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Financial Services Practice

Unlocking value from technology in banking: An investor lens

Investors, boards, and management teams are looking for banks to demonstrate differential value from technology. Our research provides a framework to link technology investments to value creation.

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Over the past few years, global technology spending in banking has been increasing 9 percent a year, on average, outpacing revenue growth of 4 percent. In 2023, this spending totaled $650 billion,[1] which is roughly the GDP of Belgium or Sweden. Despite this significant spending, it hasn't been easy to quantify the net benefits. Moreover, the banking sector has experienced the following challenges:

— *Declining productivity.* Labor statistics suggest that since 2010, productivity at US banks has been falling 0.3 percent a year, on average, even as most other sectors have experienced productivity gains. Furthermore, the correlation between banks' revenues and their number of full-time employees is very high, regardless of the institution's size, suggesting that the industry hasn't been able to deliver scale economies on technology spending (Exhibit 1).

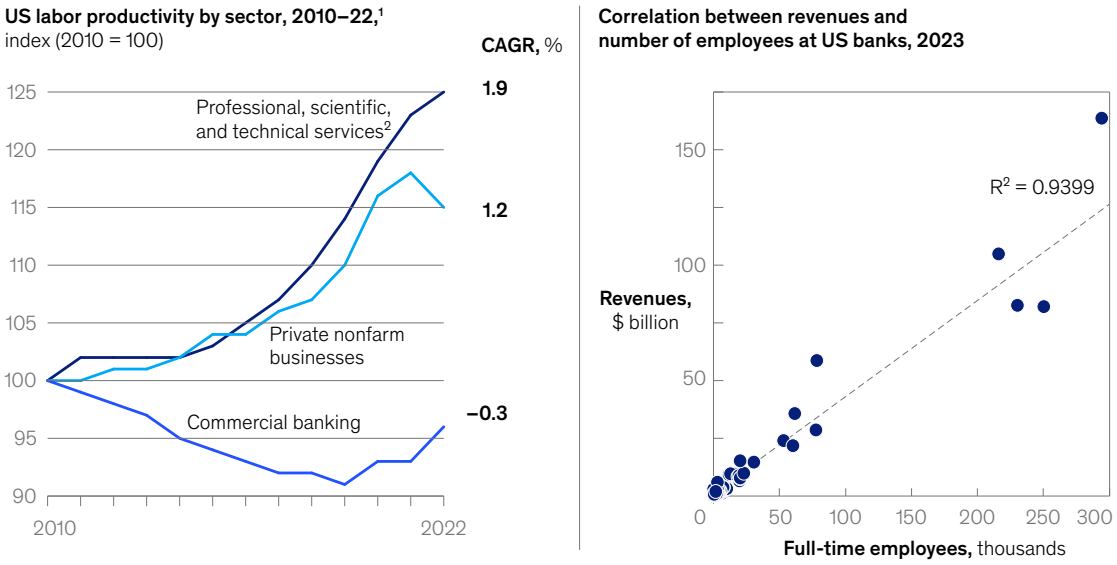
— *Unclear competitive differentiation.* If a bank spends more on technology than its peers do, it doesn't necessarily lead to a competitive advantage. For example, a large bank and a small bank can both have a mobile app with a 4.9 app store rating, even if the small bank's technology spending is a tiny fraction of the big bank's. Banks of all sizes spend around 10 percent of their revenues on technology, and a robust ecosystem of vendors ensures that new developments in technology are quickly commoditized, copied, and distributed, minimizing first-mover advantages.

— *Increasing cost of complexity.* Growing demands on technology due to regulatory compliance, adoption of AI, and a wave of legacy-system renewals will likely require the industry to continue increasing technology spending. But standard ROI calculations often fail to

[1] 2024 Enterprise IT Spending Forecast for Banking and Investment Services, Gartner, 2023.

Exhibit 1

Despite tech spending, productivity at US banks has been falling and economies of scale have been elusive.



[1] Three-year moving averages are used for professional, scientific, and technical services and commercial banking.
[2] Includes subsectors such as legal services, accounting, consulting services, computer systems design, and scientific research.
Source: S&P Capital IQ; US Bureau of Labor Statistics data as of September 2024

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acknowledge the full costs associated with a tech business case, such as maintenance of the newly built application, increased technical debt from the complexity created, and future infrastructure expenses. This total cost of ownership for a new application can often outstrip the benefits of building one.

While technology has led to major changes in banking, as evidenced by innovations such as mobile apps, algorithmic trading, and automation, quantifying the value from these developments has been difficult for many banks, particularly when it comes to specifying what they are doing better than their peers.

The growth in technology spending is naturally drawing increased scrutiny from management teams, board members, and CEOs, as they expressed in interviews we conducted for this research. This perception was also reflected in our interviews with several leading equity analysts, where we asked for views on value creation and the role of technology in banking. A general sentiment emerged that technology spending is often seen as opaque and that the value enabled is unclear to stakeholders (see sidebar, "Banking equity analysts weigh in").

In this article, we outline how banks can extract greater value from their technology spending—and demonstrate that value to stakeholders—by shifting the way investments are allocated and driving outcome-based execution.

Currently, some financial institutions are in a negative loop: they have limited discretionary capacity for tech spending but determine they need to build certain solutions themselves, often because vendors' offerings don't meet their needs. In the interests of organizational harmony, these institutions typically decide which projects to prioritize from the bottom up, with limited top-down direction, which results in a large number of small technology initiatives whose returns are often unclear. These initiatives typically don't have the critical mass of funding needed to show results. And because they aren't expected to show immediate outcomes, these initiatives are executed using a time-and-materials approach that prioritizes minimizing cost rather than maximizing value enabled. This in turn complicates the articulation of that value to investors.

Some other institutions have created a virtuous cycle. They use a value-focused approach and ensure cross-functional collaboration among the

Banking equity analysts weigh in

As part of our research, we interviewed several prominent US banking equity analysts about technology spending in banking. Here are highlights of what they had to say:

"Technology investments are like a call option on becoming a best-in-class digital bank 2.0, but it is unclear to us if or when this option will be in the money."

"Most of the technology spending seems to be table stakes or required to meet regulatory requirements—the share of technology investments driving competitive differentiation seems very limited."

"Technology spending is very opaque; banks would benefit from communicating more openly on the value it enables."

"We have found that the amount spent on technology is the wrong measure. In fact, we believe that the market should be more focused on what banks are spending their technology dollars on."

"There is no shortcut to value creation. Technology needs to positively influence the enduring, fundamental drivers of bank performance to have an impact on shareholder returns."

C-suite (CEO, CFO, CIO, business unit heads) to ensure value realization beyond the CIO's office. The approach entails unlocking more technology capacity through productivity improvements, concentrating technology investments in a small number of business domains where the executive team has determined outsize value can be enabled, adopting an outcome-based execution approach to ensure value realization, and developing a stronger articulation of value to investors that is directly linked to financial commitments (Exhibit 2).

The technology investment conundrum

Banks tend to face the following challenges when it comes to technology investment governance:

— *Limited discretionary technology capacity.* Many banks don't disclose specifics about their technology spending. At large banks that do disclose this data, "run the bank" and "mandatory change" spending often represents up to 70 percent of technology budgets. These categories include infrastructure hardware and software, IT operations, regulatory compliance, and other types of unavoidable spending, leaving only limited capacity for investments that can drive competitive differentiation (Exhibit 3). Technology productivity is also often perceived to be low. For example, developers may spend less than half their time coding, and implementation of new features can take as long as a year.

— *Lack of top-down portfolio view.* Even in this digital age, many executives still feel ill-equipped in the language of technology and often delegate important investments to the tech department. However, many tech departments feel they don't understand the business strategy and seek out business collaboration. If they don't receive this partnership at the senior levels, the limited amount of discretionary "change the bank" spending is typically allocated by more junior managers to disparate individual initiatives, and a top-down view is not applied consistently to ensure that spending is aligned with the business strategy. This approach results in investments being spread too thin, as opposed to being concentrated in a few strategic areas of focus. Funding allocation refreshes are also often made with a "last year, plus a bit

Exhibit 2

By adopting a value-focused approach, banks can create a virtuous cycle to unlock higher returns from technology spending.

Typical approach vs value-focused approach

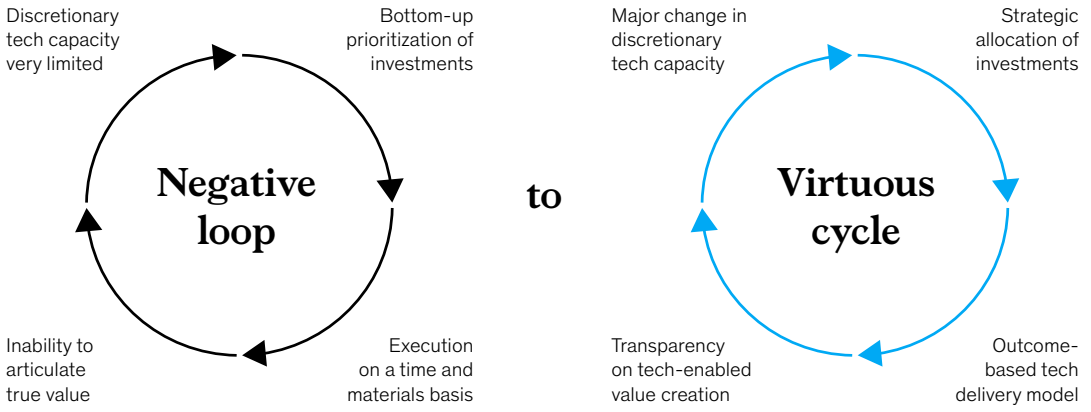

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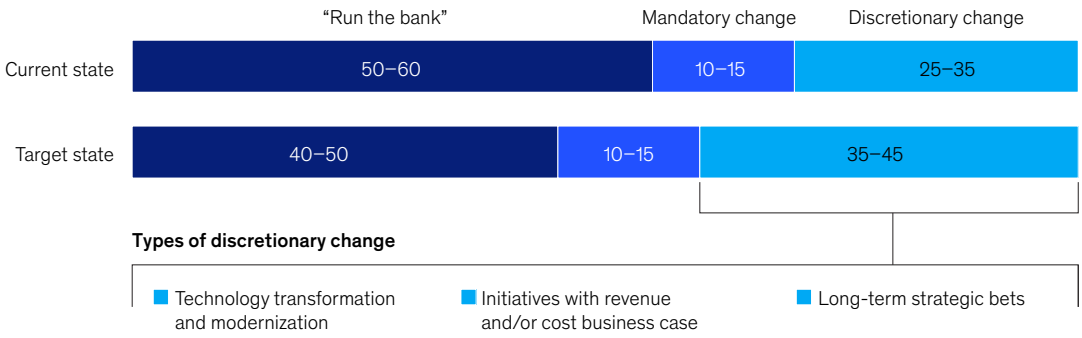
Exhibit 3

Discretionary change capacity in banks' tech spending is typically limited and can be optimized to bring more value.

Example of technology spending by category, % of total



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more" mentality, instead of reallocating based on performance and merit.

— *Insufficient focus on outcomes.* An initiative's success is often measured by whether code was released, not by whether the business value expected was realized. As such, operating budgets for areas affected by the technological change are often not adjusted to account for the expected financial impact. This lack of outcome orientation permeates the incentive structure, including how systems integrators are evaluated by procurement groups that frequently value low unit costs over quality or impact generated. This is a logical approach to take if there is no clear articulation of the value to be enabled, so the focus is typically on minimizing costs. Unfortunately, quality often suffers as a result. This led one executive to say, "The only thing I get from paying by 'time and materials' is invoices for more time and more materials."

— *Inability to articulate true value.* As a result, the CEO, board, and investors may not get the clarity they seek about the value enabled by technology spending, and they, too, may end up treating tech as an expense line item to be reduced. This situation exacerbates the negative loop we described, as compressed spending leads to more fragmentation of investments and reduces the quality of vendor and internal labor, resulting in more incremental progress, slower delivery, and poorer outcomes.

Banks can break this negative loop and move to a virtuous cycle to extract more tangible shareholder value from technology. An executive explained, "If you want to tell investors a powerful value creation narrative, then work backward from that and allocate investments accordingly."

Investing strategically to drive shareholder value

To assess where to invest in technology, banks can use a combination of approaches.

At the strategic level, executives can consider the fundamental drivers of valuation in the banking industry and for their bank's stock price. They may then be able to link technology investments to those drivers and to the financial information they provide to their board and investors.

Similarly, at a more micro level, firms can use objectives and key results (OKRs) to link technology spending more tightly to their corporate strategy

and specific business outcomes. OKRs spell out the company's priorities in terms of specific accomplishments and performance improvements. While no single methodology is a panacea, the principle of linking technology work to its eventual impact can transform how incentives work within a company.

Industry-level drivers of value

McKinsey conducted an industry-level analysis to discern which factors drive the most shareholder value in banking. This naturally doesn't apply to any single bank perfectly, but a bank could use this kind of analysis as a starting point to contextualize its own strategy and determine tech investments accordingly.

Our review of more than 90 US banks' financial results between 2013 and 2023 indicates that they delivered total shareholder returns (TSR) of 10 percent a year, on average. But banks in the top decile had TSR of 18 percent, outperforming banks in the bottom decile by an impressive 14 percentage points.

To identify what drives some banks to outperform their peers in TSR, we conducted a regression analysis across dozens of financial variables, including total assets, revenues, business mix (retail, wealth, commercial, etcetera), net income per share, loan-to-deposit ratios, loan loss provisions, capital ratios, and others. Our analysis revealed that five operational metrics account for almost 90 percent of the difference in TSR between top-decile and bottom-decile banks (Exhibit 4), with all but the first relating to return on tangible equity (ROTE):

— revenue growth

— earning asset yields (how much income the bank's assets are generating)

— cost of funds (how much interest the bank needs to pay to depositors and to other banks, institutions, and investors that it borrows from)

— noninterest income (income earned through fees other than interest income on loans, such as monthly maintenance fees on accounts and origination fees on mortgages) as a proportion of tangible assets

— operating expenses as a proportion of tangible assets

A few caveats apply, however. Because we conducted this analysis during a relatively benign credit period, loss-related factors didn't carry as much weight as they would during a stress cycle. This analysis also doesn't capture the effects of savvy M&A, especially acquisitions that might deliver disproportionate value based on the price paid for them. Finally, this analysis looks at differential performance, so while some factors may be important to a bank's TSR, they might not be differentiating if all banks are performing equally well on them.

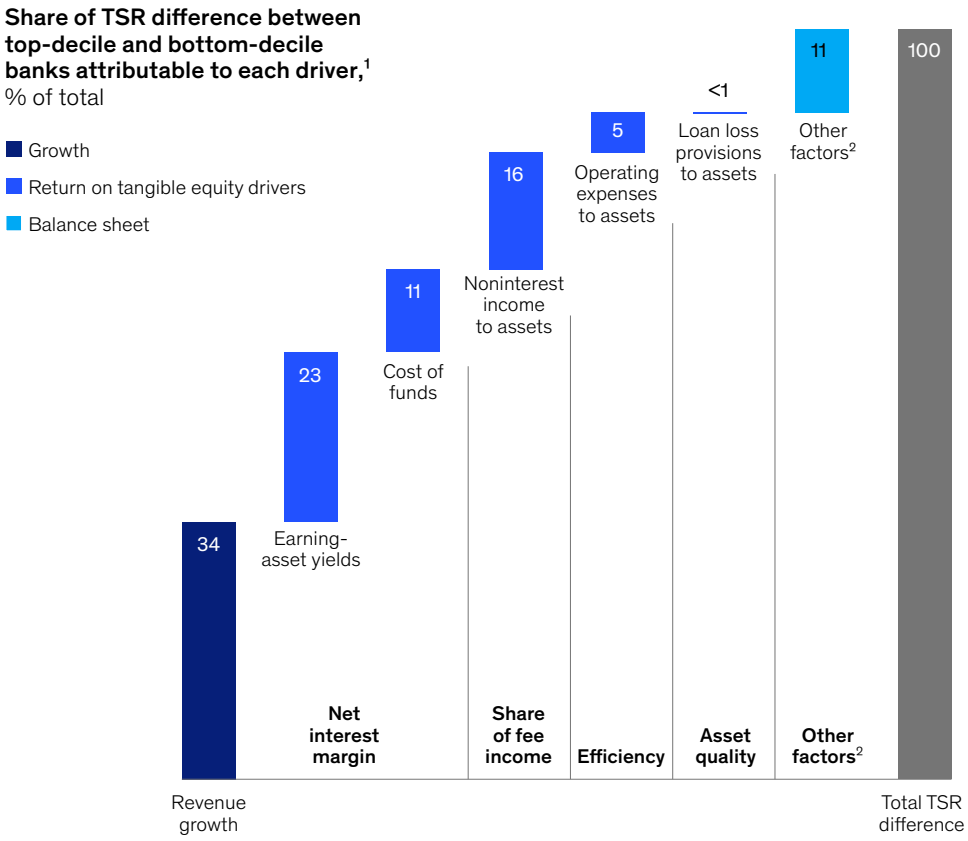
Several insights emerged from our analysis. While the drivers of ROTE proved to be the most important value creation driver, accounting for about 55 percent of the difference in TSR between top-decile and bottom-decile banks, revenue growth was the single most important variable, accounting for 34 percent. Various balance sheet drivers such as the loan-to-deposit ratio accounted for 11 percent.

Within ROTE, earning-asset yields, cost of funds, and fee income as a share of total revenue accounted for more than 90 percent of the difference in TSR, while controlling operating expenses represented less than 10 percent. In other words, reducing operating expenses was one of the smallest drivers in our analysis. Expense efficiency, though it can deliver relatively predictable and rapid results, is not sufficient to make a bank outperform its peers, possibly because most peers can easily pull the same lever, thereby making it less differentiating. This is an important insight, especially given that business cases for technology initiatives are often predicated solely on efficiency savings.

Stability over time is rewarded by investors, too. Banks with consistent revenue growth and less volatile ROTEs tend to outperform their peers.

Exhibit 4

Five operational metrics account for most of the difference in total shareholder returns among US banks.



[1]Based on data from more than 90 US banks, 2013–23.
[2]Includes loan-to-deposit ratio, ratio of commercial loans to overall loans, and capitalization levels.
Source: S&P Capital IQ; company filings, McKinsey analysis

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Some metrics that we thought might be important to banks' strong TSR performance turned out not to be. For example, asset size wasn't a statistically significant factor, indicating that scale doesn't necessarily lead to higher TSR. Both small and large banks can achieve similar margins, and while some segments do witness scale effects (such as in payments and capital markets), the banking industry as a whole doesn't seem to exhibit a scale curve. Although the biggest banks have scale on their side, they can be impeded by organizational complexity, a fragmented technology landscape, and more stringent regulatory requirements.

Among other variables that didn't rise to the top was business mix, possibly because many of the banks we examined have similar profiles, or because its effect shows more strongly in other variables like the share of fee income.

Bank-specific prioritization of value drivers and outcomes

Banks can consider prioritizing various value drivers depending on their relative performance against industry peers. For example, banks with a high ROTE and robust record of enabling growth could focus on improving expense efficiency in a way that

doesn't hamstring growth. Banks with relatively lower revenue performance may consider putting capital behind longer-term strategies to increase revenue and improve their net interest margin versus short-term expense cuts.

Different types of institutions could vary in terms of relative emphasis. For example, regional and midcap banks may want to focus on increasing fee income, which typically represents a lower share of total revenue than it would at larger banks. Consumer finance specialists typically have high asset yields and may want to strive to gather low-cost deposits to further improve their net interest margins. The biggest banks have a relatively high share of fee income, so they may want to focus on driving efficiencies in an effort to benefit from their scale.

This kind of thesis concerning business priorities should ground the institution's overall strategy and inform tech investments, setting the stage for aligning outcomes.

At the micro level, for instance, when choosing whether to invest in a mobile app or in a platform for branch employees, linking the work to OKRs is often helpful. Investing in the mobile app could boost digital sales and self-service, while reducing branch footfall and contact-center volumes. Investing in a branch platform might improve in-branch sales and employee satisfaction. Business leaders should determine where the greater opportunity lies, based on the corporate strategy and expected financial outcomes. By tracking OKRs over time and hardwiring them into the objectives of integrated technology and business teams, the CFO could ensure that the expected financial impact of technology investments is achieved and can eventually be communicated to the CEO, board, and investors.

It is critical for OKRs to form a system that aligns the objectives of individual teams and groups of teams to enterprise-level priorities.

Five examples of strategic themes for technology investment

To identify examples of how a financial institution can align its technology investments with drivers of strong TSR performance, we analyzed initiatives that banks in our database have undertaken over the past few years and mapped those to the drivers of differential value identified above. Our analysis revealed five examples of strategic themes for banks to consider (see sidebar, "A deep dive into examples of strategic themes for tech-enabled value creation in banking," at the end of this document):

1. expand growth and net interest margin through data-driven relationship banking, for instance, through personalized offers enabled by 360-degree customer data to attract operational deposits

2. boost recurring fee income through tech-enabled business building in payments, wealth and asset management, and transaction banking

3. improve operating leverage—the bank's ability to increase revenue without proportionally increasing costs—and customer experience through digitization and use of AI, for example, in self-serve customer onboarding and back-office automation

4. prevent value compression through tech-enabled risk management and compliance such as cybersecurity, resiliency, credit underwriting, and financial-crime prevention

5. optimize technology productivity, time to market, and outcome orientation by pursuing engineering excellence, platform modernization, and data and AI enablement

Each of these five strategic themes maps to the value drivers revealed in our analysis. Specific outcome metrics aligned with each theme could be used to track value realization.

The first three strategic themes involve harnessing technology to help boost revenue growth, fee income as a share of total revenue, and asset yields, while lowering cost of funds and operating expenses. With these strategies, it is important to note that technology is an enabler of a broader business transformation, and that nontech levers need to be pulled as well, including, for example, the hiring of bankers, business process changes, adoption of technology by frontline employees, and marketing. M&A can also play a critical role, particularly in increasing fee income.

The fourth strategic theme is focused on ensuring that the bank's technology is resilient enough to withstand cyberattacks, system failures, and other shocks; that it enables risk management more broadly (including preventing financial crime and optimizing credit risk); that it reduces technical debt that has accumulated over the years; and that it complies with regulations. Making sufficient investments in this area is critical to preventing value compression.

The fifth strategic theme entails transforming the technology function itself, with the objective of improving engineering productivity, accelerating time to market for new solutions, ensuring a stronger delivery orientation toward business outcomes, and creating more capacity to invest in the other four themes. Moreover, many organizations are finding that the product development life cycle, including software development, is one of the areas that can benefit most from generative AI.

Based on our analysis, we estimate that a typical bank could enable ROTE improvements of three to four percentage points by pursuing one or two of the tech-enabled business strategies as well as the tech-enabled risk management and technology transformation themes. It is unlikely that a bank would choose to pursue all five themes at once, due to the investment, talent, and time needed.

Implications for bank executives

Our research indicates an opportunity to elevate banks' approach to technology, turning it from a budget line item into an uncontested enabler of value creation. Bank executives can consider following this approach in a continuous cycle:

— *Free up discretionary-technology capacity.* Accelerate the transformation of the technology function to increase capacity available for discretionary investment by 50 percent or more (such as by increasing engineering productivity and optimizing run-the-bank spending).

— *Allocate investments strategically.* Add a top-down approach to supplement the usual bottom-up generation of technology initiatives based on ROI as part of the yearly strategic-planning process. Accomplish this by conducting an analysis of the bank's market valuation to prioritize enduring value creation drivers and define strategic investment themes. Ensure that capital is mostly allocated to a focused set of business domains that align to those themes, decide on whether to build or buy specific tech solutions, and translate each investment into OKRs that are hardwired into budget expectations and integrated team incentives. Consider the full burden of new tech, not just the initial costs. This strategic process is a critical foundation on which to build a narrative for investors about the value enabled by technology, and it can enable a dynamic reallocation of capital.

— *Execute with an outcome orientation.* Be purposeful about the operating model the organization uses. For instance, a platform operating model could ensure that execution is conducted through cross-functional teams focused on delivering business outcomes at an accelerated pace. Establish a quarterly outcome-based review using the relevant OKRs to ensure that technology solutions are adopted and the financial impact is realized.

— *Provide transparency on tech-enabled value creation.* Some banks link their technology investments to their investor guidance on revenue growth and ROTE targets. They incorporate this into their investor communications and shine a light on the metrics that matter (for example, their "run" versus "change" ratio, the magnitude of

investments made across different business units, or the specific business outcomes those investments are enabling).

As an example, a financial-technology company recently conducted a review of its technology investments across 20 business domains, with a focus on boosting revenue growth and ROE. Following the review, the company reallocated about $100 million of technology investments a year over three years, representing more than 10 percent of its "change" spending and targeting growth expected to generate several billion dollars in market capitalization.

Management and investor expectations concerning technology spending may continue to grow in the coming years. Bank executives can address this proactively by transforming the technology function to unlock more capacity, reshaping the way technology investments are allocated, ensuring value realization, and providing more transparency to stakeholders. Establishing this virtuous cycle could earn executives the right to make the investments that will likely be necessitated by technology and AI's growing importance to doing business.

A deep dive into examples of strategic themes for tech-enabled value creation in banking

Earlier in this article, we gave five examples of strategic themes banks can use to focus their investments and create a virtuous cycle for technology spending. Below, we explore those themes in greater detail.

1 Expand growth and net interest margin through data-driven relationship banking

Net interest margin, which compares the interest a bank earns on loans with the interest it pays on deposits, is a major driver of return on tangible equity (ROTE) and can be optimized by acquiring low-cost deposits and focusing on higher-yield lending opportunities. Banks that excel in this area focus on deepening primary-customer relationships and moving away from lending-only relationships. This allows them to gather sticky, low-cost deposits and offer fee-based products.

Technology and data play a critical role in this endeavor by providing a 360-degree view of customers, including their transactions and product holdings. Using technology tools allows banks to vary the interest rates paid on deposits, based on account balances or other factors. Banks can also tap technology

to identify customer needs and relationship-deepening opportunities, for instance, by using cash flow forecasting to predict working-capital needs and solutions. And they can improve credit underwriting and loan monitoring by using AI models and alternative data such as rent payment history.

Generative AI (gen AI) provides an opportunity for banks to significantly deepen customer relationships by sending them hyperpersonalized, contextual, and timely nudges to an extent that would not have been possible previously. An automated nudge could alert customers that it's a good time to refinance a loan, or that they need to make a payment so their credit score stays intact, for example.

The impact can be significant. Over the past couple of years, digital-only banks and selected regional banks have boosted deposits by up to 10 percent, at a time when other banks lost 3 to 5 percent of deposits. Financial institutions that excel in consumer finance have been able to achieve asset yields, net of loan loss provisions, of 8 percent, compared with 4 to 5 percent for other banks.

Example: Since the US Federal Reserve began raising interest rates in early 2022, a leading US regional bank doubled down on its relationship banking strategy. The bank was able to increase the number of primary relationships by 15 percent a year through innovation and a superior digital experience, receiving high customer satisfaction scores and praise for its mobile app. Data-driven interest rate pricing enabled the bank to boost deposits by 2 percent, even as deposits declined at other banks, at a cost of funds that was at least 50 basis points lower than that of industry peers.

2 Boost recurring-fee income through tech-enabled business building

To bring more value to shareholders, banks should consider building businesses in payments, wealth and asset management, and transaction banking. Our analysis of industry-level banking revenues in North America shows that these areas represent the three fastest-growing pools of recurring-fee income. They are also a strong source of low-cost deposits. Investment banking (M&A, equity capital markets, debt capital markets) can also be a source of fee income but is more cyclical in nature and hence commands lower valuation multiples from investors.

Banks can use technology in the following ways to enable growth in those three areas:

— *Payments:* embedded payments offerings for merchants, peer-to-peer payments, and virtual credit cards

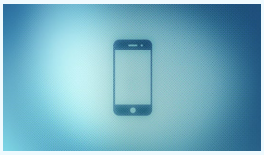
— *Wealth and asset management:* online brokerage and online retirement solutions, as well as AI tools for wealth advisers

— *Transaction banking:* cash management dashboards for small and midsize businesses and integration of treasury management services with enterprise resource planning (ERP) tools for large corporations

The pace of innovation is rapid, and sustained investments in technology are required to meet customer needs and defend market share, in particular against nonbanks such as fintechs and Big Tech companies.

Example: In 2021, a large US super-regional bank recognized that its payments business (representing 25 percent of total revenue) was a key competitive differentiator and a significant contributor of recurring-fee income. The bank launched a strategy to provide embedded-payments capabilities within the software customers use to run their businesses. It also offered an ecosystem of value-added services including budgeting, payroll, and cash flow management to help customers manage their day-to-day operations. This enabled the bank to acquire new clients and improve retention. As a result, the strategy led to 30 percent growth in business banking revenue over three years.

3 Improve operating leverage and customer experience through digitization and use of AI



Technology can play a major role in driving operating leverage, the bank's ability to increase revenue without proportionally increasing costs. It can also enable a world-class, frictionless customer experience, which, according to recent McKinsey research, correlates with higher revenue growth.

Digitally savvy banks have entirely digitized processes such as customer onboarding. They provide a seamless mobile experience and have implemented straight-through processing, which speeds up transactions by eliminating human intervention. They also continuously reduce the volume of calls to contact centers by tackling the root causes of issues that cause clients to call customer service. This includes educating customers to encourage them to do tasks digitally and continuously improving the user experience. Finally, these banks have reduced their branch footprint to account for lower footfall and have transformed branches to focus on complex, high-value customer advisory work.

Gen AI provides an opportunity to further improve operating leverage by fundamentally transforming customer service. This could be achieved partly by implementing customer-facing AI assistants (starting with text and eventually moving to voice) to address simpler and lower-risk queries. For more complex requests handled by human agents, productivity could be significantly increased by harnessing AI copilots that can provide real-time suggestions and coaching.

Example: Looking beyond US banks, in 2017, a leading Asian bank embarked on a digital transformation with the goal of creating shareholder value. The bank demonstrated that digital customers, or those with higher-than-average digital activity, were much more profitable than the average customer. Digital customers brought in twice as much income, as well as an efficiency ratio—or costs incurred for revenue produced—that was 20 percentage points lower, and ROE that was nine percentage points higher, than other customers. Since the transformation was initiated, the bank's share of digital customers has doubled to 60 percent, branch and contact center costs have fallen by 25 percent, and the efficiency ratio for the consumer bank was reduced from 49 percent to 40 percent.

4 Prevent value compression through tech-enabled risk management and compliance

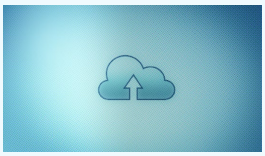
Staying on top of regulatory compliance is an important part of a bank's business, and regulatory scrutiny of technology has increased significantly in recent years. In 2013, the Basel Committee on Banking Supervision's principles on effective data aggregation and risk reporting induced banks to make significant investments in their data infrastructure. More recently, the US Office of the Comptroller of the Currency (OCC) said it was concerned by the potential risks inherent in banks' reliance on legacy systems, prompting banks to invest more in technology modernization.

US banks are also receiving more consent orders, which are directives from financial regulators to address violations, as well as "matters requiring attention," guidance from bank examiners to fix less serious problems. These cover a broad spectrum of issues, including cybersecurity (such as identity and access management, vulnerability management), operational resilience (such as backup and recovery, third-party risk management), data risks (such as lineage, encryption), and technology modernization (such as end-of-life systems, fragmentation).

A bank flagged by regulators as not doing enough on these issues can face significant remediation costs and regulatory penalties. In some cases, regulators also impose restrictions on balance sheet growth, M&A, branch expansion, and customer acquisition, which can significantly limit revenue growth and lead to value compression.

Example: A few years ago, a large US bank received a consent order and penalty from the US Federal Reserve and the OCC related to risk management and other deficiencies. The bank launched a comprehensive transformation program to drive improvements in data management practices, risk management controls, platform consolidation, and infrastructure modernization. As part of this transformation, the bank is implementing changes including automated controls and reporting that will enable a more proactive approach to technology risk management. Technology spending has grown about 10 percent a year since the regulatory order.

5 Optimize technology productivity, time to market, and outcome orientation



A complete technology transformation is a critical accelerant for the other strategies this article lays out and can free up 10 to 20 percent of technology capacity. Historically, this kind of transformation has been mostly led by the CIO, but now it is also likely to involve other business leaders to ensure that changes align with business priorities and are conducted end to end.

One of the most important aspects of a technology transformation is the adoption of a platform operating model to reorient the technology function toward business platforms such as consumer lending, debit and credit cards, and wealth management, as well as enterprise platforms including core banking, payments, and data and analytics. In this model, business and technology colleagues work in cross-functional teams focused on improving the user experience and other outcomes. Change is delivered at an accelerated pace, in sprints.

To complement the platform operating model, banks also need modern engineering practices—such as automated development, security, and operations—and high caliber, in-house engineering talent to enable new products and features to get to market faster. Through this approach, software can be deployed several times a week instead of once a quarter.

The modernization of the technology stack toward modular, interoperable API-enabled architectures and cloud technology is also critical. On modern architectures, new solutions can be delivered within three to four months, compared with nine to 18 months for older architectures, by enabling the reuse of software components and removing dependencies on outdated legacy systems.

Last, establishing a modern data and AI platform is critical to accelerating the time to insight for new analytics and AI use cases from nine to 12 months to two to three months. Establishing such a foundation is required to scale from pilots to hundreds of AI use cases. This can be achieved by building data products that can be incorporated into multiple use cases and establishing practices such as machine learning operations (MLOps) to automate and simplify machine learning workflows and deployments.

Gen AI is also starting to have a profound impact on software engineering, as demonstrated in recent McKinsey research. Experience from banks that are early adopters of gen AI indicates that tasks such as user story generation (a brief description of a product feature, capability, or task, with the end user in mind), code documentation, code generation, code translation between programming languages, and unit tests to verify the accuracy of a piece of code can be accelerated by 40 to 50 percent.

Example: In 2021, faced with competition from tech companies, one of the world's biggest banks increased its technology spending by more than 10 percent to accelerate its technology transformation. The bank aimed to migrate more than 70 percent of its applications to the cloud; automate software delivery; enable more than 400 AI use cases initially, with that number rising 30 percent a year; and proactively defend itself against cyberthreats. The transformation is estimated to save the bank $1.5 billion over the long term, reduce time to market for new products by 20 percent, and adjust the ratio of "run the bank" versus "change the bank" from 60:40 to roughly 50:50.

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