



Why as-a-Service operating models are the future of banking technology

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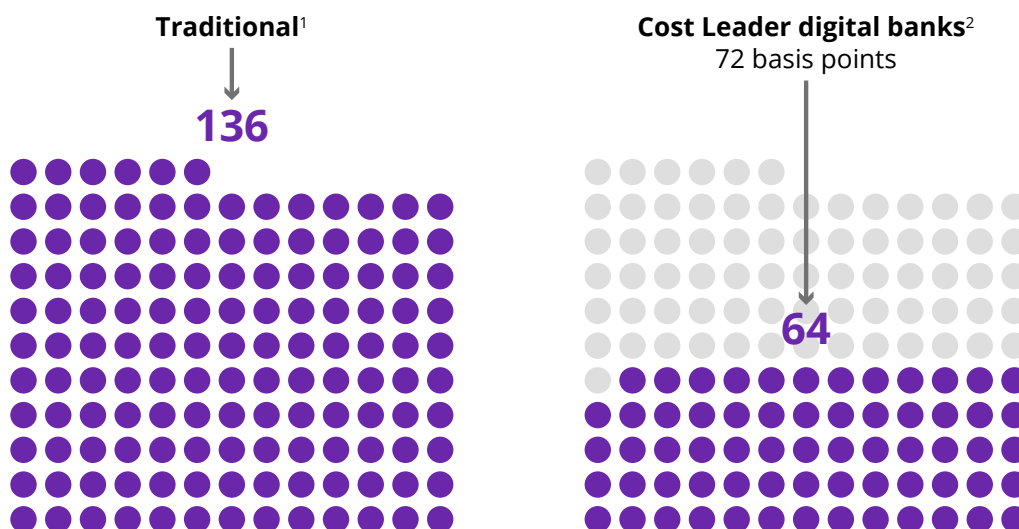
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Industry context and drivers of change

Investment banks, financial institutions and other capital markets players face major challenges around issues such as profitability, business agility and operational resilience.

Adverse market conditions and rising costs are reducing the profitability of investment banks. Due to the complexity of their systems, banks often spend more on running legacy applications than those systems deliver in revenue. Consequently, banks are actively searching for ways to improve the situation.

According to an S&P survey, over 75% of major banks failed to deliver significant bottom-line impact in recent years, despite major cost reduction programs.¹ Traditional banks struggle to bring cost ratios into line with their digital peers, with cost leader digital banks holding a significant advantage in their operating costs to assets.



¹Based on sample of top 1,000 banks' data.

²Cost leader direct bank peer group includes ING Bank Australia, UmweltBank, Granit Bank, Rakuten Bank, Sumishin SBI Netbank, Sbanken ASA, Gjensidige Bank. Source: CB Insights; KPMG Pulse of Fintech; McKinsey Panorama Digital Attacker Database & Insights; Reuters; S&P Global Market Intelligence

The business impact of the pandemic has not only accelerated the pace of digital transformation and cloud adoption but has also made it more complex. Banking customers are becoming more demanding than ever. Under extreme pressure to reduce cost while still being innovative, banks are now finding it difficult to strike a balance and need to develop a more holistic approach to tackling their digital transformation.

To help them reach their goals of increasing revenue and profitability while reducing cost, banks have pursued a range of strategies such as offshoring, DevOps and cloud. Each has contributed slightly to cost reduction and improving revenue, but banks are still falling short when it comes to improving profitability.

Typical approaches to transformation have included:

Moving platform operations offshore: Banks try to keep the same applications but look for an offshore location with lower costs. Cost savings are likely to be lower than originally planned, and the management overhead of offshoring can be significant.

Applying a DevOps or CI/CD process: Again, the bank tries to retain its legacy systems but with a unified delivery pipeline. So, while there are still several applications in the background, it seems like less of a problem because there are layers of people, processes and tools to drive the end-to-end delivery across different banking platforms. However, not all software packages have the same maturity or readiness to run in a DevOps or CI/CD mode. Some more modern systems may be ready, slotting easily into a DevOps pipeline, whereas older legacy systems won't be ready at all. Bottlenecks in the end-to-end process undermine any benefits that might otherwise accrue.

Migrating applications to the cloud: This might reduce the cost of the bank's IT infrastructure, but it can also create new issues. Not all applications will be cloud ready. Some require cloud infrastructure to be run as if it were on premises. "Always-on" with no elasticity and scalability reduces (and can fully negate)

the potential cost benefits of the cloud. Also, there's no simple, consolidated approach to running multiple systems in the cloud. One application may be certified only on Amazon Web Services (AWS), another only on Microsoft Azure, Google Cloud Platform (GCP), Oracle Cloud or similar. Deploying multiple legacy applications in the cloud can be complicated. Operational resilience, local jurisdiction compliance and outsourcing regulations also contribute to a complex cloud landscape.

When it comes to capital markets IT, banks face the cost, complexity and increasing time-to-market that comes with owning trading and risk systems. The reality is that, alone, not one of the above approaches to digital transformation is capable of resolving these challenges. However, a combined approach can achieve a more ambitious goal of consuming the bank's entire IT stack as-a-Service and unlocking additional benefits as follows:

Lower complexity: By transferring ownership of their systems to a trusted partner and consuming it as-a-Service, banks can rid themselves of the maintenance and management issues that monopolize their attention and focus on expanding their businesses while minimizing capital expenditure.

Quicker time-to-market: The initial investment required to establish a DevOps or automation framework around complex front-to-risk-to-back-office platforms is usually quite significant. But today, it can be consumed as a native feature of an as-a-Service solution.

Greater security: All the major cloud providers have built strong best practices around data access and security layers. By leveraging these built-in features, the as-a-Service solutions provide banks with high-level security standards at no additional cost.

Data insights: Bank data is typically spread across several systems, so making the most of the data through end-to-end reporting and insights can be difficult. By innovative use of scalable cloud infrastructure and offerings, many as-a-Service providers can consolidate and produce insights based on artificial intelligence (AI) and machine learning (ML) models. Taking a data-centric approach and standardizing interfaces between cloud-hosted as-a-Service banking offerings can make data more widely available and usable for enhanced data insights.

Cost reduction in banking, increased transparency: Many of these benefits help banks lower the total cost of running systems and operations. More importantly, they provide cost transparency so organizations know exactly what they're paying for and can scale up or down to meet business needs while attributing costs directly to the business lines driving demand changes.

Faster cost-to-revenue conversion: Instinctively, people might think that bespoke development projects and systems are an essential part of meeting the specific requirements of each bank. But the reality is that once a trade is confirmed and booked, the post-trade lifecycle is pretty similar regardless of the underlying business, whether that's an investment bank, buy-side, sell-side, treasury or commodities business.

Interconnection and collaboration: The increasing level of standardization enables banks to open their platforms to other banks and financial services organizations, sharing costs and creating new revenue channels.



Rise of the **as-a-Service** model

“Trading Systems as-a-Service” and multi-tenant business IT models are increasingly seen as potential solutions for banks moving forward. This is the model that will help them definitively solve the equations of cost and revenue and reach profitability.

Operating Trading Systems as-a-Service provides a bank with the ability to scale rapidly and respond to market forces, as well as always keeping up to date with the latest software versions.

In fact, as-a-Service consumption models for technology are not new — shared access to centralized resources was a ‘60s’ concept. These models were not easily

accessible for a broad audience, and the evolution of service-based consumption accelerated through the internet age.

Salesforce, perhaps the most consumer-recognizable Software as-a-Service (SaaS) provider, is a major innovator in this space, helping to advance the overall as-a-Service landscape since its inception in 1999.

Increasingly, these service-oriented business models are being adopted by both banks and the capital markets industry with an increasingly wider and sophisticated scope.

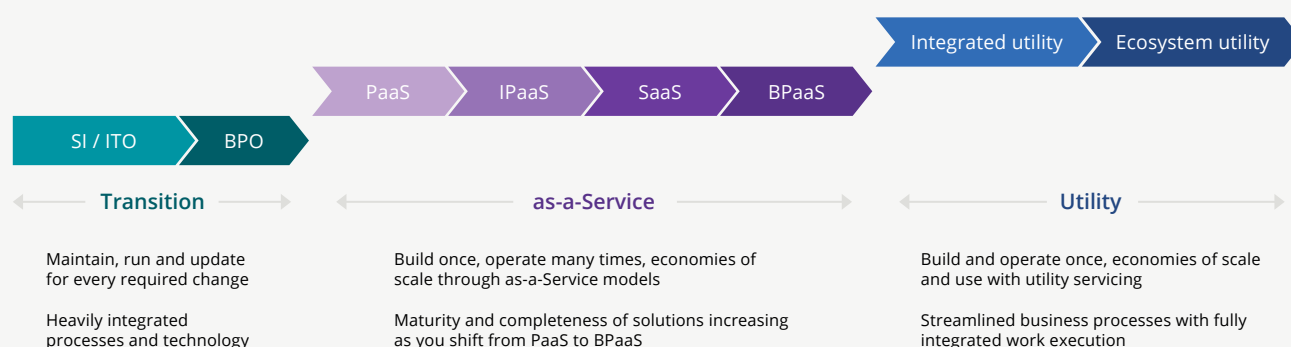


Figure: Understanding the pattern of change and business process adaptation is key to choosing the best services model. [System Integration (SI), Information Technology Outsourcing (ITO), Business Process Outsourcing (BPO), Platform as-a-Service (PaaS), Integration Platform as-a-Service (IPaaS), Software as-a-Service (SaaS), Business Process as-a-Service (BPaaS)]

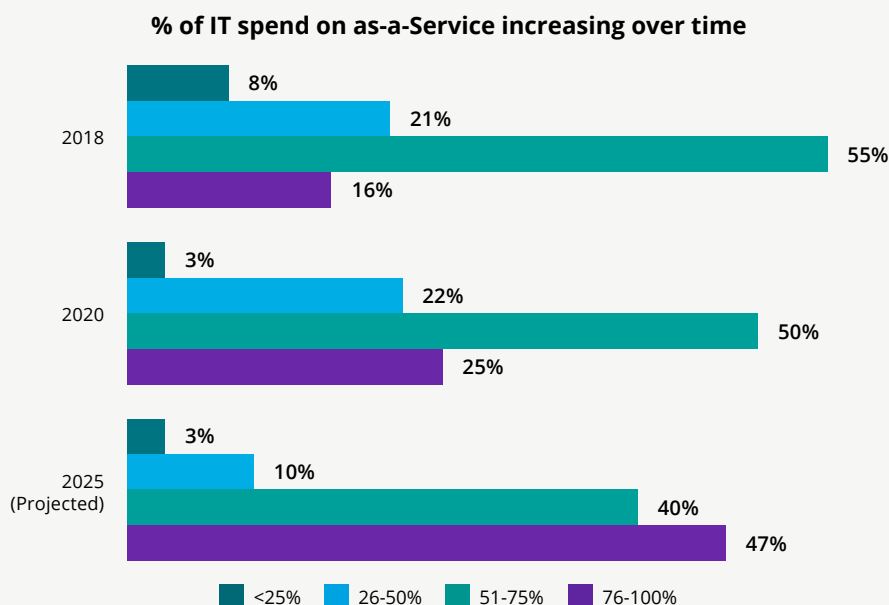
While each of these service models has its own operating and business benefits, they all help banks to achieve a wide range of positive outcomes:

- Streamlining operations, typically following Agile principles
- Mutualization of costs through standardization and shared services

- Reduction in overheads for bank staff to consume services, freeing up time to focus on business differentiating activities
- Continuous upgrades, further reducing the operational overheads when compared to running a platform in full
- Control over business priorities remains with the bank, together with an ability to shape the backlog for future change

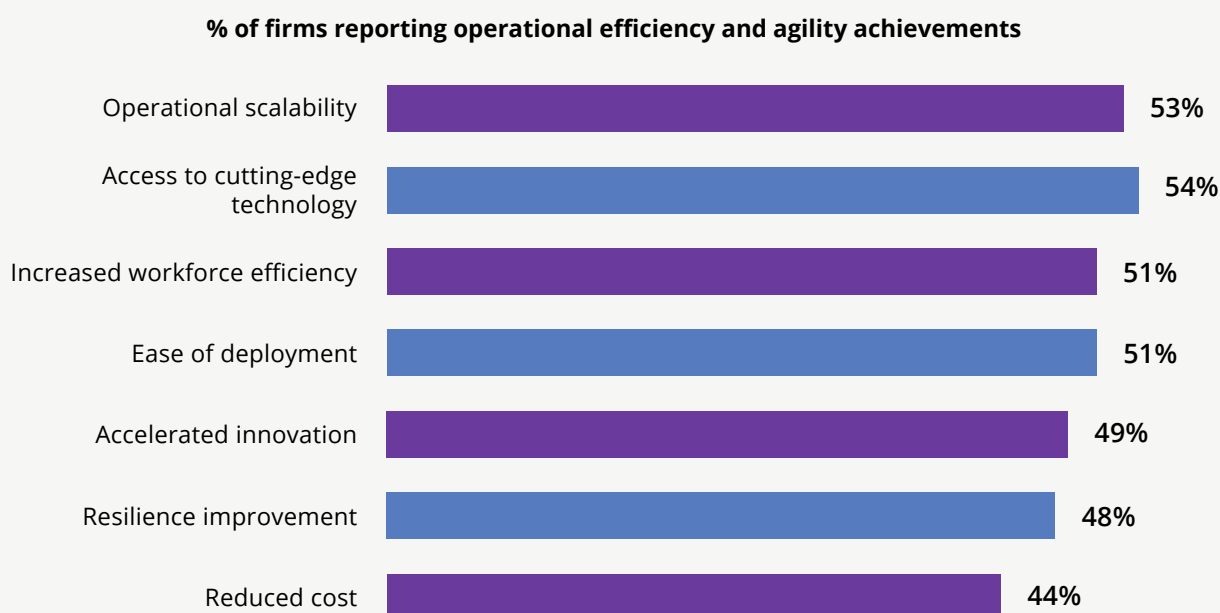
Recent research by Deloitte shows that the shift to as-a-Service is increasing and is expected to continue rapidly, transforming the enterprise IT landscape in the post-pandemic era:ⁱⁱ

- The percentage of enterprise IT purchased and consumed as-a-Service has grown significantly in recent years and is expected to grow further, with 75% of organizations in 2020 suggesting greater than 50% of their IT spend is on as-a-Service offerings



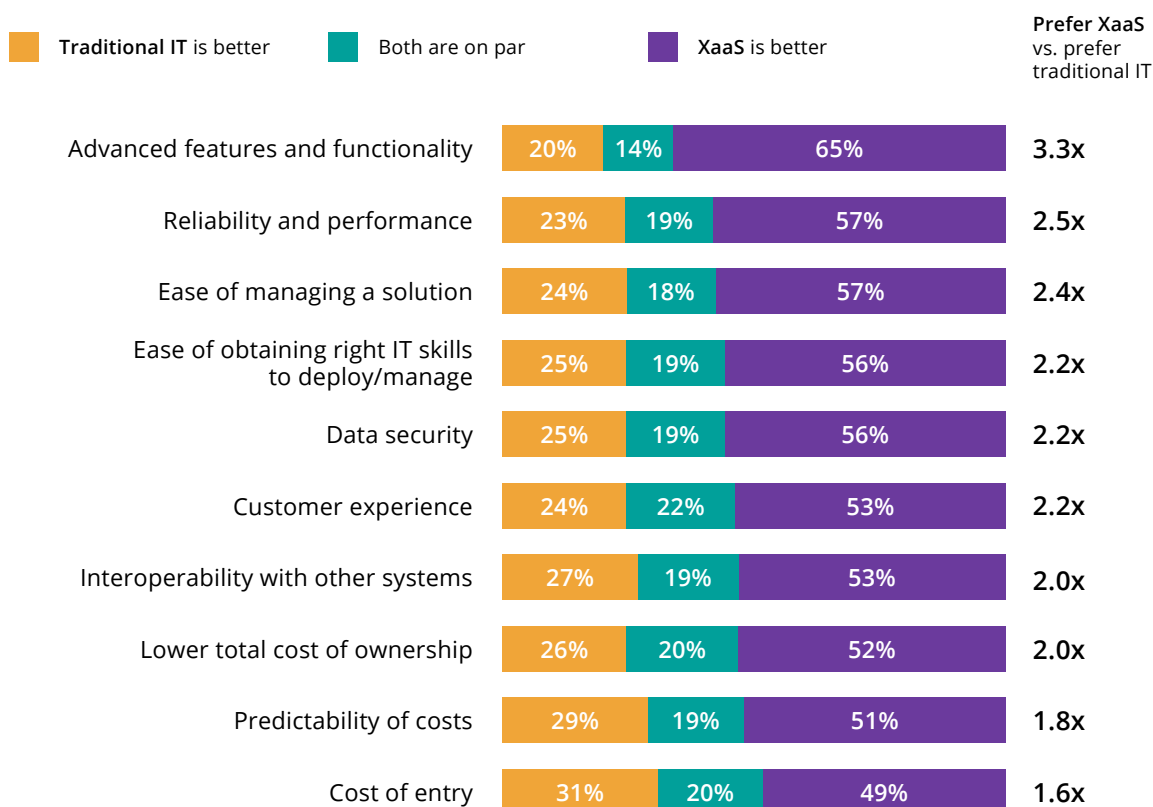
- Over the next two years, as-a-Service will become 2.3x more critical to organizational success, and almost all organizations expect to adopt multiple as-a-Service offerings within the same timeframe

- Organizations report that as-a-Service has already delivered significant benefits across multiple areas of IT efficiency and agility:



- as-a-Service is seen as superior to conventional IT across a wide range of IT attributes as outlined in the table below:

Across a wide range of IT attributes, XaaS is considered better than traditional IT
Percentage rating their preference for traditional IT and XaaS IT for various IT attributes

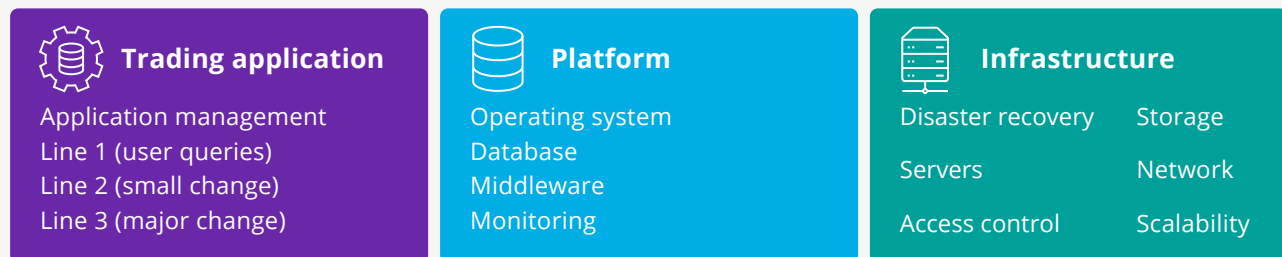


Note: N=600 US IT and LoB professionals. Rows may not total 100% due to small percentages of "don't know" responses.
Source: Deloitte Everything-as-a-Service (XaaS) Study, 2021 edition

Strategy for moving to an **as-a-Service** model

For banks, a solution for Trading Systems as-a-Service will typically have three main elements:

Trading Systems as-a-Service



The execution path of as-a-Service differs from bank to bank, depending on their strategy. That said, there are three typical patterns or plays:

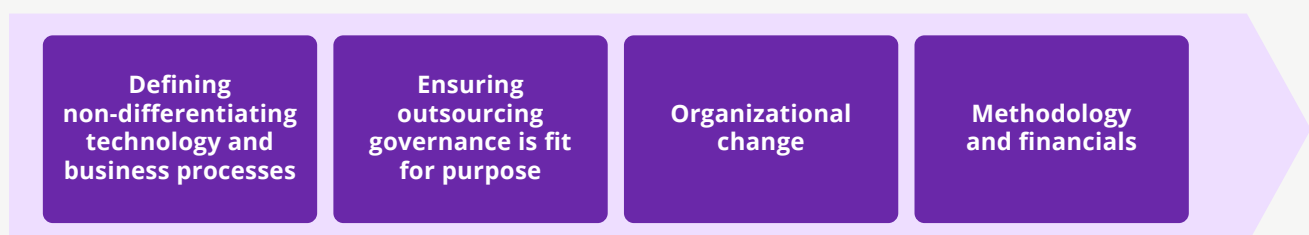
Legacy versus innovation play: Instead of managing the entire technology stack and associated complexity, banks might prefer to focus on innovation and new solutions, while ensuring the business can continue to operate using as-a-Service platforms provided by a third party. The focus here is to define scope, SLAs and dependencies on upstream and downstream systems and make sure the bank continues to provide the timely support and decision-making needed to run the service.

Return on investment play: Banks have invested heavily in building their trading and risk platforms with full coverage and operations and want to reduce costs by allowing other banks and financial services

organizations to use these platforms and pay a service charge. The focus here is to define the run and change operating model to make sure the platform continues to address all participants' requirements, while remaining consistent and easy to maintain.

Time-to-market play: Banks want to start trading new products and can't wait the typical 6- to 9-month implementation period required on a legacy system. So, they decide to leverage a tactical as-a-Service platform offerings with a faster time-to-market. The focus here is to define how the legacy and as-a-Service platforms work in parallel and determine the platforms' future state.

Building a bank's strategy for transition to as-a-Service platforms requires a phased and structured approach with four essential steps.



These four components are examined in the following sections.

Defining non-differentiating technology and business processes

Creating a strategy document which outlines the desire to outsource non-differentiating technology and business processes to reduce organizational costs is a simple task. Understanding what is core to a business from a revenue-generating as well as a cost perspective, and how this relates to the technology systems that underpin these business processes, is a much greater task. Many organizations have only gone skin deep and haven't defined what non-differentiating means for them.

This is also a very organization-specific task, and the key differentiators for each business are different as are, potentially, the metrics used to determine them. Having the most experienced and trusted fixed-income trading

team within a firm's core region may be a business differentiator, but the system that underpins these business workflows may still be completely vanilla in workflow and functionality. Eliciting these complexities and the specifics around what truly differentiates your organization from a business and technology perspective is the first step to being able to fully utilize the advantages of as-a-Service operating models. This will allow a rules-based view across the organizational landscape to select the business and technology functions that could be transitioned ahead of finding the right solutions and partners to run these as-a-Service.

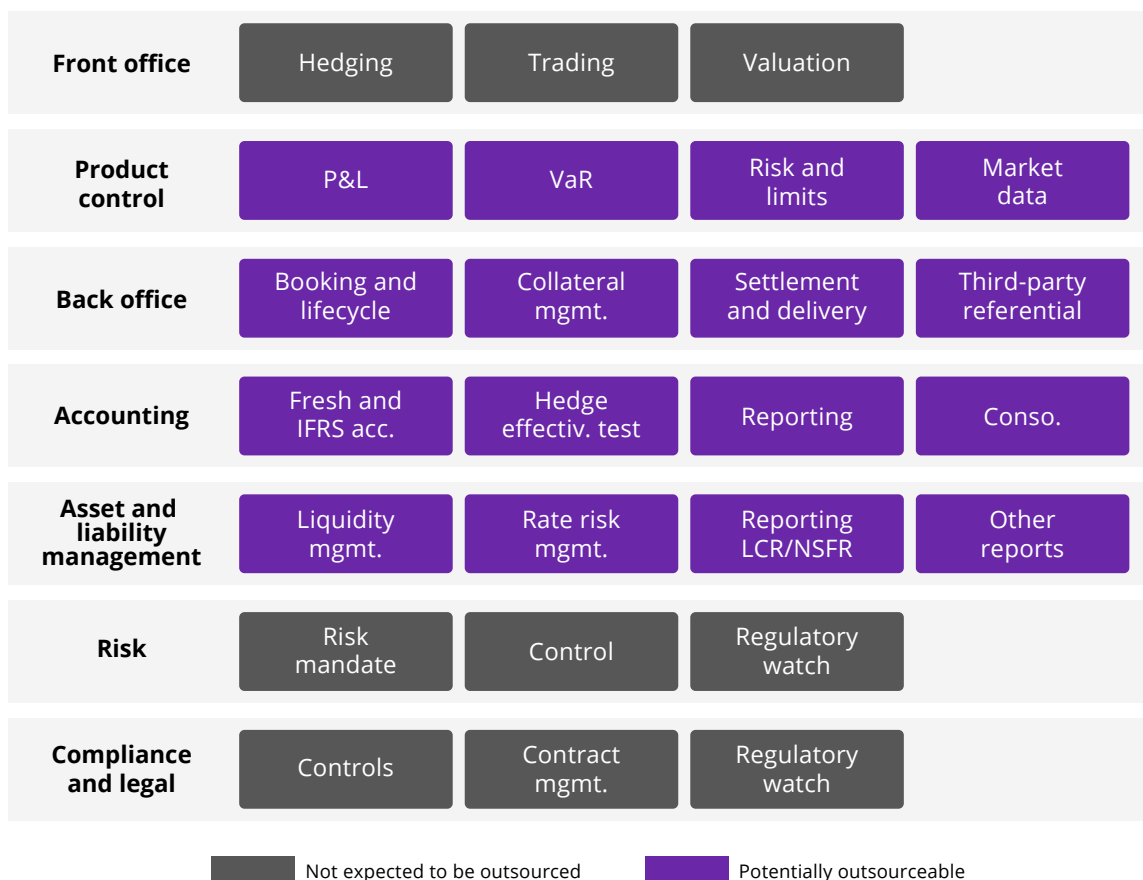


Figure: Example of differentiating and non-differentiating business areas from a Luxoft capital markets client

Ensuring outsourcing governance is fit for purpose

For organizations less used to outsourcing, even the move to utilizing self-run public cloud infrastructure can be a significant upheaval of a company's outsourcing compliance and governance processes. Supporting teams like information security, regulatory compliance and risk management need to undergo an uplift in capability to deal with the new paradigm of running services in this fashion. Fully outsourcing technology systems via an as-a-Service model takes this one step further. Understanding how to meet an organization's obligations while a third party runs a large portion of its estate can be a daunting prospect.

Regulators are continually updating their outsourcing governance frameworks as service-based business models become more prevalent. Cloud outsourcing is

now largely rolled into general outsourcing frameworks, and as-a-Service should be treated in the same way and through the same guardrails. Establishing the right level of supplier operational governance and review as well as ensuring that service metrics can be tracked and reported upon and issues remediated from both the bank's side and the provider's side is critical.

Setting out a standard for the level of information you require as-a-Service providers to report on a regular basis will allow a consistent view of how multiple services are performing. In turn, this will facilitate consistent reporting to the regulatory and compliance teams to ensure that organizations continue to meet the commitments expected of them.

Availability	Performance	Incidents and problems	Changes	Business continuity and security
Production	Application performance	Response time	Impact assessment duration	Data retention
Non-production	Batch performance	Resolution time	Execution duration	Failover and recovery
				Audits



Organizational change

Once the first two steps have been taken toward broader as-a-Service adoption, the focus can shift onto how to enact organizational change as part of the transition to as-a-Service. Many business processes which have grown organically and become more complex over the years will need to be simplified. Typically, as-a-Service offerings require a level of standardization far above bespoke and highly configured on-premises and existing implementations.

This standardization is partly why as-a-Service offerings are able to exist in the first place. By shifting from complex business processes to simplified and standardized processes, things like codebase mutualization, support and operations cost reduction and improved time-to-market are far more achievable. This is not to say that every process and business line must become vanilla — as-a-Service will always come with some level of customization but not as much as many organizations have become accustomed to.

Organizational change is both difficult and tiring, and change fatigue already exists in many organizations. Therefore, it's imperative to structure a change program in phases, outlining the benefits of each and ensuring that impacted teams, staff and business lines buy into the benefits of change early on. Moving to as-a-Service can bring significant benefit to consumers of these new services, in simplification of their day-to-day activities, improvements to operational effectiveness and shifting the focus onto business value rather than simply maintaining an estate of complex systems and processes. This shift to adding business value is something that should be embraced throughout an organization and can amplify itself into an innovation flywheel where business-change velocity increases as the adoption of as-a-Service technology and business process expands.





Methodology and financials

Transitioning to the consumption of as-a-Service offerings impacts the organization in many different ways. Focusing on the methodology alone will not encompass all of the facets required. The shift from CapEx to OpEx will impact financial reporting. Removal of depreciating technology assets from the balance sheet, potentially including bespoke-built software assets, is a change that technology alone cannot enact.

This cost shift also changes the way projects are funded. Traditionally, projects include upfront hardware, configuration and implementation costs. This moves to a consumption-based model where, during the early phases of a project, consumption will be minimal and the as-a-Service costs negligible. Only once consumption ramps up do these costs materialize in a tangible way.

Cost transparency is also a major feature of as-a-Service models. Improvements in cost transparency will help organizations understand the TCO for a business line or system. This data can be used to pinpoint further systems for consolidation or investment, in turn, helping to boost return on investment.

Taking this cost transparency, value reporting and the structured process for identifying non-differentiating technology and business processes creates the methodology for successful transition to as-a-Service. Identification of the right as-a-Service partners is also a significant challenge and another area where defining the right criteria with which to make informed decisions is crucial. Areas like security, operational resilience, balance sheet resilience, business continuity and disaster recovery capability, ownership structure and so on should all be taken into account when looking at new providers, especially if the technology underpins critical business functions.

Setting a target operating model

Banks can approach the above elements of the transition to as-a-Service in their own way and in a phased process, as long as there is an agreed target operating model (TOM) that the bank is working to achieve.

A TOM is not just an architectural map for the transition. It's about business, IT and people benefits. It's about governance and the end-to-end business process. It's about meeting bank objectives for cost saving and reducing time-to-market. And it's about making sure all decisions made during the program align with the overarching strategy.

This TOM also provides a framework for the different key business processes, such as front office, risk, back office, accounting and data management. It defines which of these are the key strategic functions for a bank to retain in-house and what can be fully outsourced.

Banks need to come to a proper consensus about what is differentiating and non-differentiating in technology and business operations. Then they retain ownership of just the differentiating items, moving the non-differentiating and behind-the-scenes technology and business process either to as-a-Service or utility models.

Functions such as back office, risk and regulatory management are ideal candidates for outsourcing. The as-a-Service ecosystem integrates easily with advanced fintech solutions that can handle these functions with greater efficiency and flexibility.

By contrast, functions such as pricing models, advanced risk calculation and client relationship channels would remain within the bank.

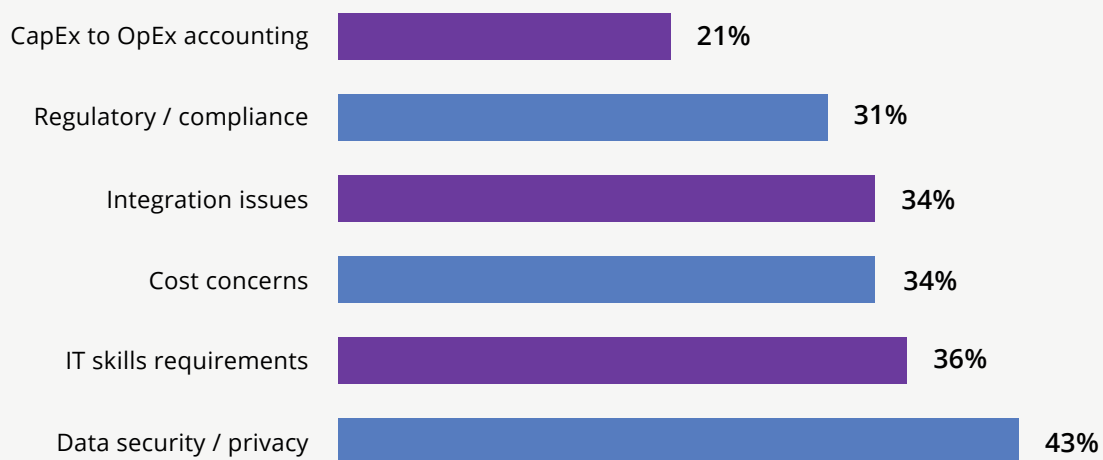


Overcoming pitfalls and obstacles to transition

While as-a-Service models deliver many benefits, banks should be careful to avoid potential downsides and pitfalls of the transition, such as increasing cost over time from utilizing elasticity to do more, high-value skillsets and salary increases.

Enterprise professionals express a range of concerns about moving to as-a-Service models:ⁱⁱⁱ

Concerns expressed around as-a-Service adoption



Though cloud and as-a-Service have long been on the to-do list of many banks, they've often been pushed down below other priorities. However, during the pandemic, the sudden pressure to transform has presented some significant challenges for banks.

Managing people impact: A bank may have several hundred personnel working on a particular legacy system. These people may need retraining or upskilling for a new banking platform. Banks will also need to manage the people impact of doing more outsourcing, as they may have less need for internal resourcing. However, the flip-side of this is that if a bank is outsourcing the technology footprint to a third party and keeps its headcount static, then it has more ability to focus on the differentiating activity for the business. So this is both a risk and a potential gain, depending on which way it is approached.

Agreeing which existing functions to outsource:

There will be territorial disagreements. Each current system will represent a major investment by the bank in terms of sunk costs, but decommissioning inefficient legacy applications can bring significant future savings too.

Avoiding any negative impact on the business:

Change comes with pros and cons. The business might get overloaded while managing the project delivery on top of the daily BAU. Stakeholders could be concerned that legacy functionality will suffer regressions or disappear altogether. While trying to solve the profitability equation and simplify platforms, CIOs need to ensure that the business is not negatively affected and can leverage incremental business value from the program.

Phasing the program to spread costs: Delivering business benefits only after the entire program is completed is not a viable approach. On a multiyear program, consider how the bank can spend money in an incremental way and derive business benefits over weeks, months and years.

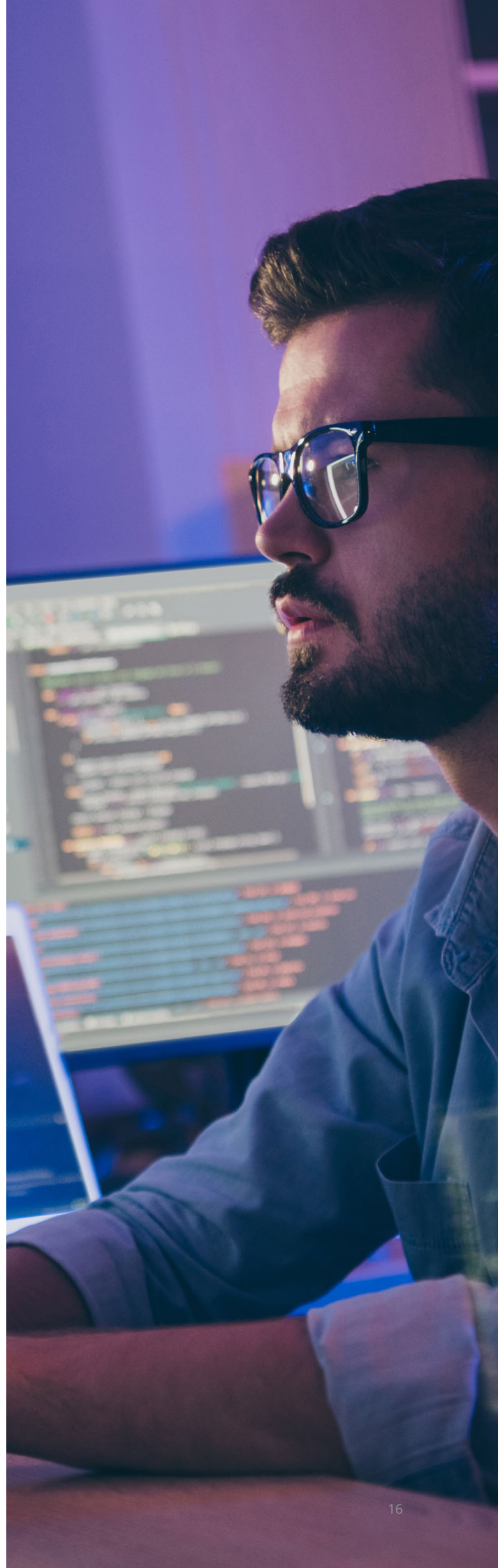
Data security concerns: One of the key issues being discussed is data. Banks have access to a large volume of customer data which is highly sensitive in nature. Obviously, banks have been extremely protective of this data. Further concerns have come from high-profile data breaches in recent years, such as those at JPMorgan Chase in 2014 and Equifax in 2017.

Data localization requirements: Many countries and regions have strict data localization requirements. This can present a challenge to as-a-Service adoption, as not every region will have in-country cloud data centers operated by the major providers. Global banks may be able to circumvent this through central installations, but regional banks might not have the same maturity and variety of offerings to choose from.

Fragmented regulations across jurisdictions: When running bank operations across multiple countries or regions, there is often a lack of regulatory harmonization, especially within treasury divisions. This makes as-a-Service adoption more challenging. If a bank has to take a different approach for each location, benefits are not uniformly realized.

Organizational alignment: Unless as-a-Service adoption is driven from the top of the organization, the process can lead to friction between teams and divisions.

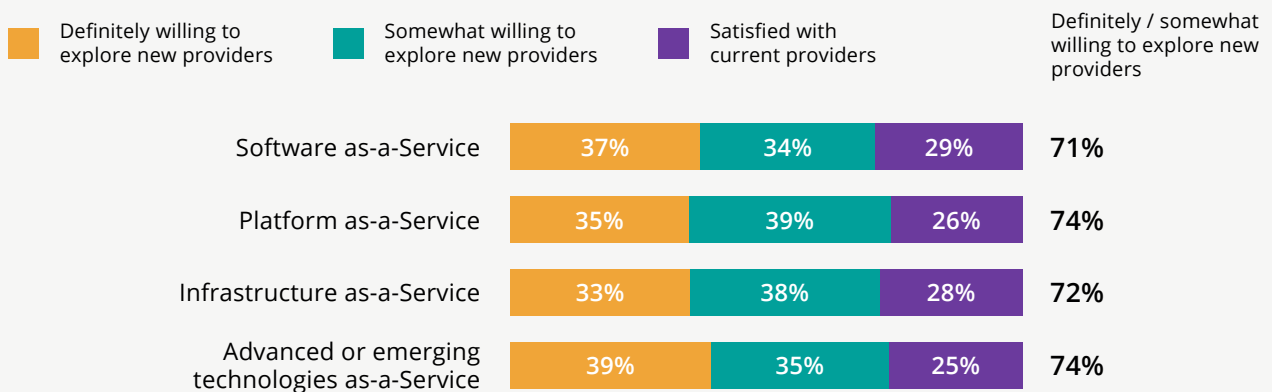
Awareness and robust strategy: Successful transformation relies on the availability of the right skillsets. The complexity of transitioning to an as-a-Service based technology landscape can also prove challenging if not carefully planned and implemented.



Choosing a technology partner for as-a-Service

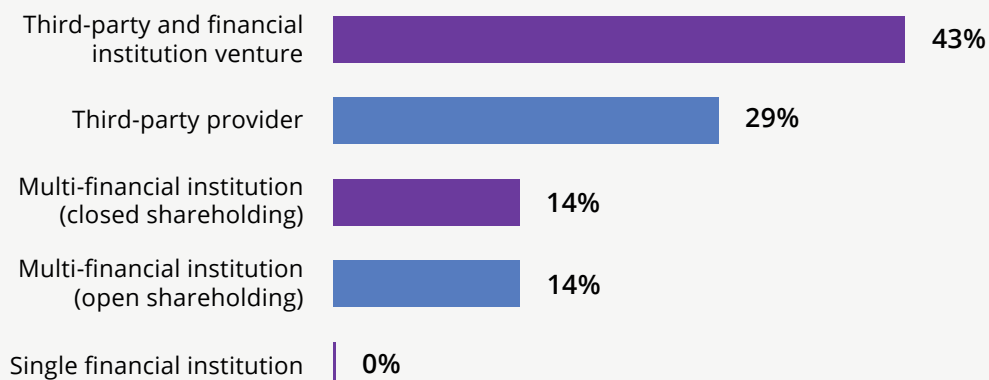
According to recent research, a significant proportion of enterprise organizations are open to exploring new IT providers across the as-a-Service landscape:^{iv}

Willingness to explore new providers for the kinds of XaaS the organization uses



Overwhelmingly, the preferred operating model for banks of as-a-Service Utilities is for them to be operated jointly by third-party providers, either standalone or in conjunction with a financial institution:^v

Degree of preference for each operating model



When considering a move to an as-a-Service model, banks will often seek a technology partner with specialist knowledge and experience in this area.

A strong technology partner will understand how the as-a-Service model can help a bank drive digital transformation, reduce capital cost and accelerate innovation.

By leveraging trusted partners for their as-a-Service journey, banks can enable more ambitious transformation initiatives while remaining focused on their core business objectives.

Such a technology partner can provide the right mix of skills and resources to support the bank and manage change — from subject matter experts as frontline support to technical analysts dealing with complex integration challenges.

Steven Wong, Global GSI Alliance Financial Services Lead at AWS, states, “AWS has a global community of partners that help financial services institutions drive innovation-led business transformation. AWS and its partner network jointly deliver value by providing advisory services, skilled resources, technologies and innovative solutions to solve the customers’ business and technical challenges.”

In the unlikely event a problem develops, the bank should expect full provision for disaster recovery, together with solutions for backup and archiving. The technology partner should provide all the specialist tools needed to keep applications in good shape, managing change delivery in a consistent and reliable way.

as-a-Service technology providers should be able to provide high-level architectures for their solutions, outlining how they solved the important challenges such as high availability, disaster recovery, security, identity and access management, and data backups. Strategies for keeping the software up to date, patched and with the latest security vulnerabilities covered should be shareable. And any subsequent processes which could affect the use of the as-a-Service offering should be flexible enough to reduce operational impact.

By choosing the right partner to guide adoption of as-a-Service, the bank can simplify the way third-party applications are managed, while delivering cost savings of up to 50%.^{vi}

The bank maintains control in the partnership but is free to focus on differentiating business activities that can give it a sharper edge in the market.

Conclusion: The as-a-Service future

Banks and capital markets organizations are increasingly focusing on transforming infrastructure, investing time and resources into innovation, and increasing their capacity to bring new services and tools to market faster.

We believe that future banking operating models will include commodity banking technology — a set of as-a-Service offerings coupled with multi-tenant utility platforms and key differentiating systems — to make sure that individual businesses stand out.

Banks will adopt a more collaborative approach and access innovative external services. These can be niche applications such as Collateral as-a-Service or Regulatory Reporting as-a-Service as well as central platforms to support their capital markets activities such as Trading Systems as-a-Service. This approach will allow more flexibility and agility as services can be scaled up or down on a pay-as-you-go basis.

Adoption of cloud technology is on the critical path of the digitalization journey and is essential for banks looking to achieve business goals such as increased profitability and flexibility.

Utilities and as-a-Service offerings are potentially the next big steps toward profitability and operational efficiency. An ecosystem is emerging of these offerings with multiple independent software vendors (ISVs), fintechs, system integrators and IT outsourcing providers, collaborating to standardize and commoditize their offerings. With financial services technology vendors starting to collaborate in this way, banks have an opportunity to tap into a fast growing and evolving technology landscape, bringing with it the latest innovations alongside mutualized and reduced costs, increased flexibility and improved overall return on investment.

The standardization of integration is central to the success of these ecosystems, as managing different types of integration will become expensive and difficult to manage. This is achieved through the creation of a user-friendly integration, supported by open APIs. Integration as-a-Service is another way to accomplish this by removing all overheads associated with the platform and infrastructure. The solution is provisioned as a “black box” in which the underlying architecture is less relevant than the service functionality, resulting in potentially huge savings in infrastructure, DevOps and platform maintenance.

Data as-a-Service (DaaS) is another driver of banking application modernization and will reinvent the way organizations address their data management capabilities. Banks will have the ability to manage their data in a spontaneous yet fully accessible way, allowing them to explore the most relevant data needed for a specific task.

Mark Hepsworth, CEO of Alveo, states, “We are seeing more and more banks and asset managers looking for cloud native data aggregation and data quality management capabilities. DaaS models use these capabilities to provide fast integration into business user workflows, lower cost of change and easy access to trusted data while maximizing customer return on data investment”.

as-a-Service models will be an integral part of the equation for each of these developments. Continuous change is the nature of the capital markets industry, so it is vital for banks to be proactive, looking ahead and preparing for their as-a-Service future.

ⁱ S&P Global Market Intelligence, 2018.

ⁱⁱ Deloitte Everything-as-a-Service (XaaS) Study, 2021 edition.

ⁱⁱⁱ Ibid.

^{iv} Ibid.

^v AFME Industry Utilities: A Perspective for Capital Markets, 2018.

^{vi} Luxoft estimate.

Acronyms

MIFID: Markets in Financial Instruments Directive

LIBOR: London Inter-Bank Offered Rate

FRTB: Fundamental Review of the Trading Book (aka Basel IV)

About **the author**



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Ihyeeddine Elfeki is Global Lead, Trading and Risk Solutions at the digital strategy and software engineering firm Luxoft. He has 20 years' international experience delivering technology and business solutions to capital markets and financial services, with proven success and a track record of delivering optimal results in high-growth environments through initiatives that exceed operational performance targets and yielding measurable outcomes. In 2016, he joined Luxoft's London office to lead the Trading and Risk Solutions practice, first in EMEA and then globally. Ihyeeddine has led several deals with banks, asset managers, treasury and commodity businesses, playing a key role in steering their transformation journeys.



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Luxoft is the design, data and development arm of DXC Technology, providing bespoke, end-to-end technology solutions for mission-critical systems, products and services. We help create data-fueled organizations, solving complex operational, technological and strategic challenges. Our passion is building resilient businesses, while generating new business channels and revenue streams, exceptional user experiences and modernized operations at scale.

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