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# The Tech Imperatives Banks Need to Focus on Now

The marching orders are clear: Relieve profit pressure, speed products to market, tackle regulations, and reduce risk.



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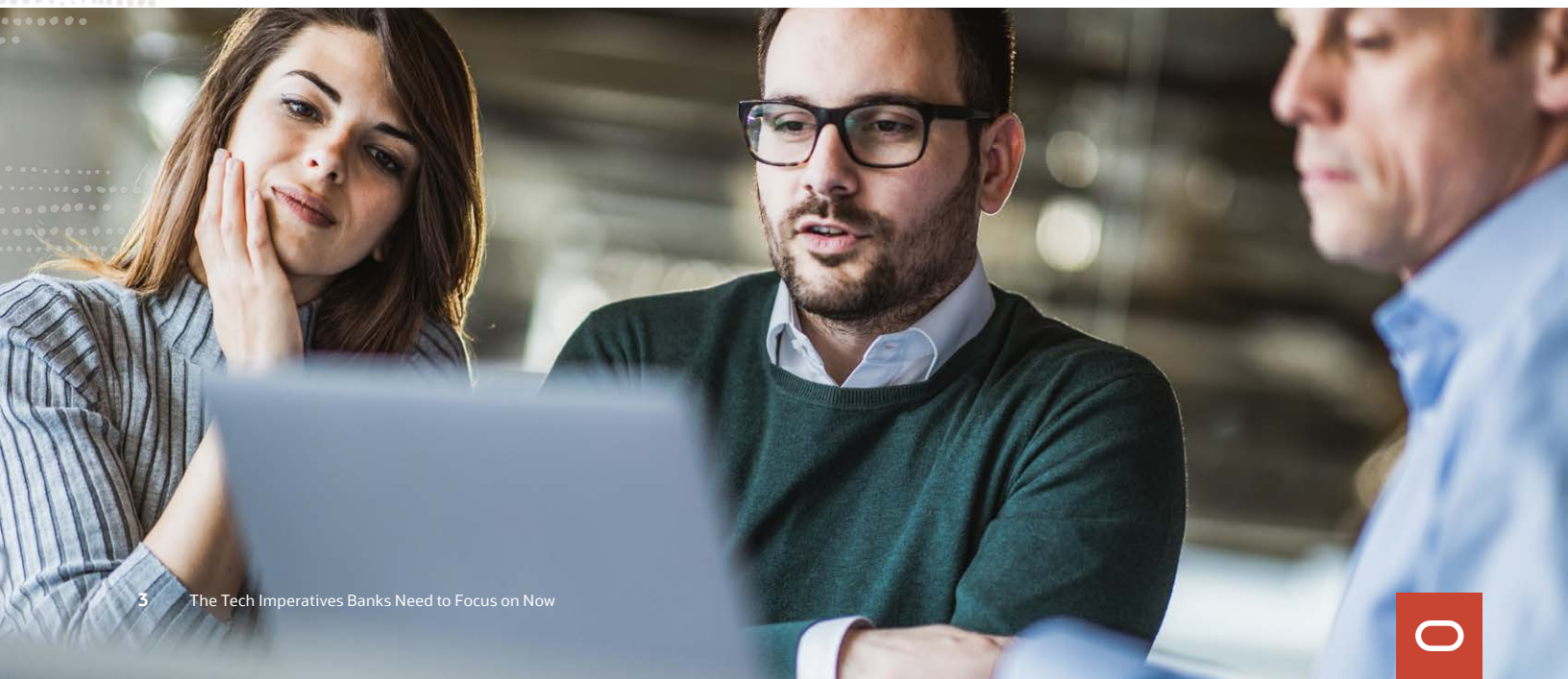
**By Aaron Ricadela**  
**Senior Writer, Financial Services**

Caught between tighter capital requirements and higher costs on one side and the need to fund innovation to combat new competitors on the other, banks worldwide are hard pressed to make the right calls on technology spending.

Banks' returns on equity, a key industry profit measure, have been battered since the financial crisis 15 years ago. Globally, more than half earned less than their cost of equity in 2022, and profit levels are expected to keep falling through 2030, according to consultancy McKinsey & Co.

On the retail side, with interest rates at their highest levels in 15 years, large and midsize banks are paying more to depositors to keep them from moving money into higher-yielding money market funds. Their investment banking and trading businesses have slumped amid weak M&A and IPO markets and investors' abating risk appetite. Midsize institutions face stricter liquidity requirements following the spring 2023 [failure of several banks](#). And the threat of cybersecurity breaches, with their potential to leak data and tarnish reputations, looms large over decisions on opening computer network access.

Meanwhile, new competitors are knocking on the door. "Large tech companies, already 100% digital, have hundreds of millions of customers, as well as enormous resources, in data and proprietary systems—all of which give them an extraordinary competitive advantage," JPMorgan Chase CEO Jamie Dimon acknowledged in his April 2023 annual letter



to shareholders. “The growing competition to banks from each other, as well as shadow banks, fintechs, and large technology companies, is intense and clearly contributing to the diminishing role of banks and public companies.”

The nimble newcomers offer customers faster ways of financing, investing, and moving money. Fintechs are peeling off portions of banks’ lending and financing businesses by offering lower interest rates and speeding approvals, while larger challengers are integrating financial services into their stores (think Walmart) or operating systems (Apple and Google).

No question, banks have incumbent advantages. They’ve earned their customers’ trust over the years. And they’ve amassed troves of data ripe for deep analytical mining to help them tighten regulatory compliance, better analyze client portfolios, and automate more investment advice.

“A lot of the successful banks have been looking at the big tech companies and saying, ‘What can we borrow in terms of organizational structure?’” says Alexandra Mousavizadeh, CEO of London-based Evident, which this year published an index that ranks the 23 largest North American and European banks by their AI leadership. Topping the Evident AI Index, based on research, patents, talent, and 140 other criteria, are JPMorgan Chase, Royal Bank of Canada (RBC), Citi, and UBS.

A big challenge for banks is the fact that only about 20% of their IT budgets go to “change-the-bank” initiatives—creating innovative new products and improving existing ones. The other 80% is sunk into maintaining what’s already running. “We’re in the phase now where



changing the bank has become running the bank,” Mousavizadeh says. “Those at the front are doing both at the same time.”

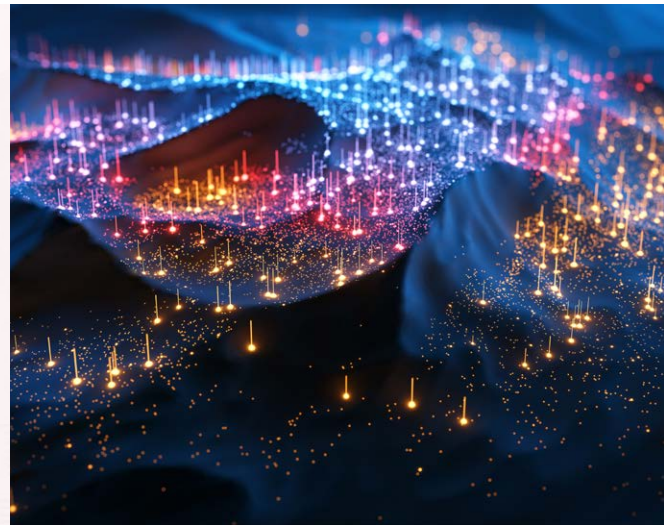
To help make that happen, banks will have to accelerate their uptake of cloud infrastructure and applications. Just 13% of banks surveyed by McKinsey in 2022 had moved half their IT systems to the cloud, though 54% said they planned to by 2027.

Public and private clouds, and the development tools that underpin them, let banks bring new services to market more quickly and add computing power as needed—which is critical for digital products accessible via phones and for interoperability with fintechs.

“Every one of these banks, if they were starting over again, would not have data centers and go to the cloud.”

**Jay Dweck**

Cloud computing adviser and a partner at hedge fund Tekmerion Capital



Cloud computing can also lower costs by reducing legacy system maintenance and consolidating redundant applications and other IT from acquired companies on a standard platform, freeing up money for those change-the-bank initiatives.

“Every one of these banks, if they were starting over again, would not have data centers and would go to the cloud,” says Jay Dweck, who advises financial institutions on cloud computing and spent decades working at the intersection of technology and trading desks at Goldman Sachs and Morgan Stanley. Problems arise when banks’ IT departments move some applications to cloud platforms without adding to their capabilities, keep other applications running in their own data centers, and then can’t show CEOs the cost savings, Dweck says. “The intuition is right, but it’s very difficult to get done.”

Here are five technology strategy imperatives financial institutions need to focus on and the tradeoffs their leaders need to consider.



## 1 Free budget for change-the-bank initiatives

Banking profits have been declining for a decade and aren't likely to recover soon. Return on equity for the US banking sector fell sharply during the early months of the pandemic, then climbed to nearly 15% in the first quarter of 2021 before declining again to about 13% in the first quarter of 2023, according to data compiled by Statista. The ROE for European banks has dropped even lower, plunging into negative territory in the second quarter of 2022 before climbing to a still-anemic 9% in the first quarter of 2023, according to the European Central Bank. Higher capital requirements, lower fees and commissions, and higher loan loss provisions are partly to blame for the recent softness.

Banks' net interest margin has been squeezed by regulatory "ring-fencing" arrangements, which separate retail banking operations from riskier investment banking and corporate finance.

These trends make it all-the-more important for banks to move their IT spending out of costly system maintenance—the so-called run-the-bank costs that make up about 80% of their tech budgets—and into projects that can boost revenues and margins. (Some savvy CIOs place important initiatives in the run-the-bank bucket to protect them, then pad their change-the-bank budget with proposals they suspect may be cut anyway.)

Moving core software for managing accounts, transactions, and bookkeeping from mainframes to platforms that are less costly to maintain can help.

So can cloud computing. It pressures banks to make their applications more efficient so they don't burn through CPU hours, and it lets them direct IT resources to new features only as needed. Replacing decades-old systems written in dated programming languages with applications that run as so-called microservices lets banks deploy web and mobile apps more quickly. Software-as-a-service applications—including ones that standardize, automate,

and accelerate financial close, procurement, talent management, and other key processes—can whittle down operating expenses too.

Applications and infrastructure in the cloud scale quickly to deal with rising data volumes and customer demands, supporting expanded electronic payment processing and the high performance computing simulations needed to model risk.

“On premises, people don’t worry about applications’ efficiency,” says Dweck, who is also a partner at hedge fund Tekmerion Capital. “But in the cloud, there’s value in worrying about this.” Trouble is, banks often eschew software rewrites to speed cloud migrations, then need to win approval for projects that don’t add features and are saddled with migration costs. “Anyone who has a tight run-the-bank budget can’t do that because they don’t have the money,” he says.

A lift from higher interest rates is giving banks a window to invest in innovation. Whether that boost can outpace the higher costs they need to bear because of inflation—including for IT operations, outsourcing, and cloud computing—remains to be seen.

## Rate Reversal

Rising interest rates are forecast to start heading back down in 2024

	US Federal Reserve federal funds rate	European Central Bank deposit rate	Bank of England bank rate
2022 actual	1.7%	2.0%	3.5%
2023 forecast	5.1%	3.75%	5.25%
2024 forecast	5.2%	3.0%	4.25%
2025 forecast	3.6%	2.0%	2.5%
2026 forecast	2.7%	2.0%	2.5%

Source: S&P Global Ratings



## 2 Fend off big tech and other challengers


Five years ago, EU banks were forced to provide rival fintechs with API access to the accounts and data of willing customers under the revised Payments Services Directive. A new European Commission directive on open finance may require banks to share additional financial data about investment and insurance products.

That's not the only incursion into the banks' turf. In the United States, Apple offers a consumer credit card and high-yield savings account that exceeded US\$10 billion in deposits in the summer of 2023, and it's moving into credit risk assessment and buy-now-pay-later financing. Walmart MoneyCenters offer banking services, such as checking and credit cards, to the retailer's 230 million weekly store visitors. Taking advantage of existing assets—the iOS operating system that weaves Apple Wallet right into its home screen or Walmart's expansive store floors—lets those companies snag new customers efficiently.

Amazon.com and Google offer payment services of their own and partner with fintechs on automated portfolio management, loan verification, and small-business cash management services. Automakers, too, have entered the payments realm: Mercedes-Benz lets drivers pay for electric vehicle charging from their dashboards, BMW owners in Germany can reserve and pay for parking spots using their iDrive dashboard system, and Tesla touchscreens let owners make vehicle financing payments.

Banks need to turn the customer data they have on hand to their advantage as upstarts of all sizes move into their markets. Wells Fargo, Bank of America, and JPMorgan Chase are among a group of banks developing a digital wallet for online checkout to compete with PayPal, Apple Pay, and other online checkout systems. By looking at data from 150 million card

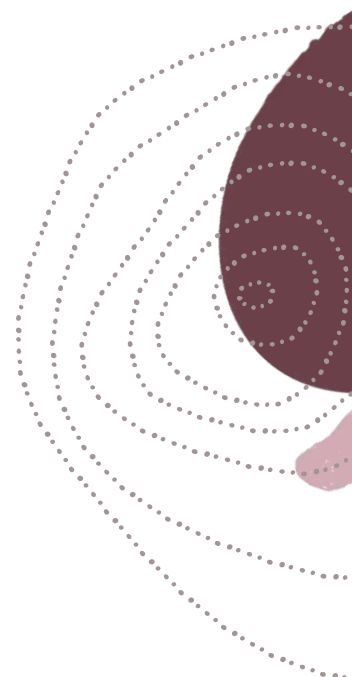




accounts, they can identify online buyers with low credit risk and autofill card data for them to reduce the risk of fraud.

JPMorgan Chase and Wells Fargo have signed up for the Federal Reserve's FedNow instant payments system, introduced in July 2023 to try to modernize the United States' old, check-based one. The service lets Americans send money instantly via their financial institutions with immediate settlement, compared with older systems that settle money transfers in batches. Banks on both ends of the transaction need to subscribe, and the data exchange can give them an edge when competing with peer-to-peer lending platforms.

A big priority for many banks is integrating their services directly into the platforms of nonindustry players—so-called embedded finance. JPMorgan Chase, for example, is partnering with Oracle to embed payment, corporate credit card, and expense report reimbursement services into Oracle's cloud-based financial applications, letting B2B buyers, sellers, and service providers streamline and automate transactions.



### 3 Scale AI to drive competitive advantage

Banks are sitting on reams of valuable customer data they can use to prospect for business, tailor investment advice, improve payment processing, and prevent fraud. Thus far, they've been limited by their technical ability to take full advantage of it.

Those that unlock their data silos and apply AI-based analytics to their data will have a leg up on new competitors in a number of areas, including capital markets research (helping advisors make better decisions for clients) and proofing clients' portfolios for risk to suggest reallocations. Generative AI, which can summarize research and create detailed tables and spreadsheet formulas, could lead to big boosts in productivity. Promising applications of generative AI include routing payments, detecting trade discrepancies, assisting underwriting, and improving cash forecasting.

Banks are also applying AI to comply with Know Your Customer rules and other fraud-fighting measures by finding patterns in transaction and web data. For example, Scotiabank, a Toronto-based lender with C\$1.3 trillion in assets, is attacking money laundering using natural language techniques to analyze spoken and written text and AI to detect anomalies in payment data. "As the speed of funds increases through these new fintechs and payment channels, it's a challenge," says Stuart Davis, the bank's executive vice president for internal data protection management. "We are a choke point for the movement of the money, and if we can see it, we can disrupt it."

Yet many banks are struggling to even implement conventional predictive analytics techniques that can look across customers' portfolios to spot cross-selling opportunities or help cut loan default risk. Banks need to clear that hurdle before adopting more advanced AI. Making the jump will be critical. Generative AI techniques could create an additional US\$200 billion to US\$340 billion in annual revenue across the industry, McKinsey estimates, if banks maximize its use for regulatory compliance, customer service, coding, and risk management.

"Banks will need to move fast to get ahead of the competition as incredible growth and massive boosts in productivity are within reach," Accenture said in a May 2023 report.

Some already are. Deutsche Bank has struck a partnership with NVIDIA to use their AI-optimized graphics chips and software to warn bankers about counterparty risk and help employees navigate internal systems via a digital assistant. JPMorgan Chase has more than 900 experts creating new AI models, 600 engineers writing the code to put models into use, and a 200-person AI research group looking at new finance problems the technology could help solve. And in June 2023, the bank named Teresa Heitsenrether as chief data and analytics officer to head AI adoption companywide.

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**Alexandra Mousavizadeh**  
CEO, Evident

“AI and the raw material that feeds it, data, will be critical to our company’s future success,” Dimon said in his letter to shareholders. Increased AI usage is also closely tied to cloud computing’s on-demand capacity and speed, he said.

At a minimum, banks need to tackle the work of building a data infrastructure that’s ready for advanced predictive analysis and AI. That means cleaning and labeling data and storing it in systems where it can be accessed by a range of applications. To model loan portfolios and make mortgage lending decisions, for example, progressive banks are creating synthetic data sets to protect customers’ privacy and mitigate bias. “Any cracks in your data infrastructure really get illuminated the more sophisticated your AI tools are,” Evident’s Mousavizadeh says.

## 4 Get ahead of emerging regulations

As if banks didn't have their hands full with the next batch of Basel III rules, a hailstorm of environmental and cybersecurity regulations is also heading their way.

US megabanks are now facing revisions of the “endgame” reforms to the Basel regulations that followed the 2008–2009 financial crisis. They have until 2028 to comply with the new rules. Banks will need to replace their in-house risk models for capital requirements with standardized ones and run parallel methodologies for computing risk-weighted assets. Stricter minimum capital requirements will also apply to banks with US\$100 billion or more in assets.

More scorecards are in the offing. The international Taskforce on Nature-related Financial Disclosures is recommending that financial services firms record their environmental impact this year—including the impact of their financing activities. The US Securities and Exchange Commission is proposing rule changes that would compel publicly listed companies to report their climate impact. European banks have until the end of 2024 to reflect climate risks from extreme weather or pollution in their governance, strategy, and risk management, according to a European Central Bank decree.

To respond, banks need to weave environmental, social, and governance data into processes such as credit approvals. They also need to capture more data from customers and control its quality.

In cybersecurity, the European Union's Digital Operations Resilience Act put technical standards in place that banks and insurers need to adhere to by 2025, including reporting cybersecurity incidents and testing their systems' ability to withstand attacks.

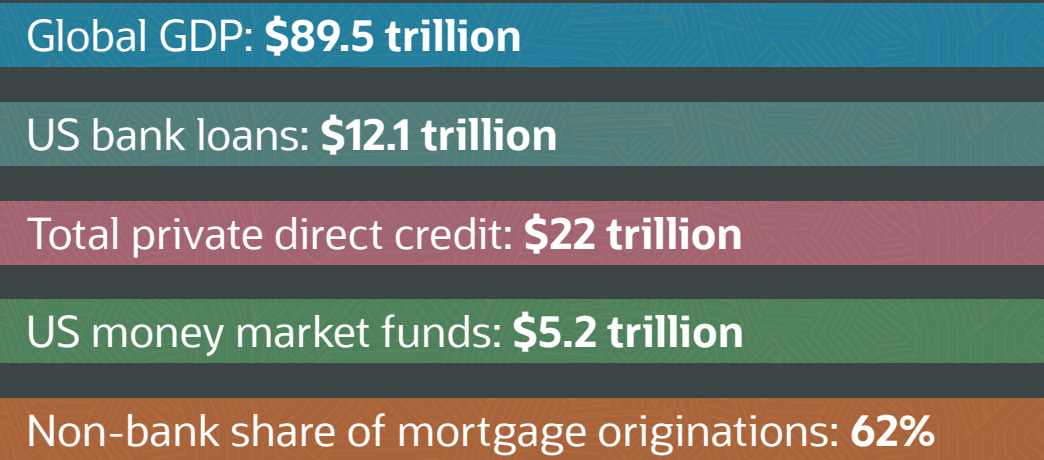
Cyber stress tests are also coming. Guarding against cybersecurity risks has become one of the European Central Bank’s top banking supervision priorities through 2025, shaped in part by a failed 2018 IT migration and subsequent data breach at UK bank TSB after their acquisition by Spain’s Banco Sabadell. The ECB plans to begin testing banks’ resilience to cyberattacks in 2024, with results published by midyear. The stress test will simulate an attack on the databases underlying banks’ most important applications.

IT systems must be able to collect, collate, and report more data without swelling the run-the-bank costs that come from regulatory compliance. Data warehouses that contain a staging area for collecting data and ensuring its quality, a tier for storing master records, and different “engines” for running stress tests is one possible approach, says Marcus Praetzas, Deutsche Bank’s global head of database services.

There may be a flip side to more and increasingly complex regulations: They favor banks with the expertise to navigate them—which many fintechs lack.

## Diverse financial sources

Size of sector, 2022



Source: JPMorgan Chase 2022 annual report



## 5 Build talented teams

Implementing AI, reckoning with increased reporting requirements, and paring legacy costs to invest in innovation won't be possible unless banks can hire and keep the right people. The tech professionals in highest demand are data scientists, AI engineers, executive cybersecurity experts, database administrators, and top coders. And banks are still desperate to hire and retain mainframe and minicomputer specialists, whose numbers are waning.

In AI, banks' traditional recipe of attracting top technical talent through higher pay has lost some of its zest. Members of the close-knit community of large language model builders keep tabs on one another's work, prefer to team up and publish often, and favor well-funded startups with minimal bureaucracy.

It's not just the best model builders who are in high demand. Banks that can't attract hotshot data engineers risk bogging down their AI specialists with preparing and cleansing data for modeling, according to the Evident report. Top engineers, too, shun "banks' perceived lack of technical agility" and legacy systems in favor of tech companies, the report says.

Wells Fargo, ING, and JPMorgan Chase are among the forerunners in creating AI talent development programs, according to the Evident Index. Others are creating dedicated AI research labs. RBC's Borealis AI has assembled computer science, physics, and finance PhDs



to work on basic and applied research in areas including digital currency and electronic trading. TD Bank's Layer 6 lab is investigating natural language processing, time series data analysis, and other problems.

Hiring and retention rose to become C-level executives' top concern for 2023, up from fourth in 2022, topping cybersecurity and digital transformation, according to a study by the consultancy Horváth of 433 executives worldwide, 19% of whom work in financial services, the largest group surveyed.

For technical talent, building university relations, publishing papers, attending academic conferences, and engaging with open source development communities can help banks find and retain key employees—and burnish their brands.

—Aaron Ricadela is an Oracle writer based in Frankfurt, Germany, and a former business journalist covering finance and technology for Bloomberg News, BusinessWeek, and InformationWeek. Sourabhi Sen assisted with the research for this ebook.



## Run complex workloads on Oracle Cloud Infrastructure

Oracle Cloud Infrastructure (OCI) services help banks run trading, finance, risk management, fraud detection, and payment software more efficiently, with higher performance and more resilience to downtime. Financial institutions are moving workloads to public cloud, hybrid cloud, and multicloud environments to support emerging business models, meet evolving regulatory requirements, and keep up with competitors.

- **Artificial intelligence:** OCI Supercluster is a high performance system featuring more than 32,000 NVIDIA A100 GPUs per cluster, ideal for training generative AI. Oracle also offers the latest NVIDIA H100 GPUs. Prebuilt OCI services for digital assistants, sentiment analysis, and document understanding are available for users' own applications. Together with Cohere, Oracle offers large language models that can help banks analyze large volumes of financial documents, support R&D, and aid fraud detection.
- **Oracle Analytics:** is a platform for preparing, modeling, visualizing, and collaborating on data within security and governance guidelines. Companies can choose to start on-premises or in the public cloud and have the flexibility to move. OCI also offers software for building data lakes and processing big data in Hadoop.
- **Cloud security:** Providing physical isolation of machines that run computing and database services, as well as network design, data encryption, and API security, OCI meets the information security requirements of banks and other financial services organizations. Oracle Security Zones helps customers enforce policies across computing, network, storage, and databases. Oracle Cloud Guard provides security posture management to help detect misconfigured resources, insecure activity across tenants, and malicious threat activities. These and other OCI security services help financial services organizations resolve cloud security issues and address threats in a timely manner.
- **Oracle Autonomous Database** delivers high performance and scalability for transaction processing and data analysis, and it ensures mission-critical workloads stay online. The cloud database handles backups, recovery, troubleshooting, and tuning automatically, and it patches itself each quarter—more frequently if needed.



## Prepare for changing markets with Oracle Cloud applications

In today's ultracompetitive banking industry, making accurate forecasts, managing risk, and staying compliant with ever-more complex regulations are paramount. Banks are also competing with one another and the technology sector for the best talent. Oracle's financial, HR, and other applications can help.

Some of the largest global banks are embedding financial services for business customers directly into their [Oracle Fusion Cloud ERP](#) tools. In addition to the JPMorgan Chase example cited above, HSBC offers a multicurrency digital wallet in [Oracle NetSuite ERP](#). In terms of back-office support, [Oracle Fusion Cloud Accounting Hub](#) allows for the flexible creation of additional subledgers.

- [Oracle Fusion Cloud HCM](#) lets recruiters connect to LinkedIn from within the application and pull in data to help with job offers. There are also tools that can capture local market data to set compensation levels and that help ensure regulatory compliance. Generative AI built into the application suite can help employers create job requisitions and descriptions.
- [Oracle Sales](#) and [Oracle Marketing](#) applications help financial institutions target upsell candidates by giving them a complete view of their customers using a single data set and model—a vast improvement on the typical line-of-business view. Internally, financial institutions are tapping the application suite to simplify and standardize the creation of sales plans and the compensation models aligned with them.



## Oracle Financial Services: Build loyalty and drive growth

Banks are gaining new views of financial data, fending off fintech competition, and girding themselves for coming regulations with Oracle Cloud Applications and Infrastructure. Address retail banking customers' needs no matter where they are, give corporate clients real-time views of cash and liquidity, and manage compliance faster while keeping costs down.

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