud adoption at scale. The cloud journey started for the financial services industry a couple of years ago, driven by the need to improve cost efficiency. However, the real value of the "as-a-service" paradigm lies in the ability to be more agile and drive innovation.

Institutions will not adopt public cloud for the sake of technology; they are looking for measurable business outcomes with faster time to market, enabling clear competitive advantages.

We are pleased to provide this Cloud Adoption Value Assessment Guide, which will help institutions better measure business value driven by improved cost efficiency, more agility and time to market, and access to continuous Innovation.

Deutsche Börse Group

Allison Krill,

CTO Deutsche Börse AG

DEUTSCHE BÖRSE GROUP

As one of the world's leading exchange organizations, Deutsche Börse Group organizes markets defined by integrity, transparency and safety for investors and raisers of capital. It offers its customers a wide range of products, services, and technologies covering the entire value chain of financial markets.

Since 2017, Deutsche Börse has placed a strategic focus on new technologies and has started bringing its IT infrastructure to the public cloud.

We are committed to using the public cloud as an enabler for innovation; it helps us to become more agile in the work we already do and to push forward what's next for our business.

On this journey to the cloud, we have a strong need to measure the value we generate for our business. In concert with the risk-based cloud adoption model developed by Deutsche Börse focusing on the prioritization of workload migration, this allows us to validate if we progress according to plan for the prioritized workloads or need to adjust our path. The Maturity Model developed by Microsoft has proven to be highly valuable here and is successfully applied in our multicloud journey.

The authors

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Laurent Verdier is Chief Technology Officer (CTO) in Europe for Microsoft's Worldwide Financial Services team. He has spent more than 25 years in major international banking groups as an IT and real-estate manager. Today, he brings his experience of global organizations and his strategic vision of the transformation required by the adoption of the public cloud. He is involved in Microsoft's engagement with major financial institutions around the world.

This paper also includes contributions from Michael Girg, Chief Cloud Officer of Deutsche Börse Group. He is responsible for the cloud activities at Deutsche Börse, with his team defining the group's multi-hybrid-cloud strategy and steering overall cloud adoption. In his previous role, he was leading Deutsche Börse's global IT infrastructure.

"The job to be done" to be successful in digital transformation with cloud adoption

Today, it is imperative for a financial-services company to be sure that it is getting the best from its technology investments, and more specifically from its journey to the cloud. These institutions have no time to lose in transforming their business models or building new ones that make use of the always-progressing digital experience of both workforces and customers.

Looking at the competition of traditional players and new entrants, the financial-services industry transformation has become a race, where reduced cost of operations, increased agility, high speed to market, data-driven businesses, and broad digital capabilities are the core ingredients. In these areas, the public cloud is now recognized as one of the key enablers of success for the execution of a digital business strategy.

Applying the well-known formula "you cannot manage what you cannot measure," banking and insurance executives of both IT and business lines are looking for simple and efficient ways to assess the performance of their transformations.

The purpose of this document is to provide simple and strategic ways of thinking to build relevant insights that can help financial institutions manage their decisions and achieve success moving forward. The core principle of the approach relies on the fact that cloud adoption can be measured with many quantitative technical indicators, which can be turned into qualitative ones that are valuable and relevant for these businesses.

Reading through this document, you'll see that:

- There is a model to translate cloud technology usage into business outcomes.
- Leaders in the industry have chosen different paths to the cloud to achieve their business ambitions—patterns of technology usage and cloud adoption are aligned to the realization of business outcomes.
- There's an approach that can be applied to any institutions that are considering the public cloud as a key driver of digital transformation.

As an IT executive, you will understand how to:

- Analyze the performance of the current cloud-adoption journey against your business ambitions.
- Inform upcoming technology investment decisions with comprehensive insights and industry benchmarks and build an IT strategy aligned with your business ambitions.
- Develop new trusted relationships with business owners based on a common language to generate business value.

As a business executive, you will learn how to:

- Align business strategies and required technology investments.
- Discuss business value creation and cloud technology–investment performance with technology owners (such as IT).
- Inform operating-model transformation gaps with technology usage.

The paper begins with a description of the model and how it connects cloud technology usage with value for business. It looks at cloud-adoption trends in financial services, in addition to specific patterns of adoption by industry leaders. It also shows how the approach can be applied to any institution, and which outcomes could be expected.

Microsoft has developed a data-driven model to measure cloud-adoption effectiveness and business value creation

What if you could measure the performance of your digital transformation and your journey to the cloud like you measure the performance of your car by looking at its dashboard while you are driving? For that, just like in cars, you would need a model that translates technical cloud-usage indicators into simple, relevant aggregated performance indicators that you can see and interpret to take the right actions.

The cloud is made of systems that work together to deliver its performance. For cloud adoption, we have defined nine systems or categories that, thanks to cloud technology, can be measured in deep detail and aggregated in insightful and actionable ways.

Microsoft

Foundation services consumed by infrastructure and operations organizations:	1. Network, security, and IT operations 2. Usual compute and storage datacenter infrastructure resources 3. Specialized compute capacities to deliver big compute-driven scenarios
Adoption services consumed by developer organizations:	4. Development tools and containerization capabilities to enable developers' agility 5. Database as a service (DBaaS) to enable high-performance transactional data management 6. Application platform services to build modern architecture for digital applications
Innovation services consumed for business-transformation purposes:	7. Big data intelligent stores and management services 8. Analytics services 9. Artificial intelligence (AI) and other advanced digital services like the Internet of Things (IoT)

Figure 1: *The nine categories of technology that a company consumes during its cloud-adoption journey*

On one hand, measuring usage of the nine categories described in Figure 1 constitutes the fundamentals for building the aggregated performance indicators of a cloud-adoption journey. On the other hand, the business value is categorized as described in Figure 2:

- Optimization of an **existing market position** by modernizing the technology estate.
- Improvement of an **existing market position** by accelerating the speed to market and by making data-driven decisions.
- Development of a **new market position** making use of digital innovation like AI.

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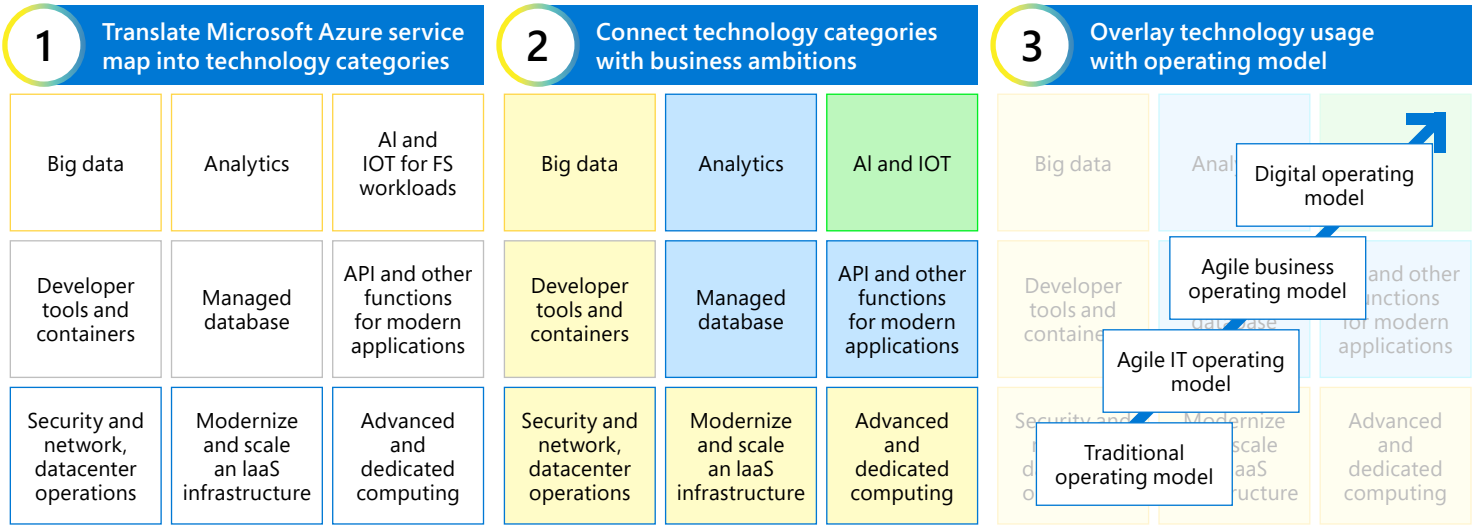
Categories of business value created by cloud adoption:	• Technology cost and operation optimization • Speed to market development • Data-driven operations • New digital-business-models enablement • Simplification and standardization of business processes
Risk factors can compromise the creation of value:	• Security and risk management • Enterprise culture transformation
Economic impact:	• Cost structure • Business revenue

Figure 2: Building business value with cloud adoption, categories, and risk factors

Microsoft has created a unique data-driven model, shown in Figure 3, that combines the usage of the nine technology categories and the three types of business value. This approach is able to deliver unique insights to inform cloud-adoption performance, including comparisons at industry and geographical levels.

Bridge business value and technical capabilities:



- Microsoft Azure consists of more than 100 distinct services with fine-grained usage metering
- These services can be grouped into nine categories of platform services
- Foundational services are placed at the bottom layer, with increasing value add toward the top layer

- **Horizon 1:** Optimize/consolidate market positions
  Cost efficiency/performance and scalability invest in new technologies and Tech agility
- **Horizon 2:** Improve/grow in existing market positions
  Speed to market and data insights
- **Horizon 3:** Change/develop new market positions
  New business models based on AI/IoT

- Capturing the business value of technology requires transformation of the operating model in parallel
- Transformation of the operating model is also based on the usage of Microsoft's digital work cloud services (for example, Microsoft Office 365, Microsoft Teams, SharePoint, and Microsoft Dynamics)

Figure 3: *The three-stages approach summarized in collaboration with Deutsche Börse*

Lastly, to be really useful for all and to facilitate constructive discussions between business and IT owners, the outcomes require simple and comprehensive visualization.

After discussions with customers, we came to a "target view," as shown in Figure 4, which positions the institution's performance on a target balanced with optimal industry performance at the center.

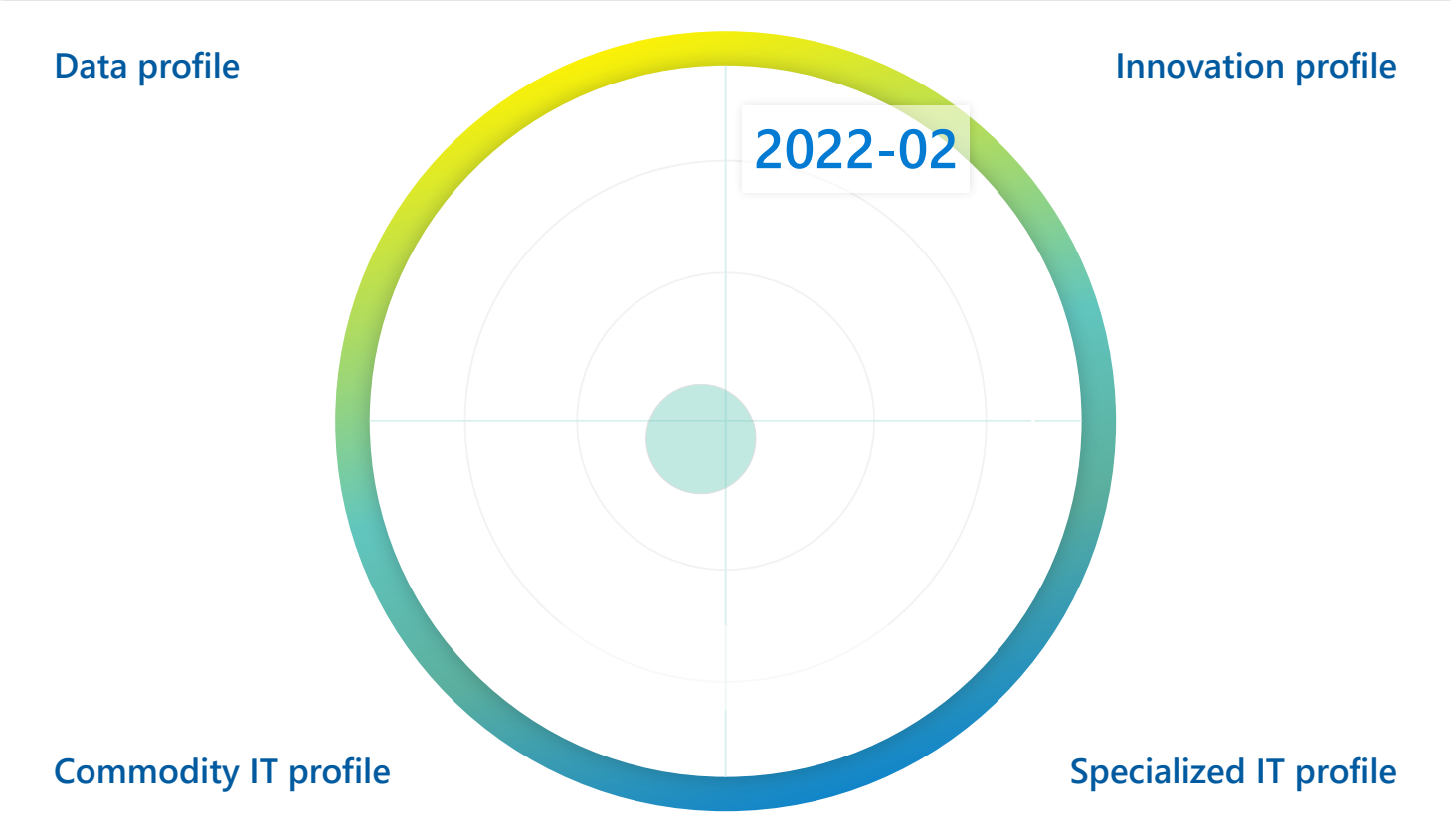


Figure 4: *Example of a bank having a balanced journey to the cloud*

- The "bubble" represents the measured mix of Microsoft Azure services usage for the institution during the selected month.
- Being at the center of the target means the usage of Azure is bringing the most value (see Figure 2) to the measured entity.
- The center is established with real cases of banks getting the most value from their usage of Azure. It can also be interpreted as a benchmark of cloud usage in the industry.

Identifying the cloud-usage profile to understand the business-value contribution

One of the immediate insights from the application of the model by an institution is the characterization of the current cloud-adoption profile and understanding how the used technologies influence the value for the business.

The target is divided into four quadrants that qualify the cloud usage into one of the four following profiles. Each profile is characterized by dominant usage of technology categories and potential business-value creation.

1

The commodity IT profile is characterized by dominant usage of standard cloud-infrastructure services, including security and network capabilities. This profile is empowered by scenarios like building the right controls, security, and operations, modernizing the datacenters to optimize costs, and the growing need to reduce the carbon footprint. This profile is also empowered by equipping developer teams with the right tools to become agile and quick.

The value gained in this profile is cost efficiency in IT infrastructure, technology agility, and, of course, improvement of security.

2

The specialized IT profile is characterized by dominant usage of large compute capabilities for massive calculation needs, grid compute or specialized compute for virtual desktop infrastructure (VDI), or SAP server hosting. This profile is empowered by business scenarios like scaling big compute capabilities, which are popular today in financial institutions for large risk calculations that improve knowledge of risk exposure.

The value gained in this profile varies from cost savings in specialized infrastructure, agility, and speed to market for applications.

3

The data profile is characterized by dominant usage of data cloud services for storing all kinds of data and usage of modern data-management capabilities. This also includes the data-analysis capabilities to build insights for the business. This profile is empowered by business scenarios like developing data-driven operations, or, for example, modelling risk exposure to anticipate financial consequences to climate change for insurers.

The value gained in this profile is efficiency in data management for all usages and improvement of operations driven by data insights.

4

The innovation profile is characterized by dominant usage of AI and IoT cloud capabilities. This profile is empowered by business scenarios like developing new digital entities, building new digital business models, and improving the customer experience.

The value gained in this profile is the capability to build new digital business and operating models. Beyond agility and time to market, AI is the key factor for the customer experience.

Influencing the position on the target with industry scenarios

The second insight that can be easily derived from the application of the model is understanding the main scenarios that have driven cloud adoption so far and that could be applied to influence future positioning on the "target" and to improve global business value for the institutions.

The position of an institution on the target is influenced by the deployment of business or technical scenarios in the cloud (see Figure 5).

Each scenario has business objectives and is supported by underlying technologies. For example:

- Improving customer experiences will need machine learning (ML) and AI.
- Modernizing core systems will require modern, agile architecture based on microservices.
- Improving risk posture will require large compute capabilities.

A journey to the cloud is about prioritizing and executing scenarios and getting the expected business outcomes.

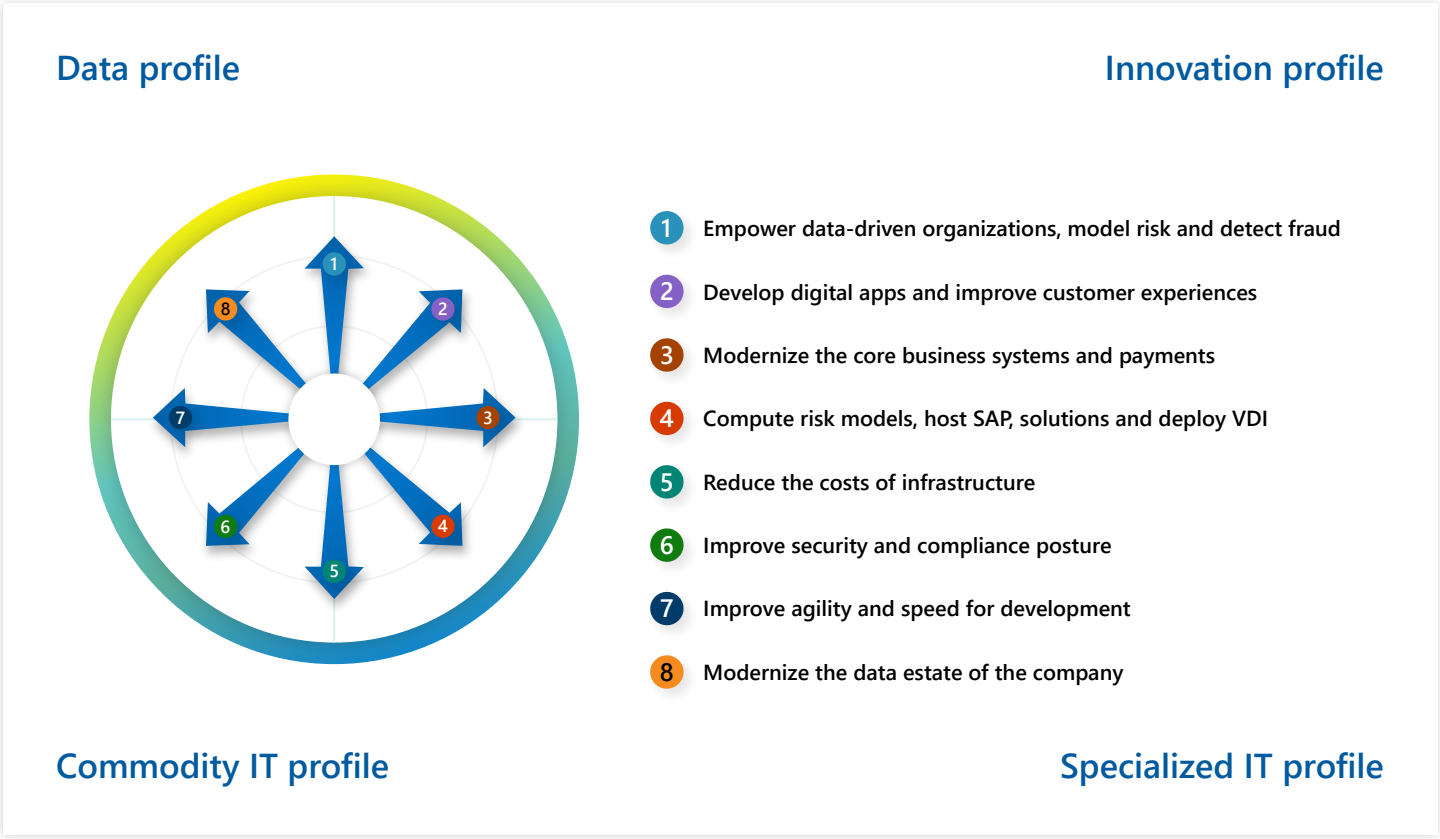


Figure 5: *Cloud-adoption profiles and the most popular business solutions deployed in the cloud by financial services*

With measures done every month, the model helps to track progress against objectives and to prioritize the scenarios to bring to the cloud.

Industry cloud-adoption trends and patterns

To illustrate how the model works, it has been applied at the banking-industry level to understand what the real drivers of adoption for the cloud have been so far, what kind of value the top adopters are building for their businesses, and how the future can be anticipated.

As a summary of the last four years:

- Before 2019, cloud adoption was driven first by developers for **pilot cloud-native applications** in order to increase agility and speed to market.
- In 2019 and 2020, we saw **massification** of cloud adoption involving security and infrastructure organizations. This period was dominated by regulation and security considerations, and it has seen the emergence of the "landing zones or virtual datacenters" to automate operations, control, and security postures. Banks and insurers started to define their broader cloud strategies, including hybrid and multiclouds. The business value gained was more focused on IT cost optimization, while agility and speed to market remained.
- Since 2021, we have seen banks trying to accelerate their business transformations with **data-in-cloud scenarios**. Regulation constraints have been solved in many cases. Banks and insurers are building new value with data and are becoming more data-driven in operations.
- Soon, with assets like industry-specific clouds (here being cloud for financial services), we anticipate the usage of advanced services like **data intelligence with ML** and **AI as standard in many digital business scenarios**.

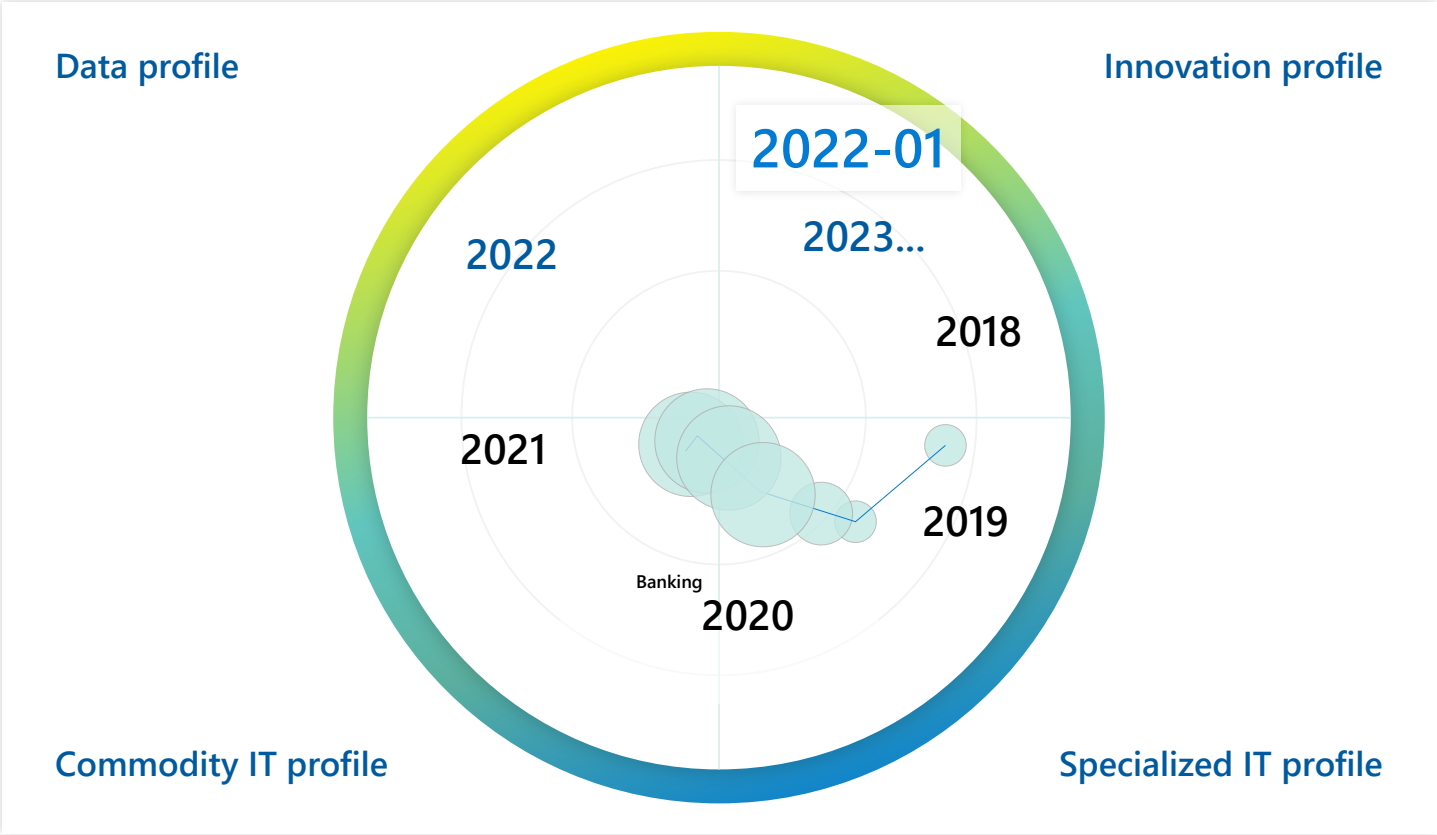


Figure 6: Measured cloud-adoption journey in banking (top 30 Azure adopters)

The cloud-adoption journey at the industry level is the combination of the journeys of different companies. The journeys could be very different, depending on the adoption plan built to address the main priorities for the transformation of each institution.

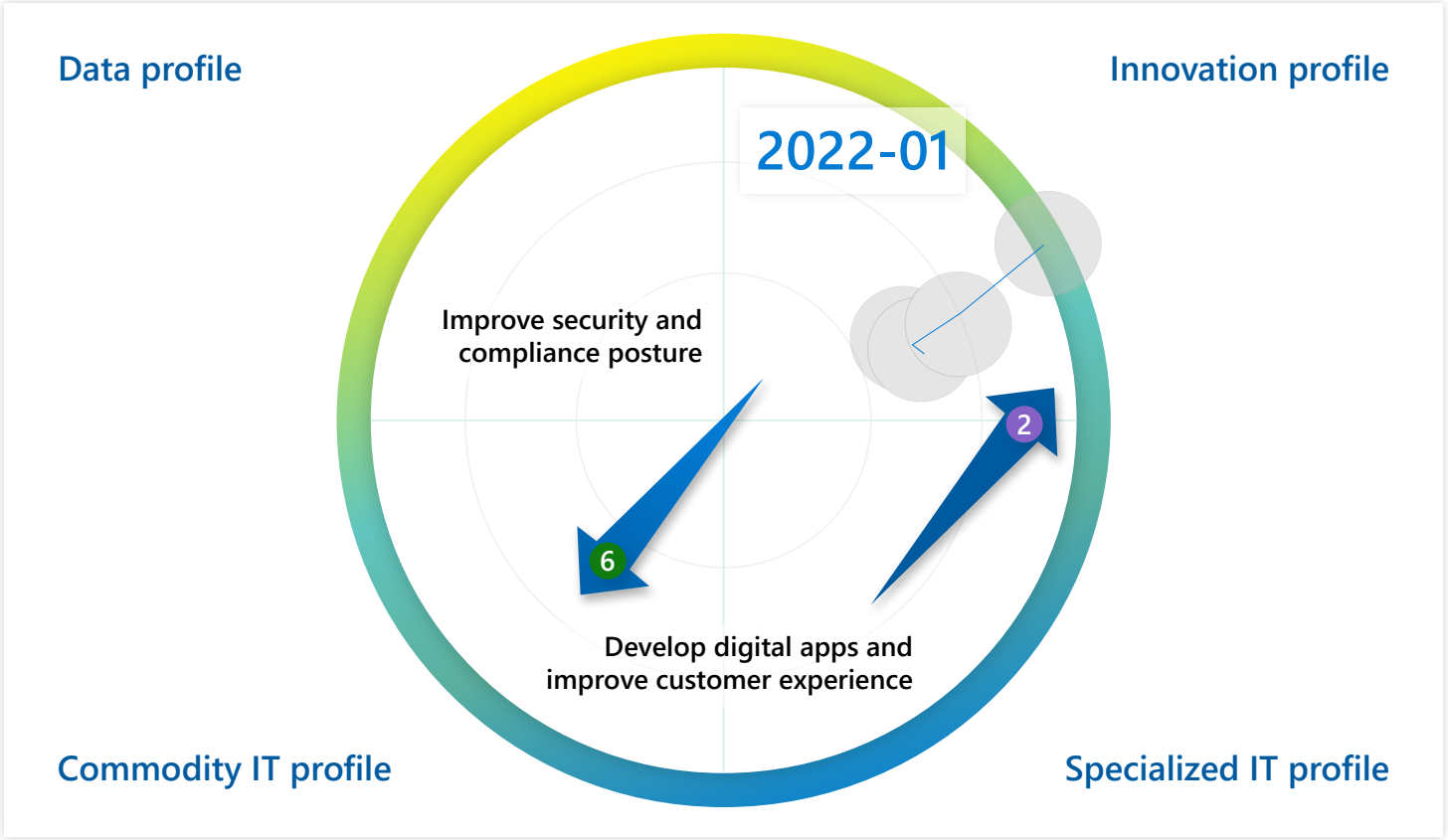
Looking at a deeper level of details, "patterns" of the adoption journey can be identified. These different patterns, based on real-life experience, support the execution of the business strategy of banks and insurers.

The following examples of patterns are issued from leading financial institutions. They illustrate how these institutions have prioritized their transformations in the cloud.

Innovation-led scenarios

Building a new digital business like a neo bank has become a common pattern of journeying to the cloud. The objective is to have the best customer experience, which translates into the adoption of the innovation services of Azure.

In this scenario, data and AI are at the core of the systems. The global solution is often built with an ecosystem of market solutions that provides the core services for the customer. The benefit for the company is to create a new market addressing different segments of consumers with new business models.



How to interpret the illustration

In this case of a financial technology company, the journey to Azure started with the development of new digital applications focused on customer experience, making use of AI and Azure Cognitive Services. The journey shows a movement to the center, which indicates increasing usage of infrastructure and security services as the application grows and matures.

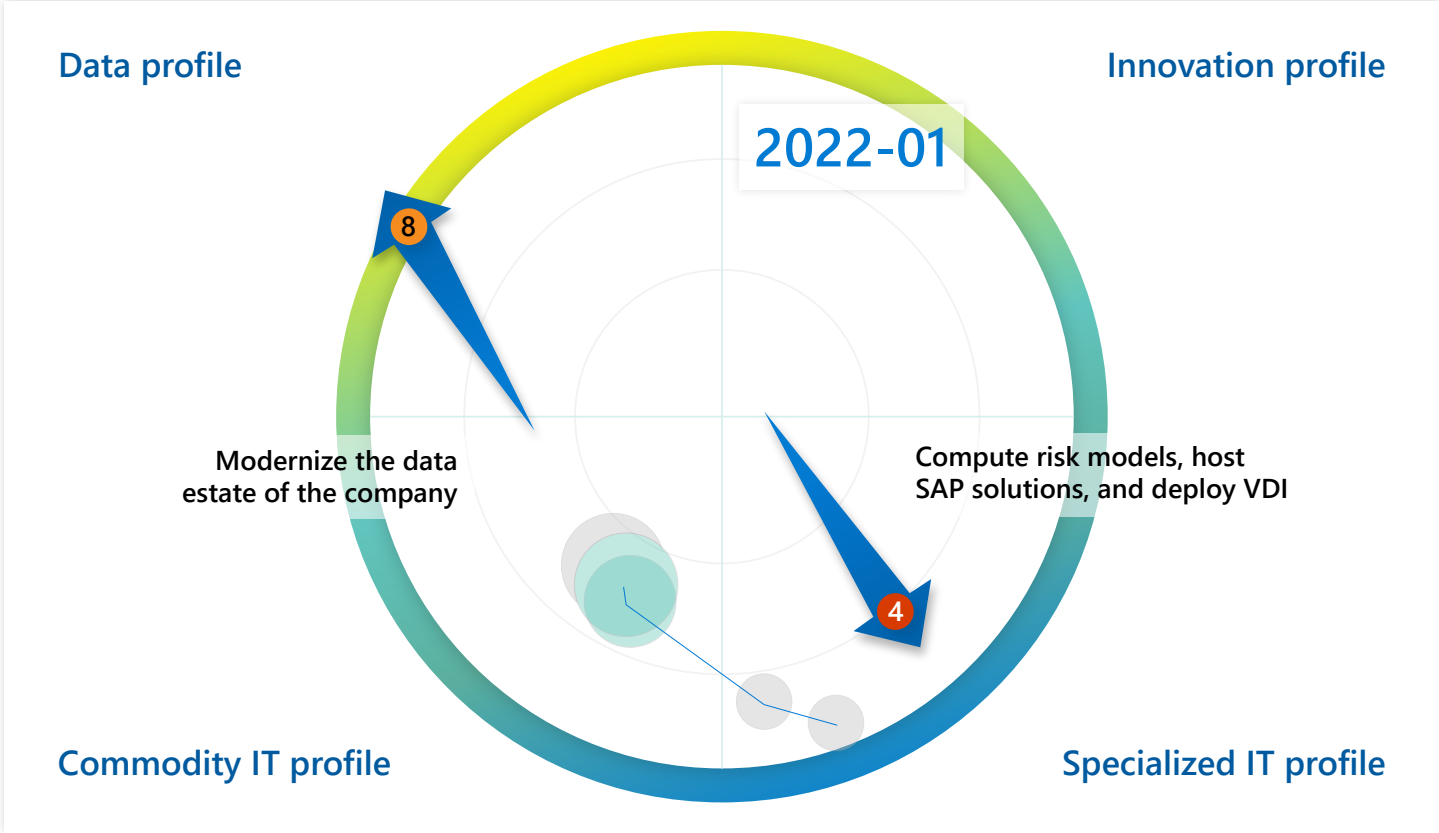
Infrastructure-led scenarios

The scenarios that require specific infrastructures like big compute capabilities are also popular in financial institutions' journeys to the cloud.

This is the case for risk-compute capabilities, for which the grids have been moved to the cloud with quick and significant cost-reduction impact.

Other workloads that benefit from this scenario include SAP infrastructure or VDI.

Often considered a first "easy" step to the cloud, these scenarios are followed by re-platforming of applications and adoption of data solutions in the cloud. The new benefits for the financial institution are speed to market and data agility to address the new business needs (for example: regulatory reporting).



How to interpret the illustration

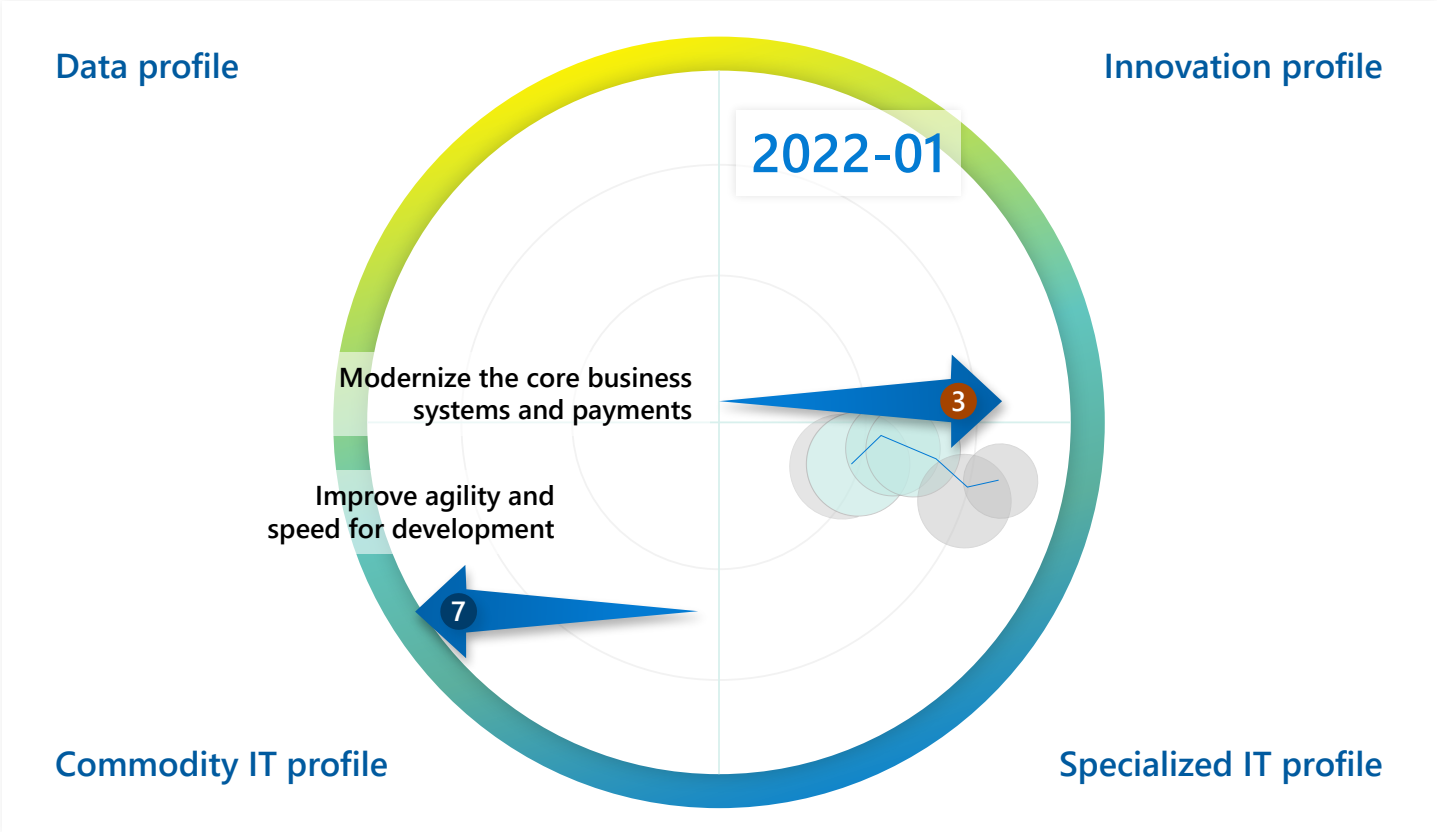
In the case of a large global insurer, the journey to Azure started with the usage of big compute infrastructure for risk calculation, followed by more usage of infrastructure (specifically VDI). The journey shows a movement to the top-left, indicating increasing usage of big data in the cloud and developer-led adoption.

Modern architecture–led adoption

Looking for more agility and increasing the speed of new feature delivery has been one of the first scenarios that developers have used to move to the cloud.

This scenario is applied for fast moving business situations like the development of "open banking" and new payments schemas. It's characterized by modern architectures relying on modules (like microservices) and driven by business events (such as payment execution). It corresponds to the usage of platform-as-a-service (PaaS) solutions in the cloud that do not require the usage of infrastructure (server-less). Customers report acceleration of speed to market of 30 percent to 40 percent.

This scenario is also used when modernization of the application portfolio is required.



How to interpret the illustration

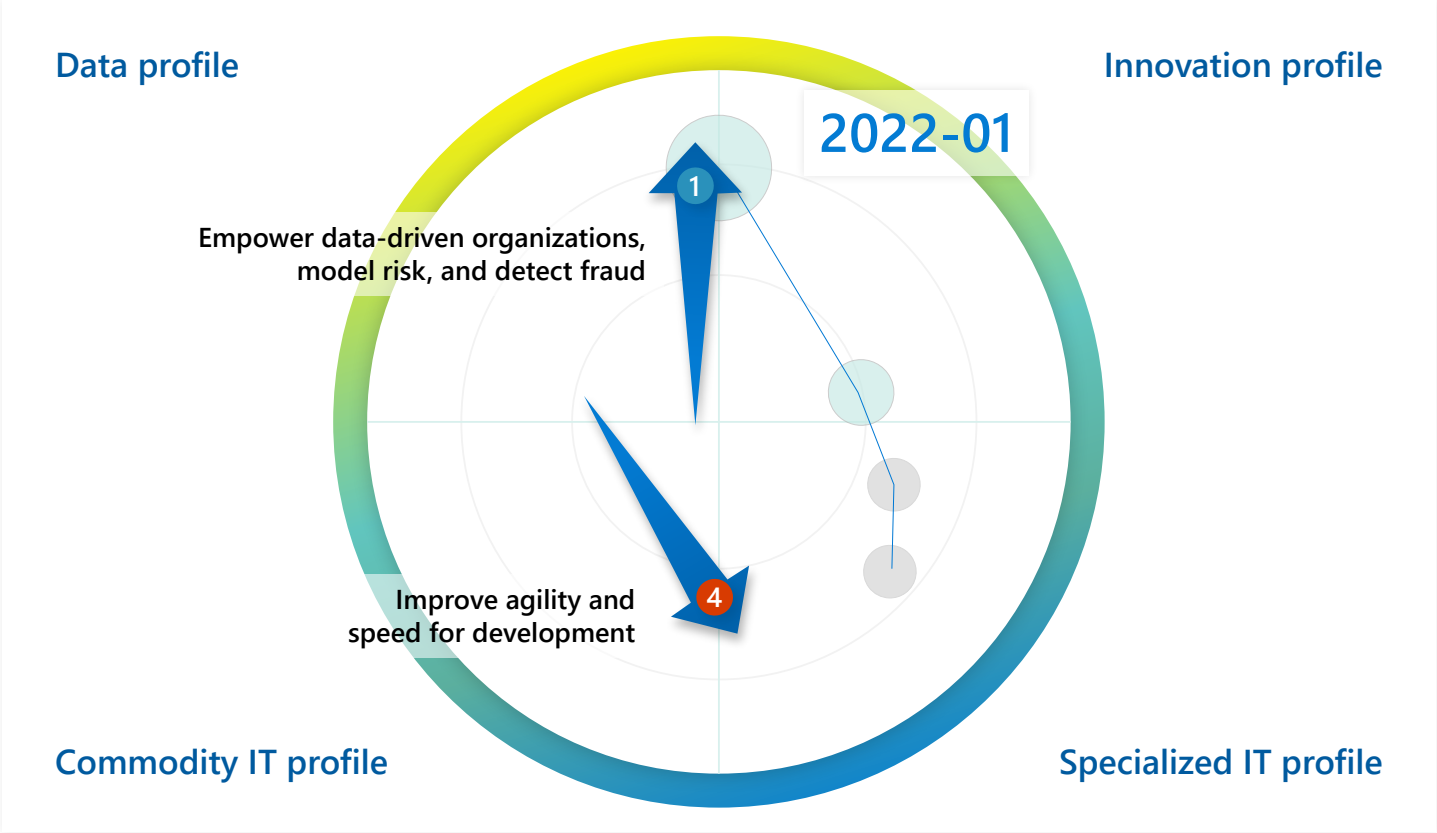
In the case of a payment service company, the journey to Azure started with the development of a cloud-native application based on modern architecture and event-driven business services. The company's priority was agility and speed to market, as it has started delivering brand new business-critical services for the banking industry. Developing its business, the company is moving to a more balanced usage of Azure services, with new scale capabilities.

Data scenarios–led adoption

Some institutions see in the cloud the unique opportunity to use data to drive efficiency and to build new insights for better business decision making and personalization.

Data-driven scenarios require transformation of processes and organizations.

The business benefit, beyond accelerating development cycles, is to drive efficiency and address, for example, the new regulatory reporting requirements in banking or the new risk modelling in insurance, making use of deep analysis capabilities and ML.



How to interpret the illustration

In the case of a large global investment bank, the journey to Azure started with specific infrastructure to compute risk models, achieving cost and speed optimization. Moving forward, the bank has decided to develop data-driven operations, making use of the cloud-analytics capabilities.

Adopting cloud at scale means executing all kinds of IT and business-scenarios transformations. Such transformations take time, and projects must be prioritized. Most of time, the business imperatives drive prioritization. Beyond that, prioritization depends on the specific situation of each institution that requires first cost reductions or speed-to-market improvements or even new business-model developments to create revenue streams.

A journey to the cloud should not introduce uncontrolled operational and security risks, nor should it be the only technical paradigm change that would not, or would only partially, bring the expected value for the business.

In this context, Deutsche Börse has developed an approach to qualify risk and cloud-fit by application to prioritize the migration plan:

Case study of Deutsche Börse Group's cloud-adoption strategy: The risk-based cloud-adoption model

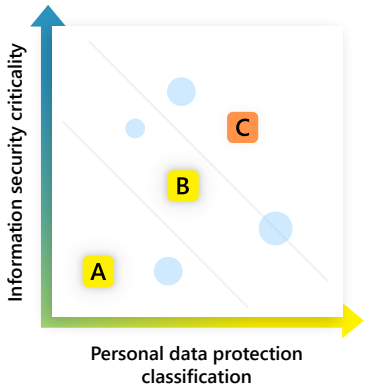
DEUTSCHE BÖRSE GROUP

The cloud plays a crucial role when it comes to delivering agility and innovation, along with the highest security and stability standards in any company today. We started our journey to the cloud with development and test activities, in addition to less-critical workloads, followed by the first critical workloads in 2021. By now, we run more than 30 percent of our workloads in the cloud. We are moving on and developing a systematic approach to sequence further cloud migrations, consisting of three steps.

1

Risk level

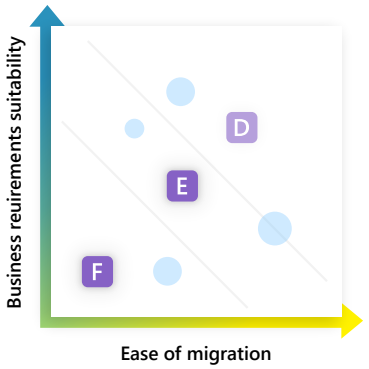
We determine the risk level per application cluster that we are using along two dimensions: information security criticality and personal data protection classification. Combining both criteria in one diagram and separating clusters into three areas reveals three risk levels, as shown in this graphic: risk level A, where the combined information security and data-protection criticality is low, risk level B, where these levels are medium, and risk level C, where these levels are high.



2

Cloud fit

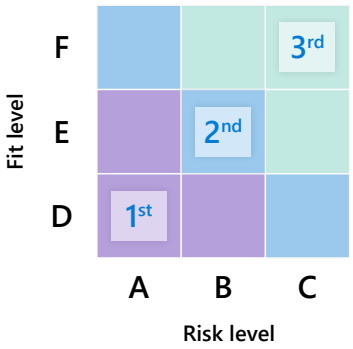
Step 2 is to incorporate efforts and benefit potential. We now classify again along the two dimensions of business requirements suitability and ease of migration. Combining these two criteria again in a diagram allows us to separate into three areas: high cloud fit D, which is well-suited to a cloud with regard to business requirements, easy to migrate, medium cloud fit E, and low cloud fit F.



3

Combine the outcomes from step 1 and step 2 into a consolidated view

Finally, we combine the outcome into a consolidated view, sorting application clusters with low risk level (A and B) and high fit level (D and E) as applications with the highest priority to move. Those combining low cloud fit with high risk are the last to being moved, whereas the last group is in the middle.



Summary

The model provides solid guidance on how to sequence cloud-adoption, combining risk and benefit/ease of the migration view. However, applications need to be analysed in detail; there are also specific opportunities in the third movers' group for early cloud adoption. Our next wave of adoptions will have a high percentage of first movers, a lower one in the middle group, and even lower in third group.

How does the model apply to all institutions: Expected outcomes?

None of the previous scenarios of adoption are better than the others. The key takeaway is that the journey to the cloud must be nurtured by the business strategy in order to create the expected value at the right time.

As soon as an institution has its own cloud-consumption data, the model of maturity described in this document can be applied. Every IT or business leader can then discover the journey to the cloud that has been taken by his company so far.

The immediate outcomes provide quick answers to systematic questions that Microsoft is receiving from its customers:

At the IT level 	• How does the company compare with its industry peers? • Is the company's technology progressing in the "right" direction to align with business needs?
At the business level 	• Is the journey aligned with the strategy of the company in terms of business development? • In which technology domains should the company invest more to reinforce business-value creation?
The application of the model brings a few simple outcomes that are highly valued by leaders (both IT and business) 	• Simplified and comprehensive visuals that can be shared across the company at the strategy level • An integrated framework of strategic analysis that includes market-comparison capabilities and patterns • Gaps highlighted between measures (visual) and expected position (application purpose) • Projection of business unit or application future positions due to new investments or running developments

Next Steps

Knowing how to measure the benefits of the journey to the cloud and the impact it has on your broader digital transformation might influence the ways you manage your strategy and priorities. The proposed fact-based approach delivers the insights that most of the transformation leaders we have been talking with are looking for.

Let's conclude with how cloud-adoption stakeholders, on both the IT and business sides, benefit the most from the approach of measuring the cloud-adoption results.

As an IT executive, ask:

Where do I need to put my attention to make an appropriate interpretation? Master the limits!

First, you need to keep in mind that there is not a "good" or "bad" journey to the cloud in general. The most important thing is to be sure that the journey you're on is bringing the right value to the institution; the value that is expected and has been targeted.

Second, the data shows what's in the measures you have. That means that investments you're making outside of the scope of the analysis could largely influence the journey you're seeing. You should form your own opinion on how these other investments are influencing the position of the model.

Third, to be complete, the analysis of the model should be considered relatively. For example, it should be observed relative to industry, geography, or existing industry patterns. The comparison results will help in building strong arguments to pursue or influence the current investments by looking at your market signals. Think about the future, and not only about the justifications of the past.

How can I use the gained insights to inform the investment decisions I have to make? Think about the future by looking forward, not at the past.

Rather than looking at the past to understand what has been done, and the results those actions might have brought, it is important to understand how future decisions are going to influence future benefits, and how those decisions will position an organization versus the industry trends.

The best way to do that is by aligning the results of the model to your business's key performance indicators (KPIs) and to project the model using your ambitions based on those. Each project you'll be executing will have an impact on the result of the cloud-adoption model. It's a good exercise to anticipate what a possible impact would look like. Having a data center migration will obviously move the position to more optimization, where an application-modernization (re-architecting) will move the position to more "speed to market."

How can I go deeper into the analysis? Extend the analysis in different directions to maximize the value.

Two things can be done to go deeper in the analysis:

- Performing the analysis at the business-unit level or at the application level. This would require a little effort to group the measures into something that makes sense for the institution. In Azure, it can usually be done at the subscription level.
- Extending the analysis to the digital work aspect. Like the model calculates an index of the cloud-platform adoption (Azure), the same kind of exercise can be done with the usage of digital work services in the cloud. For Microsoft, this process consists of building an aggregated index that aims to represent the evolution of the way people work inside an organization by looking at the usage of Microsoft 365, Microsoft Teams, Microsoft Dynamics, and Microsoft Power Platform. It's also interesting to see how financial institutions across the world have been progressing due to the pandemic crisis.

As a business executive, ask:

Where should I start? Build your fact-based point of view!

You should be clear on the expectations of your company's digital transformation. Start by defining the business outcomes that the institution is most interested in to be successful in its transformation.

Look at the journey to the cloud that has been executed so far. Is it aligned with what you think your current investments and efforts in the cloud were planned to be? Does your journey bring the business value that the institution is waiting for and prioritizing?

Looking in deeper detail, where expenses in the cloud have been made so far, are they giving you a sense of the transformation's values that they are contributing to? The profile of technology spends compared to the leaders in the industry can show what makes you unique (or not). By doing that, you can build a strong opinion on what is really going on, proven by data.

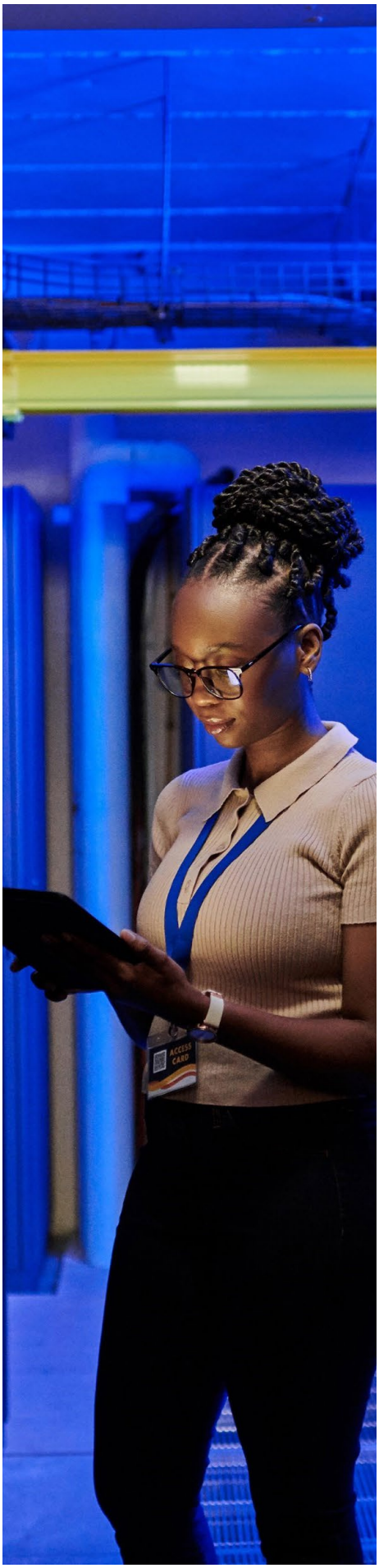
What should I do with the results? Use them as a fact-based platform for strategy discussions.

The model has been designed to help qualify the business value generated by the public-cloud adoption with simple and aggregated performance indicators. Therefore, it can support various areas within a company, from business units to the IT department, in sharing the results the institution is getting from its cloud investments. The same view can be interpreted through different angles that matter the most to the various areas.

One of the best ways to use the results is to share them across the organization in order to build a new tangible bridge and a shared understanding between the technology decision owners and the business decision owners. You could engage with your counterpart and elevate the discussion of cloud investments at the strategic level.

As stated in a study by Deloitte: "Increasingly, it is critical that company boards have a solid understanding of what the cloud makes possible and how their organizations can **use it to build new competitive advantage, mitigate business risk, and strengthen their financial foundation."**

We have also experienced interest in the model to inform the economic equation of cloud-adoption, and where it can be used to influence the way business plans are built and measured. Benchmarks exist in the market to give a range of economic impact for different patterns of cloud usage, such as cost-structure impact or uplift in business-value generation.



In conclusion

Cloud-adoption is a continuous process that enables digital transformation. During the journey, organizations can progress on how they optimize and accelerate the value generated for the development of their businesses.

Value creation for financial institutions can be maximized with changes in the operating models of their business and IT. A culture delivering more agility, with less siloed organizations, and centered on the customer is essential. Likewise, it is also key to develop the right processes to face regulatory constraints and cyber-risk challenges.

And, of course, cloud-adoption value goes beyond if, for example, you look at the carbon-emission footprint of datacenters.

Transforming digitally also means becoming more data-driven in the analysis you make, and in the decisions you take. Apply this to the cloud-adoption topic to be able to say, "I can only manage what I can measure!"