# Accelerate Data Innovation with Real-Time Financial Services

How modern data layer technologies can position financial institutions to succeed in a marketplace that is getting tougher

# Executive Summary

*"The financial services sector faces serious challenges around strained margins, changing customer behavior, and competition from digital-native market entrants."*

The financial services sector faces serious challenges around strained margins, changing customer behavior, and competition from digital-native market entrants and Big Tech. Cloud-based fintech startups focus on a customer-centric digital model that provides them with a range of advantages over legacy, on-premise systems. These include greater flexibility and more deployment options, increased business agility, and faster path to innovation.

As a result, fintech startups have the agility to effortlessly innovate and pivot to new ideas that maximize the customer experience.

In contrast, much of traditional banking still suffers from the rigidity and complexity of legacy RDBMs, limiting its ability to scale, innovate, and adapt to modern technologies. This is also a highly regulated industry where new rules are constantly being applied. Banks need to adapt quickly to avoid fines—a challenging task when they're deeply rooted in cumbersome legacy IT systems.

Not surprisingly, these challenges have been exacerbated by the Covid-19 pandemic. However, tackling these challenges offers the sector an opportunity to expand its reach and launch new products and services. This report looks at four areas where modern data-layer technologies in particular can help traditional financial services firms overcome the challenges and profit from new opportunities.

First, the market expects a holistic customer experience from its financial service providers, encompassing everything from mobile to online to chat to traditional phone support. Traditional banks that successfully implement such a strategy can turn their physical branches into a competitive advantage, see improved recommendation rates, and encourage customers to take on more products and services.

Second, regulatory changes are requiring financial institutions to share customer data through open banking processes. But meeting these standards is not just a cost. In the UK, which was one of the first countries to adopt open banking, the measures have been shown to unlock new revenue opportunities.

Third, financial institutions face a growing threat from fraud and cybercrime. Data layer technologies can help financial services companies meet these challenges, giving customers confidence that their financial security is in good hands.

Finally, availability and scalability are vital to ensuring that new and innovative services can actually be delivered to customers, providing banks with the flexibility to meet changing conditions and build customer trust.

Data is vital to meeting all of these challenges. Financial services companies that flourish in the coming years will be those that are able to make the most of that data.

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# Introduction

The banking and financial services sectors face complex challenges ranging from historically low interest rates depressing the top line to a tough regulatory environment in the wake of the 2008 financial crisis. Meanwhile, a shift in both consumer and industry behavior is changing expectations.

Younger generations, who represent a large and growing portion of consumers, are demanding a better digital experience, while business customers' expectations are being set by their experience as digital consumers. Increased costs from things like cybersecurity are further squeezing margins. Large traditional financial institutions don't have the luxury of time to cope with these challenges as they also face growing legions of new, digital-native challengers.

Many banks recognize the potential for modern data technologies to make their systems and business processes more efficient, agile and responsive to customer trends. Legacy RDBMS often have issues with scalability, flexibility, reliability, and complexity.

However, replacing them is risky, expensive and time-consuming, which poses a big problem for traditional banks. When a new trend emerges, fintech start-ups born in the cloud have the agility to respond, innovate and cater to the needs of the consumer, all whilst traditional banks are struggling to get the cogs in their rigid model moving.

To compete, traditional financial services companies are augmenting their legacy, on-premises batch processing back office IT system. This is achieved by embracing cloud and microservices architectures, artificial intelligence/machine learning (AI/ML), in addition to the increased use of analytics for their front and middle office applications, which require real-time data.

Every single middle-market asset management, insurance, and financial institution surveyed by BDO in 2020 said they have developed, or are planning to develop, a digital strategy. But despite the fact that literally everyone is working on a digital strategy, only a quarter (27%) of those institutions are executing their strategies.

The challenges have only been heightened, and the pace of change accelerated, by the Covid-19 pandemic. PwC has warned that credit quality could deteriorate rapidly and markets are likely to be volatile, affecting business stability and revenues. The ongoing effects of COVID-19 will likely persist for years.

Concerted efforts are required to handle the disruption, such as staying in close contact with business partners and regulators, reviewing portfolios to identify potential risks, and improving the customer experience. But this is no time to despair. These daunting challenges are also opportunities to grow your market share, develop new services, accelerate digital transformation and modernize your applications. The companies able to do this most effectively are the ones that will flourish in the decade ahead.

In the Forrester Infographic: The State Of Digital Transformation In Financial Services, 2021, Forrester indicated that financial services organizations are investing in products, customer experience (CX), and innovation as a way to emerge from the COVID-19 crisis. Another key finding was that improving operational efficiency had become the top digital transformation driver.

Fortunately, there are technological solutions that can increase resilience and flexibility, such as a best-in-class modern data layer that can enable key organizational objectives while also improving operational efficiency. That's what Redis Enterprise can offer. This paper considers examples of how Redis can be an essential element in helping banks and financial institutions meet today's challenges and unlock the associated opportunities.

# 1. Customer Experience

Customer expectations have changed. Younger generations—Millennials and Generation Z—who have grown up with digital technology now make up a large portion of the customer base for financial institutions. These customers expect online and mobile banking and they want their account details to be accessible on every platform at any time. If they start a transaction on their laptop, for example, they expect to be able to continue it seamlessly by phone or at a branch. While 17% of over-55s expect to bank more online over the next 1-2 years, according to an EY survey, more than a quarter (28%) of under 35s do.

An omnichannel platform is an opportunity to transform the customer experience, which brings significant benefits.

Financial institutions are competing in a crowded and cutthroat marketplace where customers are constantly being bombarded with new and exciting digitized products that provide them with a stronger grip on their finances.

To succeed, financial institutions must augment the customer experience in a way that guarantees users a fast, flexible and seamless digital solution:
- 76% of customers want an omnichannel experience
- 79% want a fast response to inquiries, with one-third of customers expecting a response within 30 minutes on social media.
- 59% expect on-demand customer service that's accessible from any location

Customers are brutal in their expectations and won't tolerate any shortcomings. According to The World Retail Banking Report (2021), 81% of customers state that they would be motivated to switch to a new-age financial provider if they offered easily accessible, flexible banking.

Banks that offer a poor experience typically see their share of deposits decline. For older customers and those with less access to digital tools, face-to-face interactions in bank branches remain important. The costs of maintaining a branch network has been a burden for many financial services firms, but an omnichannel strategy can transform those branches into an advantage. Retailers have already embraced the omnichannel trend and banks have the opportunity to follow suit. In this model, face-to-face becomes just one of a range of connected channels—one that digital challengers cannot match.

However, as many physical branches have been forced to close or reduce hours and capacity during the Covid-19 pandemic, the need to rely on other parts of the omnichannel strategy has been accelerated. Many call centers have also been affected, with reduced capacity due to staff working from home. In a Harvard Business Review study, the percentage of customer service calls rated as "difficult" have more than doubled during the pandemic. That can put an extra burden on digital channels, which companies must account for. At the heart of an omnichannel strategy is the need to put the customer at the center of the experience.

A recent 451 Research survey (451 Research, *Voice of the Enterprise: Customer Experience and Commerce, Organizational Dynamics and Budgets 2021*, April 22, 2021) reveals[1] that there are a number of characteristics consumers are looking for that can shape the ideal digital banking experience. In the survey, consumers rated the following as ideal experiences:

- An efficient experience (53%)
- A simple and easy-to-use web experience (50%)
- A consistent experience across website, store, mobile app and contact center (40%)
- A personalized experience (32%)

Consumers demand a digital banking experience that's fast, seamless, personalized, and easily accessible—all characteristics that are expected in any digitized service. This should form the baseline for banking and financial service firms to build upon, using these traits to shape their CX strategy and differentiate themselves in a cutthroat industry

Companies often focus on optimizing application response times as the first step, and Redis Enterprise is used by many as a high performing in-memory data layer that ensures consistently low latency for users. But banks shouldn't stop there. Redis Enterprise has also been used in other ways to improve the customer experience—for instance as a user profile store to instantly provide account balances on the mobile app or website, and as a secondary indexing engine to help customers search through their account-transaction history. The high write throughput and low latency required to update customer profiles in real time for tasks like credit-risk analysis and identity verification make Redis Enterprise an ideal choice for retail banks building a seamless customer experience.

Data is one of the most valuable commodities in the digital era and banks are sitting on treasure troves of insights. Having Redis as a frontend database enables real-time data analytics and reporting. Continuous real-time analytics are proactive and trigger responses as they happen, allowing analysts to make immediate data driven decisions or make personalized recommendations that maximize the customer experience.

1. Source: 451 Research, a part of S&P Global Market Intelligence, *Financial organizations must prioritize CX and technology to drive loyalty in a digital-first landscape*, October 18, 2021

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# 2. Open banking and regulation

"Data is now driving the global economy—just look at [...] the world's most valuable companies. They collect and exploit the information that users generate," wrote BBVA group executive chairman Carlos Torres Villa, in the Financial Times. "But companies are hoarding data too, preventing others, including the users to whom the data relates, from accessing and using it."

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Open banking is a regulatory attempt to address data hoarding in financial services by making it easier for customers to share their data with other providers. In 2020, there were approximately 20.4 million worldwide users of open banking, a figure that's expected to reach 132.2 million by 2024.

The idea is that customers should be able to easily move their money between different providers, use third-party tools such as money-management apps, and combine all their various services—no matter who provides them, from checking accounts to store loyalty cards—in one place. As open banking becomes a requirement in more and more jurisdictions, financial services companies need to make sure it is secure and works as intended.

Although regulatory changes are an obligation, they can also create big opportunities for new services. This starts by giving users more of what they want and providing a better service. Beyond that comes an opportunity for the entire sector to become more collaborative and less siloed, opening the way for new products and services. In the UK alone, for example, research suggests that open banking represents an estimated £7.2bn revenue opportunity in terms of new services that can be offered and greater use of existing services.

Even though the US has shown little sign of open banking laws that would oblige businesses to implement particular standards, there is still a good reason for banks to pay attention. First, as with European rules such as GDPR, banks that operate in Europe or elsewhere in the world must be prepared to comply with local open-banking rules.

Second, in the absence of regulatory moves, the market is driving some of these changes. Financial apps like Mint were early proponents of data sharing, for example, and as companies like these introduce a better customer experience, companies that can't keep up risk being excluded from growing markets.

As demand for data increases, so does the need for a platform that can scale elastically on demand in response to traffic. Solutions to ensuring the scalability of open banking platforms can perhaps be found in other areas, such as the realm of securities trading. In the case of international exchange organization Deutsche Börse, Redis Enterprise helped ensure timely data reporting to both regulators and customers.

The company relies on Redis Enterprise as a cache for a data warehouse used for regulatory compliance, ensuring that every quote and trade is processed in Redis with low latency while also guaranteeing on-demand scaling, high availability, and automated deployment.

As regulators in the UK and Europe seek to drive increased competition and innovation by opening up customer banking data to third parties. Redis Enterprise can enable banks to deliver a full range of services using APIs based on a microservices architecture.

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# 3. Security

Open banking and omnichannel approaches can make financial services companies even more tempting targets for cybercriminals and fraudsters. But there are also opportunities to be found amid the threats. Handling risk more efficiently brings cost savings and frees development teams to work on revenue generating tasks. There is also a reputational bonus to companies that can boast of paying extra attention to security of personal data.

Even the best companies must stay ahead of security challenges or risk catastrophic consequences. However, detecting fraud is becoming more difficult in a world where applications and customer data are more distributed than ever. Security is a constantly shifting problem, as new tools bring new weaknesses and evolving tactics by bad actors create new challenges.

In today's world, a financial firm will carry out a number of checks to validate a customer's identity before providing a financial service. However identity verification based on knowledge-based authentication (KBA), which uses "static information" such as names, addresses, social security numbers, and security questions, is vulnerable to data breaches and theft.

Banks are turning to "digital identities" which combine static data with existing customer information to create a more secure and dynamic verification process. For example, this could be document verification combined with behavioral patterns, such as the type of transactions a customer most frequently makes or even how they type on a touchscreen phone.

Blending traditional customer information with alternative data sources means financial institutions can create a padlocked digital identity that's more difficult for hackers to mimic. This data can also be updated dynamically to accurately mirror any changes in a customer's transactions or behavioral patterns.

With multiple sources and data types comprising a digital identity, the challenge lies in updating these profiles quickly enough to stay ahead of criminals by identifying and clamping down on any fraudulent activity before the damage is done. Thankfully, Redis Enterprise can act as a fast in-memory identity database to deliver the sub-millisecond low latency and high write throughput required to keep digital identities updated in real time.

Companies are also leveraging Redis Enterprise's sub-millisecond latency to power real-time fraud detection systems. One such example is Simility, a PayPal service that provides cloud-based fraud detection combining machine learning (ML) with human intelligence.

The company chose Redis Enterprise as a database supporting its fraud detection service so that it could continue guaranteeing low latency to its users while processing millions of connections and billions of transactions per day.

Redis Enterprise can also bring the power of in-memory processing to other components of a fraud detection system. The RedisGraph module enables fast graph processing that can be used to detect synthetic fraud.

In addition, Redis Enterprise itself provides the highest level of data security by providing access control lists (ACLs) and role-based access control (RBAC) so that access to database keys and commands are limited to specific groups of users.

## The costs of fraud and cybercrime

Cybersecurity Ventures expects global cybercrime costs to grow by 15 percent per year over the next five years, reaching $10.5 trillion USD annually by 2025, up from $3 trillion USD in 2015. That's because many organizations simply aren't ready for the threat. Financial services companies need to manage the risk to their data from accidental breaches to cyber attacks and fraud. Human-initiated cyber attacks are also decreasing. A cybercrime report from LexisNexis Risk Solutions highlights a 41% increase in bot attacks during the first half of 2021, with financial services companies experiencing 638 million bot attacks in this period.

The consequences can be enormous, from reputational damage that can negatively affect customer loyalty to stock depreciation as investors jump ship in reaction to bad publicity. Direct financial losses can be compounded by heavy fines from regulators and settlements with affected customers.

Put it all together and the price tag can reach into the billions. The 2019 Capital One data breach, for example, saw the bank's share price fall 5.9%, while the cost of the 2017 Equifax breach has already cost almost $2 billion and the final cost, depending on customer settlements, could approach $10 billion.

# 4. Availability and scalability

All these drivers of change can be the springboard to new partnerships, service offerings, and products, but only if there is a robust and reliable system underpinning it all.

It's not optional. The increased demand from customers has been matched by a growing convergence of B2C and B2B expectations. Customers now expect financial service providers to offer experiences that match the best consumer-digital services available—that means being fast and always available, even during planned and unplanned traffic surges. Similarly, business customers now expect the same standard of service as consumers.

In addition to reliability, financial services companies need the flexibility to cope with the unexpected. The Covid-19 pandemic is a brutal reminder of the need for crisis management plans, including the ability to direct customers to alternate channels or, better still, make seamless backend adjustments so consumers never even see the problem.

Too often, companies plan for things like uninterrupted services based on previous crises. But that's not always how it works. The pandemic has been unusual in that it is not a threat to infrastructure like a hurricane or an earthquake might be, but it is still a global crisis that has upended customer behavior, reshaped demand, and deeply disrupted business-as-usual.

Companies have had to navigate this period while supporting customer channels that might not be their usual priority, providing emergency products and services to struggling customers, and maintaining momentum on their existing digital transformation efforts. You need the technological capacity in place to increase capacity or direct users to a different channel when the need arises. If you don't have that in place ahead of time, then by the time you need it, it will be too late. Many companies are turning to the cloud or managed services approaches in order to reduce time to market for new applications by freeing IT teams from day-to-day management to focus on R&D.

Redis Enterprise offers both high availability in any scenario and the flexibility developers need to rapidly deploy in any environment. Using Active-Active geo-distributed technology, Redis Enterprise allows Redis databases to be replicated across multiple geographic regions, enabling local latencies, rapid automated failover, and data consistency for globally distributed applications. Redis Enterprise is also available as a managed service via all three major cloud providers, enabling developers to reduce time to market by quickly launching databases in the cloud.

## 3 Ways Redis Enterprise supports the financial services data layer

1. Whether as a cache, session/user profile store, or fast in-memory database, Redis Enterprise delivers a great user experience by consistently providing high throughput and sub-millisecond latency.

2. Building innovative solutions in financial services involves a wide variety of data types—Redis Enterprise supports full-text search, graph processing, Bloom filters, and more so that developers can meet the real-time requirements of today's applications.

3. As artificial intelligence and machine learning become more widely adopted, efficient AI model serving has emerged as a challenge for organizations trying to run ML pipelines in production.

Predictive applications like fraud detection rely on machine-learning models trained on historical data to make predictions today about future events. A Feature Store provides a repository of commonly-used features (data points) for data scientists, engineers and applications to work with.

Online Feature Stores are optimized for low-latency real-time queries of typically small datasets and are primarily used for online predictions and model inferencing. One of the largest global banks in the world is currently using Redis Enterprise as an Online Feature Store database for real-time fraud detection.

# Conclusion

Data is key to addressing these challenges. Financial services companies that want to stay relevant must manage and use data in ways that benefit their customers, enable agile business processes, and support new products and services.

The squeeze on financial services margins will continue, as will regulatory oversight—exacerbated by the ongoing effects of the Covid-19 pandemic. However, this turmoil can be an opportunity for smart organizations able to transform their businesses to meet the needs of today's customers.

With multiple data models, financial institutions can leverage Redis Enterprise to bring real-time performance to use cases like identity verification, transaction scoring, fraud detection, and more.

Redis Enterprise Cloud and tiered storage options in Redis Enterprise offer an attractive TCO by eliminating data center-related spending and improving IT productivity to let your organization focus on rapid innovation, rather than just keeping the lights on. In a recently commissioned TEI study conducted by Forrester Consulting on behalf of Redis, the analysis showed companies can achieve up to 350% ROI by using Redis Enterprise.

Finally, Redis Enterprise provides enterprise-grade reliability, performance, and availability for mission-critical financial applications. It ensures five-nines (99.999%) availability around the world with Active-Active Geo-Distribution across regions, and provides an in-memory data layer that delivers sub-millisecond latency at virtually any scale.

*" With the improved scalability of Redis Enterprise, interviewees avoided costs related to expanding their databases for both new and existing projects. Interviewees also improved their income by more quickly taking advantage of new business opportunities while recouping revenue previously lost to poor database performance. "*

## What do the experts say?

Forrester Total Economic Study (TEI) 2021

**350%**
ROI

**$4.12m**
Net Present Value (NPV)

**$5.3m**
Total Benefits Present Value

The Forrester Total Economic Study (TEI) is a comprehensive review of the value offered by certain businesses to help organizations understand the financial impact of investing in technology.

In this study, Forrester interviewed six customers who have used Redis Enterprise, combining the results from each experience to provide an aggregated financial analysis. Below is an overview of the results along with an excerpt from the report.

Want to download the full study?

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# About Redis

Data is the lifeline of every business, and Redis helps organizations reimagine how fast they can process, analyze, make predictions, and take action on the data they generate. Redis provides a competitive edge to any business by delivering open source and enterprise-grade data platforms to power applications that drive real-time experiences at any scale. Developers rely on Redis to build performance, scalability, reliability, and security into their applications.

Born in the cloud-native era, Redis uniquely enables users to unify data across multi-cloud, hybrid, and global applications to maximize business potential. Learn how Redis can give you this edge at redis.com.

## Sources

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