IN THIS WHITE PAPER

Open banking is nothing less than a tsunami of change that is sweeping east from Europe and is quickly encircling the earth. The power of the consumer to demand transparency and convenience is driving this wave of change whether the bank is prepared for it or not.

But IDC believes that the movement toward open banking represents the tip of the iceberg of a more powerful concept we call connected banking in which institutions significantly expand their business models through participation in and collaboration with external ecosystems of value. From this perspective, open banking is a model of doing business that should be embraced and that, in fact, is being embraced by leading banks globally. As part of this discussion, this white paper presents an overview of what IDC calls connected banking and how it will become the future of competitive business capability worldwide.

This white paper describes some of the global drivers behind the open banking movement and where it has taken hold by force of regulation, where it is being recognized as a competitive advantage, and where the movement has stalled. The white paper also describes some of the key technology components and business requirements to make open banking possible at the institution.

This white paper also describes how Tata Consultancy Services (TCS) is supporting open banking through its own C3 Strategy Model that includes compliance, collaboration, and competition using its Open Banking Solutions Hub, a platform covering every aspect from evaluation to delivery of predefined use cases. TCS’ approach – which focuses on embracing open banking – is a prerequisite to building a wider partner ecosystem through collaboration and co-innovating offerings that create value for its partners’ businesses as well as their customers.

Finally, IDC provides guidance for those institutions that want to begin, or are in the middle of, their own journeys to open banking and offers advice for setting strategies aligned with the new models of competition as a result of a connected banking environment.
GLOBAL OVERVIEW

In 2015, the European Parliament enacted the revised Payment Services Directive, or PSD2, that required banks to share pertinent customer data with third-party payments providers, ostensibly to promote payments innovation and improve consumer convenience. A year later, the U.K. Competition and Markets Authority (CMA) issued new guidelines requiring banks to implement open banking by 2018, again, to improve the ability of consumers to control their finances. In spite of the uneven compliance to these regulations, Europe is inexorably headed down the path to open banking.

Three markets in Asia/Pacific – Singapore, Australia, and Hong Kong – are being driven by open banking regulations specific to those markets. But unlike the European environment where open banking applies to the entire market, open banking in most of Asia is not being driven by regulation. Nonetheless, the movement is gaining traction on the strength of business potential alone. In some markets, like New Zealand, governments are fostering collaboration without overt regulations in the industry to make open banking as beneficial as possible for those institutions. Elsewhere in Asia/Pacific, open banking is a fragmented, but still compelling, focus of business transformation.

Less developed are the Latin American and North American markets with respect to open banking. In some parts of Latin America, open banking is happening from the outside-in. Led by financial giants like Santander and BBVA, both considered innovative organizations in their own right, partnerships with fintech firms are driving the move to open banking through open APIs within individual business lines. Mexico alone has passed open banking regulations that can be read more like guidelines to promote collaboration with the aim of improving access to financial services by the region’s consumers. In Argentina, banking leaders have come together to create the Open Banking Argentina initiative, driven by the potential benefits of a collaborative environment in that country.

Still banks in most of Latin America lag behind their counterparts in Europe and Asia with regard to open banking. What yet lacks in Latin America, beside a regionwide approach to open banking, is the enterprise perspective. Line-of-business approaches to connectivity with external partners, and the IT work needed to make that happen, are a good thing. But ultimately, what is needed is a top-down approach that consolidates an aggregate strategy that makes the whole organization agile and flexible enough to make open banking a capability and not just a project.

Generally speaking, banks in North America are far behind their global peers when it comes to open banking. There are no regulations in place, and conversations between the industry and its regulatory stewards are just happening now. That's not to say that some banks haven't started down the path of open banking through ancillary initiatives involving open API development. But for the most part, these efforts are tied more to legacy transformation projects and one-off connectivity with a small number of fintech partners for limited functionality. Unlike Asia/Pacific, the North American banking industry as a whole hasn't formally recognized open banking as an opportunity, although the conversations taking place today are encouraging signs of progress. For example, the Canadian government announced the creation of an Advisory Committee on Open Banking in late 2018.

Regulatory Drivers

What started as a regulatory requirement in Europe, UK and parts of Asia will continue to expand globally if the financial services organizations do not proactively drive their own open banking strategies. Like no other period before today, the consumer is truly at the center of multiple industries, including financial services. However, instead of perceiving the possible regulatory changes as a
threat, banks in Latin America, the United States, and Canada must understand that lessons learned from complying to regulatory requirements around sharing data based on consumer demand will prove valuable as the institutions recognize the business potential in things like data transparency and connectivity to external ecosystems:

- With the passing of PSD2, banks had two years to create data environments that supported the sharing of customer data with third-party payments processors. This work included transforming many legacy platforms using open API technologies.
- A second European regulation, the General Data Protection Regulation (GDPR), required banks to protect the privacy of customer information. This is forcing institutions to deal with the security and privacy of customer data even within an environment that inherently was open to partners.
- CMA (Competition and Markets Authority) set up Open Banking standards in UK around Data exchange and sharing to bring more competition, increased customer choices and safe innovation within financial services.
- Although integration and data sharing with external parties have existed for decades, the PSD2, GDPR & UK open Banking regulations implied a more open approach to data sharing in that the infrastructure had to be nimble enough to share information on an on-demand basis through open API frameworks.

While regulatory requirements around open banking have not yet appeared in the majority of Latin American and North American markets, geography alone won’t protect those institutions from having to create open technology infrastructures in the future.

In fact, IDC argues that without a proactive approach to open banking or, as IDC prefers to call it, connected banking, regulations will drive the need to cater to the consumer through open banking, and in doing so, institutions in these regions will address only the smallest, most tactical needs of the market and may miss the opportunities of the larger connected strategy.

**Connected Banking: Open Banking with a Purpose**

In IDC’s view of connected banking, institutions aim to develop an internal technology and operational infrastructure that allows them to source value from both within and outside of the institution.

Connected banking is a viewpoint that perceives open banking as the basis for business innovation, improved efficiencies, and improved customer experiences. Connected banking will be the platform with which financial institutions, including retail and corporate banks as well as contextual and value-centric insurance, will compete. Figure 1 depicts a high-level view of the connected banking ecosystem.
The technologies used to enable connected banking accomplish four critical needs in financial services today:

- Compliance with existing and any new open banking regulations that may come
- Partnering with other financial or nonfinancial firms to extend the bank's services, brand, and value through nonfinancial organizations
- Creating new products, services, and business models for customers by connecting to external sources of value and creating innovation within the bank
- Transformation of the institution's legacy platforms by moving to modern frameworks, processes, and governance practices
Customers Demand Empowerment Through Open Banking and Insurance

Given the rise of the fintech and insurtech economies, where consumers increasingly rely on nontraditional channels to conduct their financial transactions, it is critical for financial institutions to collaborate with such firms in order to stay connected to the customers’ day-to-day lives. The concept of connected banking (and value-centric insurance) covers the gamut of customer types:

- **Retail banking.** The retail consumers’ demand for convenience and lifestyle-based financial control requires banks to participate in their lives, not the other way around. This model of customer centricity is what drove the PSD2 regulation to begin with. When financial institutions speak of "the customer journey," there must be recognition that the journeys are not always strictly within the bank or insurance company — although part of those journeys will touch the institution. Banks need to think in terms of being in-stream with the customer's life. This also includes wealth management and advisory services which will be impacted by open banking in a significant way.

- **Corporate banking.** There are several benefits that open banking can drive for treasurers and corporate bankers. Given the multibank nature of corporate clients, access to data across institutions is made almost seamless through open banking, providing important information on cash position, for example, across multiple banks. And the use of open APIs will make data access a real-time capability. Data access will also improve credit and finance decisions by augmenting data from non-bank sources and supporting real-time decisioning.

- **Insurance.** The insurance industry is quickly focusing more and more on risk-based business models that rely on an increasing range of data. The Internet of Things (IoT), most palpably represented by the automobile dongle used by some car insurers to monitor the driving behavior of their customers, is just the tip of the iceberg. Consumer and business behaviors will increasingly be captured by such point-of-presence devices, and the mountains of data created by those devices are proving valuable for insurance companies that want to make better business decisions and for consumers who demand a more direct correlation between the premium paid and their individual behaviors. Open API-based architectures can easily deliver that access to the data the insurance companies need for future business models to be successful.

While all of the previously mentioned cases reference the ability to access data, both the banking and insurance industries will benefit from the collaboration with nonfinancial services firms to extend the brand through products and services sold outside the organization, extending their market reach, and by creating new products and services using external sources of value.

Again, failing a proactive approach to open banking, customer demand for transparency and convenience will drive regulatory guidance in Latin America and North America and may force institutions to comply to guidelines that are inherently not aligned with the institution’s long-term business strategies.

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The Technology Implications of Open Banking

Quite simply, open (or connected) banking starts with a modernization effort to migrate point-to-point interoperability and integration of systems and platforms to an open API framework to allow for more seamless connections with both internal and external systems. But this description is a gross oversimplification. In truth, a number of technology, process, and governance practices must be transformed to participate in a connected world. Further:

- **Open APIs.** The work to participate in open banking clearly starts with creating an open API environment that allows systems to connect to the bank’s internal portfolio of resources. Moreover, a hierarchical approach to open APIs is emerging where the institution is creating different levels of published APIs based on the party accessing that data and those services. At its basest layer, private and proprietary APIs will be tightly controlled for access to the core platforms processing general ledgers, transaction systems, and so forth. There will also be internal business APIs accessible by product managers within the institution that they can use to compose new offerings by connecting microservice functionality. There may be a published set of partner APIs to be used by strategic partners that the institution wants to use for productivity, HR functions, and so forth. And finally, there may be a set of "public" APIs that are open to third-party providers (TPPs) to access a more limited set of functionalities and data.

- **Microservices.** Along with APIs, institutions are moving toward the disaggregation of monolithic systems to a microservices-based architecture for all but their core platforms. Moving functionality to microservices creates a more manageable way to control access to specific functionalities through APIs instead of trying to grant access to a single functionality within a larger system. The challenge of this kind of architecture, however, is the governance of hundreds or thousands of discrete microservices where once there was a single system. API management tools will be critical in such environments to administer the new architecture.

- **Data governance, security, and authentication.** As TPPs begin gaining access to the institution’s platforms through the APIs, and as the institution itself begins to share customer data outside its own walls, robust governance, security, and privacy policies and practices must be put in place to control and audit the new connected environment. There are several areas of data and security access that must be addressed:
  - Data quality
  - Authentication
  - Customer consent
  - Data governance
  - Analytics

- **Cloud.** One of the most powerful aspects of the move to open API and microservices is the use of cloud-based platforms to enable agility and flexibility of the institution’s capabilities. By migrating the infrastructure to cloud-based frameworks, the enterprise creates the ability to move workloads to platforms where it makes the most sense, whether on-premise or off-premise. The institution’s infrastructure becomes “virtualized" in a sense, giving the organization ultimate flexibility to operate efficiently and ultimate agility in its ability to respond to market demands, including connected banking, in a rapid fashion.

Open Banking Transformation Is Not a One-Size-Fits-All Proposition

The technologies listed previously are the key components to an open banking infrastructure and will require a thoughtful approach to enterprise strategy. As financial institutions prepare for open banking,
they face IT challenges that will be different depending on their regional presence, relative size in the market, technological maturity, and risk profile. This paper has already described the regulatory drivers affecting the global markets and the compelling business reasons that open banking is taking hold in regions where regulation has not yet stepped in. But regardless of the regional differences, the size of the institution itself will determine how the technology transformation itself will begin and evolve:

- **For large tier 1 institutions:** These banks have already embarked on modernization efforts that include open APIs and microservices and will be positioned well to embrace connected banking through transformed infrastructures. Although many of the skills necessary will already reside within the organization and their preferred partners, there are some skill sets – such as data governance and cybersecurity – that may be new to many institutions. These organizations will partner with external firms to help deliver use case-specific functionality and support a virtualized infrastructure through cloud deployments.

- **For midtier institutions:** The IT capabilities start to diminish as the asset size of the institution declines. There is enough internal expertise at this level to create differentiating platforms and business functionality, but more often it’s the case that this kind of institution relies on IT partners to deliver not-quite-bespoke solutions that the institution can modify to make its own. Open banking is no exception. These enterprises will rely more heavily on external partners to advise, evaluate, and confirm strategies before transformation is undertaken. Once strategy is set, banks and insurance companies of this size will also seek support for many of the newer requirements, around microservices management, for example, to begin implementing their open banking models.

- **For the smallest institutions:** These organizations are almost completely dependent on a small number of managed services providers to support most of their IT needs. For this reason, these institutions will have to wait for those partner providers to modernize their own infrastructures before the banks can benefit from a connected banking environment. However, the practice of “shadow IT,” the purchase of IT solutions without knowledge or approval of a central IT organization, will become minimized as most modern financial platforms are built using open API frameworks, so integration with the organization’s internal IT, previously one of the biggest challenges with shadow IT, is minimized.

**Who "Owns" Open Banking?**

Alignment between the lines of business and the IT groups has always been an issue in financial services institutions. Even though move to open banking is primarily owned by the line of business, there are several other categories of stakeholders affected by an organization’s move to open architectures. Therefore, alignment amongst lines of business, IT and other stakeholders is essential to overcome the siloed nature of most institutions in order to leverage this new paradigm:

- **Line of business.** The line-of-business executives collectively form important stakeholders in open banking. Without guidance from these leaders, IT builds a capability that will go unused, or at best, be inefficiently used. The line-of-business heads, together and separately, should prioritize the use cases, products, and services that would benefit from the migration to an open architecture. The criteria for prioritization can be anything from a need to improve the efficiency of a process to the desire to extend value through external partners to the creation of new business products that aren’t feasible in the current infrastructure.

- **IT.** Clearly, the IT groups themselves are important stakeholders as they are primarily responsible to effect the changes necessary to adopt open banking. The role of the IT group in this case is of a business enabler. Standards must be set, skills must be gained, and partnerships must be forged with the firms that provide the organization's technology
resources. But just as importantly, partnerships must be created within the institution's ranks to ensure that the business strategy is set prior to making significant technology changes. IT does not "own" open banking, but it does create the technology environment that makes it possible.

- **Operations.** Just as important as the externally facing lines of business are the internal business executives who are responsible for operations, compliance, security, and other noncustomer areas. Open banking promises to improve the efficiencies and performance of these critical functions as well. Particularly as the industry moves to cloud-based platforms in these areas, open architectures within the bank will enable the consumption of valuable services for these areas.

- **Leadership.** Finally, but arguably most importantly, are the C-suite executives who can drive investment, direction, and long-term strategy for the institution. What distinguishes open banking, which is often focused on tactical and technological outcomes, from connected banking, which seeks to fundamentally change the institution’s agility and response to the market and to actually create its own disruption in the industry, is the commitment to progressive transformation over time. For this reason, the role of leadership is that of creating and communicating the long view for the institution and to guarantee that all other stakeholders are on the same page and that investments are in line with that connected banking strategy.

### CHALLENGES

In spite of the potential benefits of open banking, institutions will encounter challenges in its deployment:

- Self-evaluation will be difficult as institutions traditionally operate in a vacuum from other organizations. Peer analysis is seldom available to determine how mature a specific enterprise is compared with its peers or how quickly the firm is advancing in its transformation.

- Prioritization of business initiatives is an organizational talent as the separate lines of business will compete for IT resources to leverage open banking opportunities.

- Fintechs and challenger and neo banks that already operate using open banking technologies are springing up globally. These institutions are currently limited in terms of the products and services they provide, but this gap will be closed quickly given their ability to partner to complete their offerings. Therefore, speed to implement in a competitive environment will be a challenge.

- As data sharing is a fundamental characteristic of open banking, security and privacy in an open world will challenge institutions, particularly those that don't have the internal skills to create a secure data/API environment. Data monetization, another critical driver of open banking, will experience the same challenges of security and privacy as banks look for ways to leverage enterprise knowledge.

- As described previously in this white paper, institutions are already challenged to acquire and retain the IT skills needed to adopt open banking technologies. Predominantly, data management and governance, security, open API, agile development, and vendor management (as applied to larger scales of partners) are key skills that have proven difficult to find in the industry.
As part of the connected banking strategy, banks need to communicate the benefits of open banking to the customer. In a regulation-driven environment, banks need their customers to give consent to sharing their data. But in the larger sense, to leverage the opportunities of new business models through external ecosystem value partners, banks will want their customers to buy in to the ability to share data with partners. Banks in Europe and the United Kingdom have experienced problems in this regard, so it will be important for banks in the other regions to get ahead of any challenges and develop customer communications strategies to support their open banking initiatives.

THE TCS APPROACH TO OPEN BANKING

TCS offers a number of services and solutions that address open banking. The TCS approach is based on a viewpoint of:

- **Comply**: Helping institutions undertake regulatory compliance as a driver of open banking and in anticipation of potential regulatory changes in the future
- **Collaborate**: Supporting the potential of extending the bank’s reach to consumers through third-party providers, integrating customer experience at nonbank channels with the bank’s own networks, and leveraging open banking capabilities to aid in data monetization
- **Compete**: Creating unique opportunities to bring value into the institution through open banking partnerships (fintechs, etc.) to deliver through its own network of touch points as well as through partners

To deploy its C3 Strategy Model, TCS offers a logical and progressive set of capabilities that can be consumed by the institution in stages or separately availed based on the bank’s existing maturity or specific needs.
These capabilities include:

- **Assessment**: Assessment services that look at existing data strategies, service use cases, security maturity, and core system capabilities and then assess the institution's readiness and requirements to progress to an open banking-capable infrastructure
- **Accelerator Hub**: Basic IT resources that form the foundation for an open architecture including prebuilt APIs based on banking standards, authentication and consent services, third-party provider management platforms, analytics/reporting, microservices, and cloud-based sandbox capabilities
- **Marketplace**: An existing marketplace of TPPs that constitute a portfolio of prebuilt business solutions that can accelerate the adoption of innovation through open API collaboration
- **Data Fabric**: An architectural framework that encompasses consent-driven data management and customer knowledge analytics
- **Use Case MVPs**: Prebuilt, tactical solutions for a number of business use cases

These capabilities are offered to enable institutions to "fast track" their adoption of open banking through prebuilt, preconfigured, and cloud-based platforms. They are positioned within the broader BFSI strategy at TCS that also includes services and solutions in cognitive systems, cloud, mobility, big data and analytics, and workplace platforms.
TCS Opportunities and Challenges

IDC believes that TCS’ open banking approach is particularly helpful for banks just embarking on an enterprise-wide open banking initiative as well as for institutions testing the waters by running proofs of concept or pilots using open banking models. In markets where regulatory guidelines haven't yet reached, small and medium-sized institutions would benefit from the kind of fast-track approach TCS offers in open banking. While not necessarily limited to Latin America, the United States, and Canada, these markets represent significant opportunities for TCS in that banks in those regions are not constrained to work toward a deadline and, therefore, will be more open to the advisory and sandbox services TCS offers.

Likewise, for banks struggling with regulatory compliance in markets driven to open banking, TCS’ services and solutions in this area will help institutions more quickly address and overcome challenges in compliance. Moreover, TCS could help those institutions think beyond compliance and leverage open banking to explore monetization and other revenue opportunities.

Likely challenges for TCS, particularly in the Latin American and North American markets, include:

- TCS is attempting to serve institutions of all sizes with the same approach. While the staged approach to open banking works very well in medium-sized banks, larger banks often seek very specific and focused components that fit within their overall IT architecture. At the same time, smaller banks are hesitant to work with vendors outside their core system and managed services providers as these institutions prefer the simplified operations associated with a single-partner system. The challenge is not in the technological resource TCS can offer but rather in the potential of being seen as a "one size fits all" provider.
- As these markets aren't being driven by regulation, adoption of open banking may take a lower priority compared with other, more pressing tactical needs. Some of the challenges mentioned previously apply just as well to TCS as they do to the bank. The siloed nature of many banking/financial organizations hinders long-term strategy around open banking, which could limit TCS’ opportunities in the short term.

But as TCS has long-established credibility with larger institutions, these challenges can be overcome by focusing its market position and messaging on the phased and component-oriented nature of the C3 solution for small to midsize banks as distinct from a services-led approach to engagement.

ESSENTIAL GUIDANCE

IDC's 2018 digital transformation use case taxonomy identifies 10 uses cases (see Figure 3). These are discrete projects with business outcomes that rely on open banking architectures to deliver new value to the bank's customers. These use cases fall under a strategic priority IDC calls "external ecosystems" that provide guidance for financial institutions looking for tactical ways to deploy open banking.
As banks in Europe and Asia have already started open banking initiatives, or are on their way to creating open banking infrastructures, IDC recommends that institutions in Latin America and North America catch up with their global peers and recognize the need to not only proactively address the potential for regulatory drivers to open banking but also seek out the opportunities like those shown in Figure 3 and inherent in a connected strategy that accelerates product development internally and creates new business opportunities through collaboration with external partners. Further:

- The connected banking strategy begins at the highest level of the organization. Whereas the past decade of strategic planning at the bank has been in the context of 18-24 months, the commitment to open and connected banking demands a longer view of 3-5 years to set the path to business transformation. This commitment must begin at the C-suite and be acknowledged at every level of the organization.
- Open banking requires some technologies and processes that are fundamentally new to most institutions. Development using open API frameworks and agile development processes is just the beginning. There are new aspects of data management, security and privacy, fraud detection and prevention, cloud services, and vendor and partner management that will require either a
ramp-up in terms of internal resources or the reliance on strategic technology partners to support these new requirements. Institutions need to make decisions on what will be kept internal to the organization and what will be "outsourced" to partners. In this regard, TCS’ C3 approach is a resource that can be called upon to quickly come up to speed on any open banking initiative or fill any gaps an institution might have on its own open banking journey.

- Open and connected banking strategies need not wait until the entire infrastructure is made open to reap benefits. In fact, IDC recommends that every stage of transformation to an open architecture have associated business and/or operational accomplishments in order to maintain the momentum of change and opportunistically help fund further transformation through increased revenue and improved efficiencies.

- The time to act is now. IDC’s research around digital transformation — the overall context within which open banking operates — is a recognized strategy that over 90% of institutions surveyed recognize. Already, banks in Europe and Asia are gaining traction with open banking-based business transformation, and Latin American and North American institutions don’t have very long before their competitive landscape will force a change to the industry’s ability to respond to consumer needs.

**FUTURE OUTLOOK**

There’s little doubt that open banking will continue to gain speed as a directional strategy for IT in the financial services industry worldwide. As vital parts of legacy system modernization, open APIs, microservices, and cloud-based operations are already being leveraged to gain efficiencies and improve performance in the back office. The use of those same technologies to address regulatory guidelines or leverage business opportunities is a logical step in the bank’s adoption of open frameworks.

Connected banking, which is the proactive adoption of open banking specifically to realize business benefits, is a longer-term strategy that culminates in the institution’s ability to become an agile enterprise and respond to, or create, disruption in the industry. Challenger and neo banks have already begun to enter the industry with modern, connected architectures based on open banking principles. These institutions will pose a threat to traditional institutions that hold on to their isolated legacy platforms.

In markets where regulation has driven open banking, banks will quickly evolve to take advantage of their lessons learned and begin turning the focus on the business opportunities enabled by open banking. In markets where regulation has not yet come, institutions must be prepared to face increasing competition from fintechs and challenger and neo banks that are "open native" and can move faster than the traditional (legacy) bank.

The banking industry in Latin America and North America is not yet at a "do or die" inflection point, yet competitive pressures from leading institutions will force the adoption of open banking sooner rather than later. Banks that can successfully adopt a connected banking business model will, at worst, maintain par with their peers, and at best, become part of a kind of financial industry the likes of which we’ve never seen before in these regions. These organizations will create new business models through open marketplaces and their customers will benefit from tailored products and integrated experiences, and both customer and bank will benefit from the new collaborative industry.
TCS' integrated Open Banking offerings and solution capabilities are designed to help financial organizations comply with open banking regulations and more. TCS also leverages its Co-Innovation Network (COIN) to accelerate customers' Open Banking aligned digital transformation journeys. TCS' Open Banking portfolio includes:

- **Assessment Kit and Use Case Catalogue:** Covers readiness assessment, strategy definition, and road map creation. Based on their business strategy, banks can choose from a curated list of use cases across consumer, SME, and corporate banking domains.

- **Accelerator Hub:** Contains (i) pre-built software components for consent management, TPP management, strong customer authentication and a set of pre-configured APIs, and a microservices-enabled sandbox solution on cloud as well as a TPP testing kit to accelerate the open banking adoption journey.

- **TCS Marketplace:** Banks can participate and innovate along with TCS' partners and manage marketplaces. This also comes with a list of solution partners identified through TCS' COIN network.

- **Data Fabric:** Architecture framework creating a responsive core and select software components for consent driven data management, customer knowledge graph, and contextual insights.

- **Use Case MVPs:** Pre-built solutions for selected use cases – PFM, SMB advisory, and mortgage value pool, among others.
About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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