BANK OF AMERICA

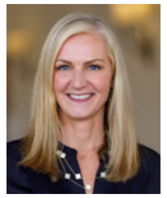
DIGITAL EDGE

Digital by design

Insights and innovations to help you rise to the challenge

BANK OF AMERICA

President, Global Commercial Banking



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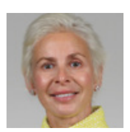

Elif Bilgi Zapparoli
Co-head of Global Capital Markets
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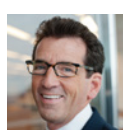

Galen Robbins
Head of Global Merchant Acquiring Sales
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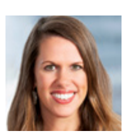

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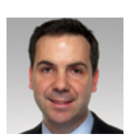

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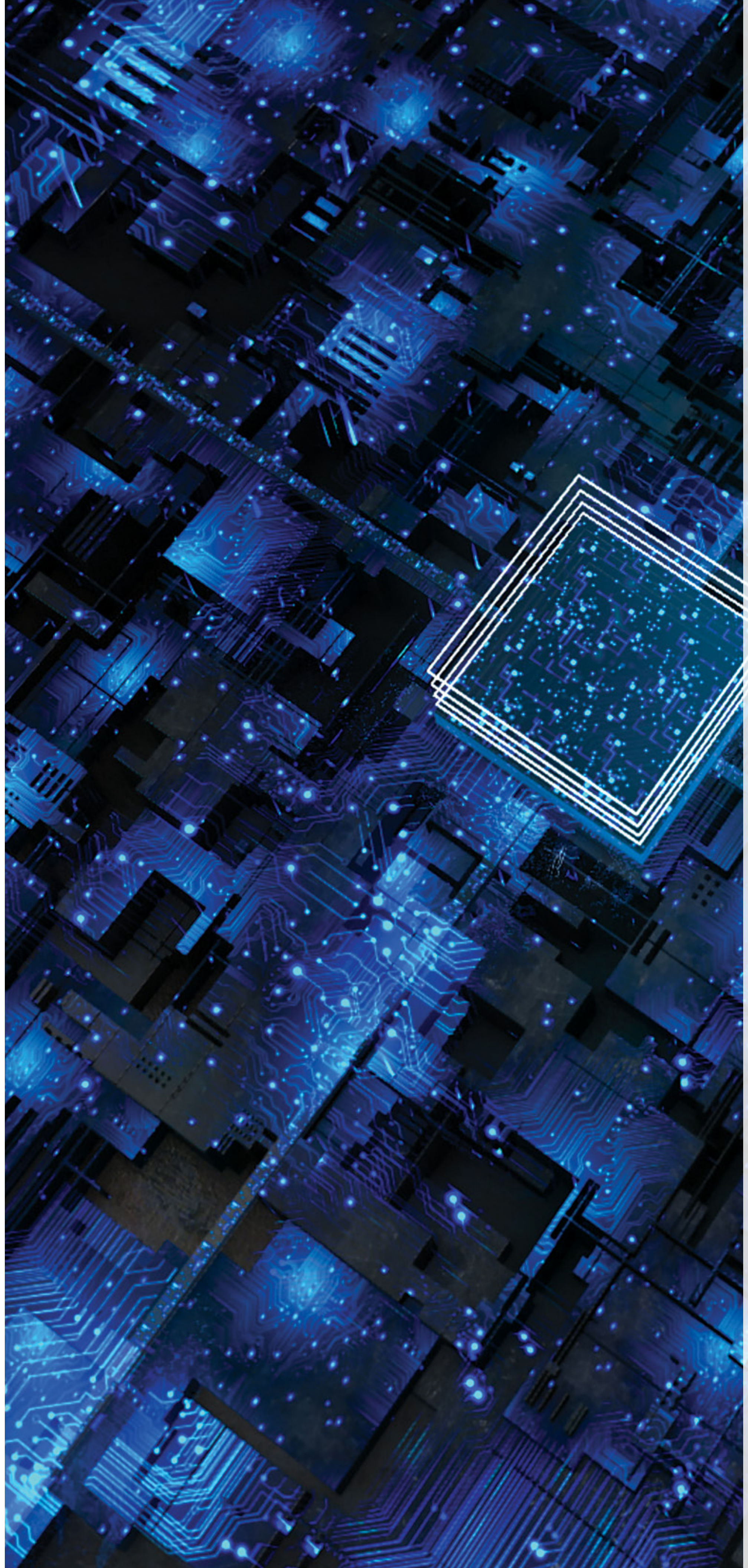

INTRODUCTION

What does it mean to become a "digital by design" organization?

For all the uncertainties it created, the pandemic made one thing clear: After unprecedented acceleration in the pace of digital transformation, there's no going back. Companies and organizations have moved beyond their reluctance to engage digitally and now expect seamless, secure digital experiences whenever they interact.

Becoming a "digital by design" organization is not just a case of adding a few digital solutions. Instead, the businesses making the most successful transitions are those that use technology to fundamentally change the way their companies operate. They're viewing digital not as a separate strategy but as the driving force behind meeting the requirements of their customers and employees.

Our 2022 Digital Edge Report is designed to help you better understand the landscape and decide what and how to prioritize in your own organization. It features insights on:

- Implementing a digital-first framework
- Game-changing capital markets technology
- Trends and innovations in digital payments technology
- The case for a digital transformation strategy
- How treasurers are protecting data and the bottom line

We have been developing solutions to help businesses solve some of the challenges you might be facing. Adoption of our digital solutions among our clients has increased to over 75%, establishing us as a digital leader among financial services companies. Through this report, and conversations with you, we look forward to sharing our learnings and expertise to help you do things faster, smarter and more securely.

Talk to us anytime for specific ways we can help.

Sincerely,

Wendy Stewart
President, Global Commercial Banking
Bank of America

Raul Anaya
President, Business Banking
Bank of America

ARTICLE #1

Developing a digital edge

What does a digital-first approach look like for today's business? It means unleashing cutting-edge technologies to create the best customer and employee experience. Capitalizing on data to make better and smarter decisions throughout your organization. And moving to next-generation security for your systems and information in this digital-first world.

"Businesses can no longer afford to consider digital in a silo," says Jonathan Aguallo, Global Commercial Banking Digital Executive. "Digital has become an expectation. It is critical to brand, acquisition, process efficiency, client and employee satisfaction and more. Layer in the sheer velocity of change, and success calls for a continuous innovation cycle with a digital-first perspective."

As companies plan for the rest of 2022 and beyond, Bank of America thought leaders point to four broad trends and specific areas shaping digital strategy today:

The trends shaping digital strategy

- End-to-end data planning
- Transformative technology
- Integrated experiences
- Next-gen risk management

1. Harnessing the power of data

New technology platforms — social media, website interactions, loyalty programs, digital payments — are generating exponentially larger amounts of data, stressing leaders on how to best harness their data in the most effective way. Data management objectives should align to the goal of helping you make better and smarter decisions, improve your internal processes and provide personalized experiences to your customers — whether retail customers or business clients.

A company must focus its data strategy on visibility and access, accuracy, security and appropriate reporting capabilities. To maximize the value of data, experts say, you need an end-to-end plan that covers all the bases.

"Too often, companies start with data analytics without having a holistic strategy that covers collection to distribution. Businesses should start with understanding

how to capture accurate data from customers, vendors, products and capabilities," Aguallo says. "Next you have to store data in an authorized way so that you can use it. Then you have to have an analytics layer, and finally, you need a clear distribution strategy."

2. Incorporating transformational technologies

Technological developments are happening at lightning speed, from cloud computing to blockchain applications. How can a modern business incorporate the most meaningful of these, and for the best return? And what's top of mind this year?

With the importance of data growing exponentially, predictive analytics powered by AI and machine learning ranks high on our list. Both of these innovations are delivering sophisticated, tailored solutions, with machine learning helping to identify trends, while real-time data and integrated systems increase visibility and transparency.

Artificial intelligence is a fast-growing area. Deployed with data, AI/machine learning allows companies to rapidly draw out more sophisticated and accurate predictive insights. It allows for personalization of messages and customer relationships, often enhanced with natural language processing capabilities, and also is fueling the growth of virtual assistants. At Bank of America, we use our award-winning consumer tech — ERICA®, a SIRI-like solution for banking — internally, to help teams become even more efficient and responsive to client needs. Companies can similarly leverage AI to speed up and save costs on repeatable tasks.

The backdrop for all this is the overwhelming importance of speed. For consumer-facing businesses, "The types of technology that literally take three seconds of friction out of an experience are winning — for example, mobile phone payments and digital wallets," Aguallo says. "These technologies provide the outcome that people expect, which is speed, convenience and security — anytime, anywhere: from my living room, a hotel, the top of the mountain. These technologies enable that customer experience."

At the same time, companies can take advantage of a host of sophisticated tools and solutions that can serve as accelerators for data, enablers that drive efficiency, speed, convenience, security and help deliver on strategy — whether that's a B2C or B2B strategy or internal process improvements.

3. Providing integrated experiences

A successful digital strategy requires integrating digital tools and data throughout the organization. One way to think about integration is to consider your company's top 10 daily functions that require access to data. Is the data usable, visible, secure, integrated?

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>
> **Jonathan Aguallo**
> Global Commercial Banking Digital Executive, Bank of America

Cross-app and platform integrations make customer and client relationships better. APIs and modern software platforms help release data from silos, making it accessible throughout an organization. With Bank of America's digital options, for instance, "Payment is integrated, the documents are integrated, the checkout is integrated, the data is integrated," says Aguallo. "We want to meet our clients wherever they want to be next. We don't want to make it about Bank of America. We want to make it about integrating into their life."

For business clients, that might mean investing in products that allow them to access data and information in one place — for instance, Bank of America's Intelligent Receivables®, an innovative matching solution using AI that helps to take the manual work out of reconciling receipts.

4. Assessing today's risk management

With increased connections and digitized functions across the business world, cybersecurity has never been more important. Cybercrime is a threat, but on the flip side, smart technologies like digital consumer payment options that are processed instantly can also improve security, reduce errors and prevent fraud.

Bank of America is deeply invested in the next-generation security technology to protect systems and clients. "It's table stakes that you're keeping my data secure. It's not an advantage, it is expected," Aguallo says. "So modern risk management has to be top of your management team strategy."

Companies also face increased risks from a lack of attention to proper corporate social responsibility, something that draws more scrutiny from a wider set of stakeholders: from clients to consumers, employees to shareholders. Over the past few years, the impact of corporate action — or inaction — has grown in importance, especially to younger generations giving rise to Environmental Social Governance (ESG) initiatives that place digital at the center as the best solution to address the challenges ahead. Take, for instance, the ability to move from paper to digital records and billing, which addresses environmental concerns that resonate with Gen Z.

An integrated approach is key

Digital by design is all about making customers' and employees' lives, and your relationships, faster, smarter and more secure. To achieve these goals, it is important that digital initiatives are considered across the entire business and integrated into your broader business strategy. "Start with a blank sheet of paper, and reimagine your customer and employee interactions," Aguallo says.

Whatever you want to achieve, the companies who embrace digital transformation with intention, discipline and speed will find their digital edge and capitalize on it for wide-ranging and long-lasting success for customers and employees.

ARTICLE #2

Rewriting the code for capital markets

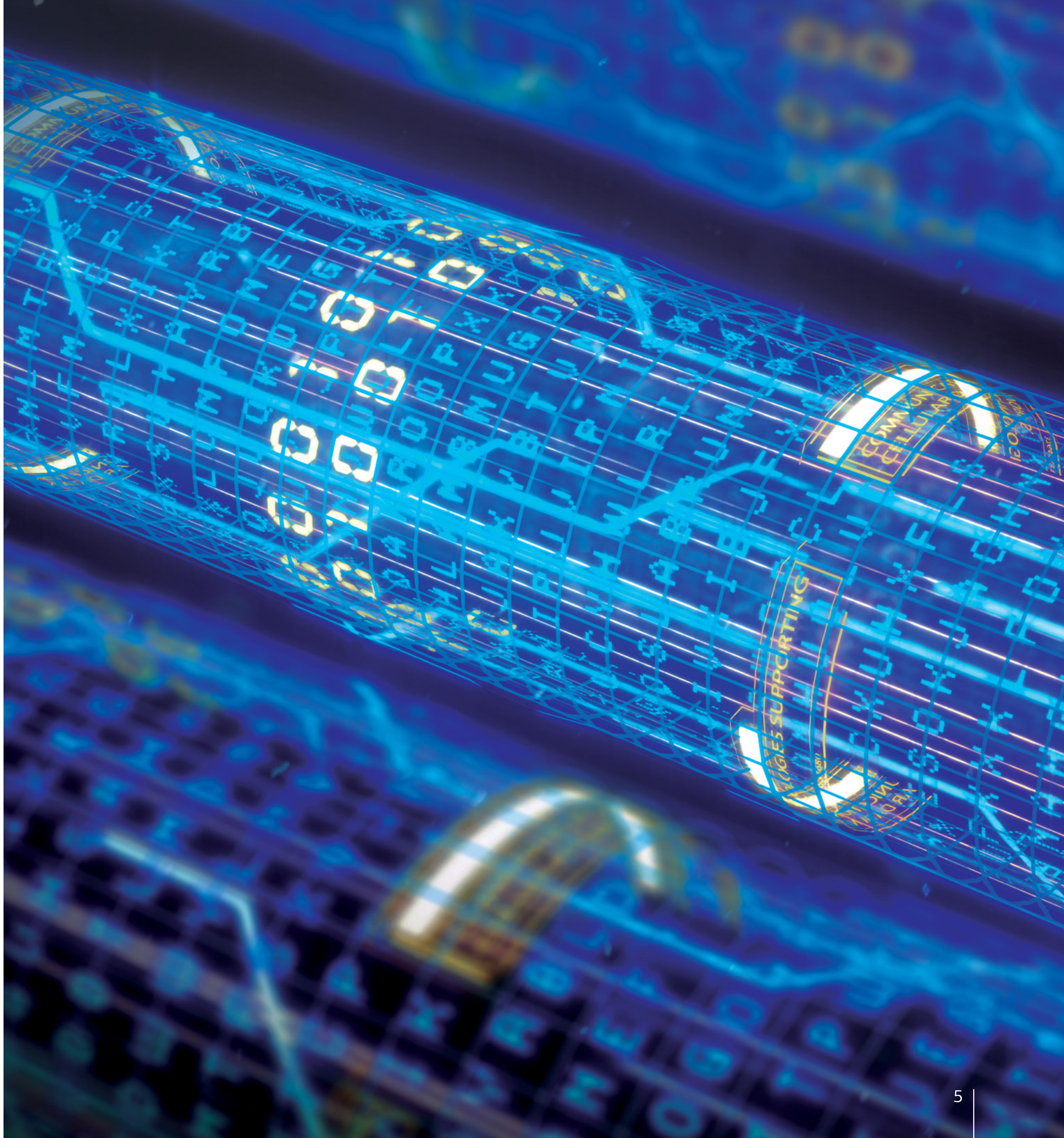
Game-changing tech is bringing cloud-based capital, advanced artificial intelligence, machine learning and microsecond options that deliver better outcomes to the deal ecosystem. This sets the stage for futuristic innovation as business and technology converge. Tech-enabled models, fueled by full exchange automation and tokenization using blockchain, are delivering a re-engineered experience, layered with intelligent tech and seasoned human expertise for a truly quantum leap. BofA Securities leaders unpack how we're rewriting our code for capital markets and helping companies with their strategic moves.

Waiting for an "Amazon moment"

Technology has the potential to transform the traditional capital markets — driving a faster, smarter process, successful data-based outcomes and, ultimately, more value for clients — and Bank of America is striving to be the architect of that moment.

"Every business, in our view, has had or will have an 'Amazon moment,'" says BofA Securities' Elif Bilgi Zapparoli. "Capital markets have not had that 'Amazon moment' yet."

As Co-head of Global Capital Markets, Zapparoli is a leader of the digital charge. "For us, the real strategic question is, 'What does it take to be as relevant 10 years from now as it is today?'" she says. "The answer is, 'What will the business look like?' And there's just one answer to that — technology." Zapparoli believes there are three key areas where technology can transform, and has begun to transform, the capital markets. Bank of America is addressing these with internal initiatives, strategic investments and industry partnerships.



> “Every business, in our view, has had or will have an ‘Amazon moment.’ Capital markets have not had that ‘Amazon moment’ yet.”

Elif Bilgi Zapparoli
Co-head of Global Capital Markets, BofA Securities

Dialing up digitization, accessibility and AI

First up, Zapparoli says, is using existing technologies to drive automation and digitization. “This is diligence. This is discipline. This is prioritization,” she adds. “This is knowing every business that we do, front to back, and how it can be improved.”

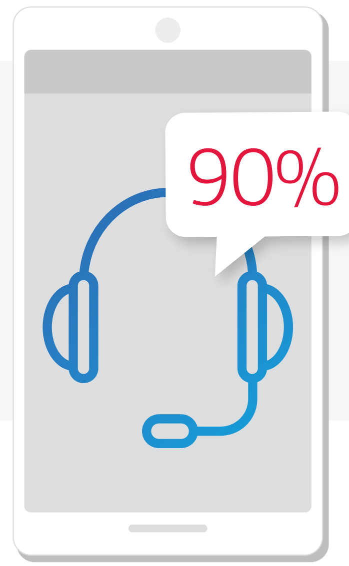
Many initiatives are client-facing, designed to make data more organized and accessible and processes faster and smarter. In early 2022, for instance, Bank of America joined the lineup of global partners and investors in Capital Markets Gateway, an equity capital markets platform that directly connects buy- and sell-side participants in real time, with centralized, standardized communication and access to information.

Similarly, Bank of America has partnered with Citigroup, JPMorgan Chase & Co. and Credit Suisse to develop a new platform for the syndicated loan market that allows lenders to access portfolio data in one place. The new portal, scheduled to be launched this year and called Versana, is designed to digitize the loan space and eliminate paperwork, like payment notices and rate resets, that are often handled manually.

Existing AI technologies also are being deployed to improve deals. Launched in 2018, Bank of America’s PRIAM uses AI to comb through its databases and predict which clients may be interested in specific deals, based on their record and past history. The goal is to improve deal-making by identifying investors and opportunities, then connecting them with each other. Think of it as operationalizing intuition. PRIAM 2.0, the second generation designed to take the experience to the next level with even more functionality, is set to debut in 2022.

90% think that virtual assistants will handle 50%+ of customer interactions within 5 years.

Source: Accenture.



These big initiatives will work alongside the continued digitization of more routine functions and tasks. According to an Accenture survey, 90% of respondents say that within five years, virtual assistants will handle more than half of customer interactions. Similarly, Zapparoli says her vision is relationship managers augmented with all of the data about all of the clients in their respective coverage areas and industries, leaving them enabled and armed to strategically focus more deeply on customers with even greater accuracy. In that scenario, everyone wins.

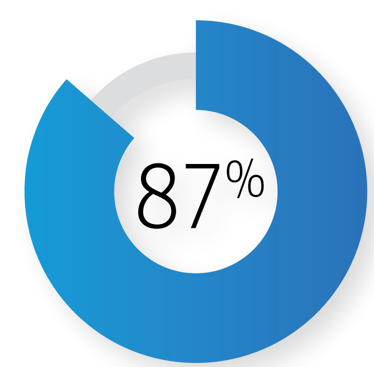
Leveraging better, smarter, faster data

Technology can have a major impact on the capital markets through more extensive use of existing treasure troves of data in decision-making. Tools like PRIAM, for instance, can provide fast and accurate data on client preferences and history. But, Zapparoli says, “Although we talk a lot about data, the reality is we rarely make decisions based on it. We use data still for presentation purposes. So how do we go to a state where it defines decision-making?”

She says optimizing the use of data will require a culture change in the markets. “We have very experienced people who have references, and then we all make decisions based on that — and then of course we feed in data. But it’s not that often that data changes the direction,” she says. “What I’m talking about here is: Can we go to a stage where we almost leave our experiences aside and can just start with data?”

Blockchain sets the stage for secure, real-time settlements

Zapparoli sees broad potential for blockchain technology to enable the capital markets to move to a decentralized ecosystem — one that’s faster, safer and more efficient. Don’t think of all cryptocurrencies as being like Bitcoin; although cryptocurrencies get all the headlines, using blockchain technology as a way to create a permanent, unalterable, secure digital ledger is how more people will use these applications in more situations. Zapparoli thinks it will change a lot of the way transactions are handled in the future.



87% believe most B2B transactions will take place on a blockchain in the future.

Source: Accenture.

She explains it like this: “In a blockchain world, you can turn everything into a token and you can put the tokens on a chain. Then you have no need for central clearing and central counterparties because the smart contract will have all the information on that chain. All the counterparties to the transaction will be able to communicate with each other via the chain via their addresses, so you have instantaneous settlement. You do not have any counterparty risk. You don’t have to think about currency changes. You can have interest payments that are, again, automatic. That’s a very different world than the one we live in, and it’s a very real example of how technology can transform the way we do things.”

Capital markets participants agree with Zapparoli. In a recent Accenture survey, 87% of respondents said that in the future, most B2B transactions will take place on a blockchain.

Game-changing tech can deliver on purpose-driven goals

Zapparoli believes that technology is capable of empowering us all. When it comes to financial markets, the efforts she describes are ultimately designed to make them work more effectively for everyone. She says, “At Bank of America, our CEO defines our purpose: To help make financial lives better, through the power of every connection. In our view, this is an execution aspect of that philosophy. What we’re talking about here is technology as a conduit to making it better. Again, the results are more favorable, more cost-effective, more value-added, and that’s why, big picture, we think everyone needs to pay attention to that.”

ARTICLE #3

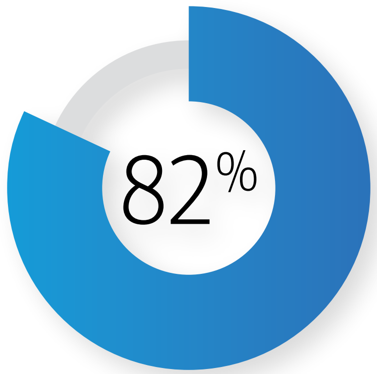
Digital payments transformation touches consumers and merchants

Consumers no longer think of their world as compartmentalized between digital and non-digital experiences. Around 80% of consumers will see the world as strictly digital in 2022, says Forrester research. And in no area is that clearer than in how people pay for the goods and services they buy. In a time of continuous change, how is the payments landscape evolving, both for consumers and merchants?

Growth in digital payments has exceeded expectations

What started with in-person improvements, like contactless “tap and go” cards or the ability to scan a mobile phone at checkout, has accelerated exponentially. Some 82% of Americans used a form of digital payment in 2021, according to a Digital Payments Consumer Survey from McKinsey. Any company that transacts with consumers must navigate the move away from cash, checks and even physical cards to a widening assortment of digital payment options. These include payments made via:

- Merchant or brand websites, apps and reward programs
- Third-party ordering or delivery services
- Peer-to-peer payments like Venmo, PayPal or Zelle®
- Digital wallets like Apple Pay



82% of Americans paid digitally in 2021.

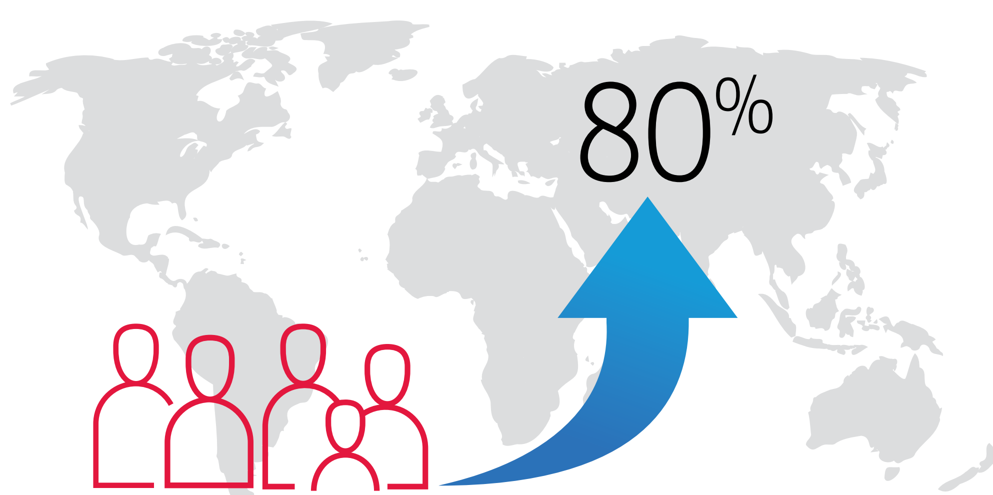
Source: The 2021 McKinsey Global Payments Report.

Some of these are still facilitated by a card, while others are electronic ACH payments, with money drawn instantly from the buyer's bank account. Some of the newest options offer one-click payments on social media and streaming sites — like Facebook Pay, a "buy now" button that allows online shoppers who see a promoted product they like to buy natively on the social platform, rather than clicking through to a brand or retailer's website.

It's a "commerce anywhere" world

Increased buying opportunities mean a push for speedy, uncomplicated, always-on options. "Consumers are driving that choice," says Galen Robbins, Head of Global Merchant Acquiring Sales at Bank of America. "As a customer, you seek things that are easy, that enable you to get what you need done with the least amount of action and expense. Consumers are driving multiple payment options, the digital experience, and merchants are responding in ways they've never had to before. They're leaning on Bank of America to provide them those alternatives, those gateways, those other means of capturing and retaining a client's payment information in a frictionless way."

Robbins says Bank of America itself has innovated in response to its own retail banking customers' preferences. He says, "Even compared to just five years ago, the choices that we give a client to interact with the bank — whether it's to make a payment, or to transact their financial services business through the banking centers, through bankofamerica.com or through Merrill Edge® — are huge and the choices they expect from us are equally huge."



80% of consumers will see their world as all digital in 2022.

Source: Forrester.

Consumers have embraced paper to digital

Robbins believes the move to digital payments benefits consumers, who enjoy a smooth, effortless process, with many digital options. They enter their information once and use that for all future purchases. And options like one-click order systems or peer-to-peer payments make the payment process feel less transactional, and more about the customer's connection to the brand, retailer or friend. Today's options enable almost everyone to be digital, even the 7% of American adults who remain unbanked have the option of using a phone to pay — "and virtually everyone has a phone now," Robbins says.

Merchants win through better data, security and processes

For merchants, the switch to new digital payment methods can pay off in multiple ways:

- More speed: Getting the cash and the checks out of the system speeds payments, provides faster reconciliation and reduces labor costs and processing fees, Robbins says.
- More data: Digital transactions and digital payment platforms can generate data for merchants, allowing them to harness the important marketing trend of personalization (while still being mindful of customers' privacy concerns). "Merchants gain an edge when they are able to retain customer data," says Robbins.
- Enhanced security: Robbins says in addition to tokenization, other advanced digital fraud prevention tools have been developed. Merchants willing to deploy these state of the art services will make transactions more secure irrespective of payment type.
- Fewer declined transactions: Digital payment systems and the data bases they create and access can help merchants and banks cut down on the number of declined transactions. "A huge percentage of declined transactions are from invalid card data, like replaced or expired cards, for example," says Robbins. "With a digital payment, if the system recognizes a transaction was declined, it can go into the database to see if the customer has current card data, and if so, resubmit the transaction with current card information to obtain a transaction approval. That saves the sale for the merchant, avoids customer service interruptions and allows the banks and merchants to focus on the actual bad actors."

> "Consumers are driving multiple payment options, the digital experience, and merchants are responding in ways they've never had to before."
>
> **Galen Robbins**
> Head of Global Merchant Acquiring Sales, Bank of America

Digital payments are not just for traditional retail operations. Bank of America has worked to create a similar payment system in healthcare, with a healthcare-specific portal designed to enable digital, paperless, contactless options to pay. "The gateway allows the healthcare customer to swipe a card or store their payment information, so that it becomes part of the patient's permanent record, integrated with the hospital system, the provider and the insurance company," Robbins says.

A fast-moving payments world

What comes next? "The pace of change is incredible. I almost think that we are getting to a place where changes happen monthly, so we have to think about digital advances in the context of months, not years," Robbins says. "We will have a conversation a year from now and I'll be telling you 20 other things that we're doing that we didn't do 12 months ago," he says. "That's how fast the pace is changing."

ARTICLE #4

Making the case for digital transformation

Companies see a growing need to become more digital — now is the time to get everyone on board.

Whether it's boomers and seniors finally embracing digital banking, or everyday consumers figuring out how to use QR codes, the global pandemic has galvanized digital transformation across almost every industry. In fact, 97% of enterprise decision-makers say COVID-19 sped up their digital transformation.[1] But how do you develop a digital transformation strategy? Even in the face of unprecedented digital adoption, transforming your business through technology isn't one-size-fits-all, and leadership buy-in is rarely a rubber stamp.

Each company is on a unique journey, and stakeholders need to understand the value proposition from many angles to come up with the right digital roadmap. Regardless of whether you're addressing a formal board of directors at a multinational company or the owners of a family-owned business, the key to securing support from company leaders is to provide real data and metrics that focuses their attention on three critical drivers:

- Improving the customer and employee experience
- Increasing efficiency
- Attracting and retaining top talent

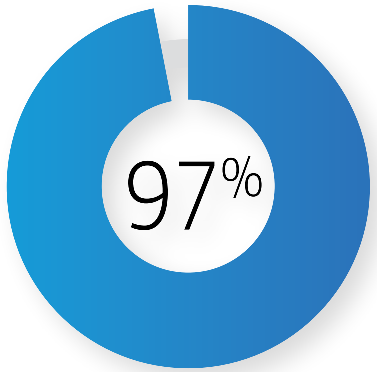
Key takeaways

- Use hard data to demonstrate to senior leadership the ROI of meeting the needs of a more digitally savvy marketplace
- Digital transformation can translate to a better customer experience and higher employee retention
- Embracing digital can help you reduce costs and increase efficiency

In a tech-driven world, customer experience is key

It's no secret that business longevity has been declining at a rapid rate. In 1965, a company's lifespan on the S&P 500 was 33 years on average, but that's forecast to shrink to 12 years by 2027.[2]

To stay relevant in this fast-paced environment, today's companies must prioritize and improve customer experience. "If you're not growing with your customers — as they embrace digital technologies in the rest of their personal and business interactions — you're not going to retain your customer base, much less increase it," says Julie Harris, Enterprise Chief Experience Officer at Bank of America. As more technology-driven companies begin offering seamless customer service and rapid response, their user experience expectations will be higher than ever. To help your stakeholders connect the dots between the customer experience and return on investment (ROI), be prepared with metrics on sales growth, customer retention, customer satisfaction, user preferences and more.



97% of enterprise decision-makers say COVID-19 sped up digital transformation.

Source: Forbes.

Operational efficiency is a business imperative

Being successful in business doesn't always require working more — but it does require working smarter and more efficiently. This means you have to think about operational excellence, and to do that you have to become more efficient and productive. Investing in the digitalization of manual processes, for example, not only helps your company become more efficient, but also frees up resources that you can invest into new technologies and capabilities that will help retain and attract customers — in other words, boost ROI.

Moreover, the benefits of increased efficiency aren't just about making your business run more effectively. Operational improvements can enhance the user experience both internally and externally, while improving customer satisfaction in the process. "Digital transformation is the key to running our businesses better and delivering experiences to our customers and employees that, put simply, make their lives easier and better," says Harris.

Of course, becoming more efficient relies on removing barriers to success and having the right teams in place, plus a governance structure that reflects your company's goals and objectives. For example, you may want to have teams with clear decision-making authority, intuitive and outcome-focused processes, metrics that align with your strategic objectives, or guidelines on how resources should be allocated.[3]

Operational efficiency also goes hand in hand with managing risk. With your operations running efficiently, you're in a better position to identify any risks threatening to derail your business. "At Bank of America, managing risk is at the top of our minds," says Harris. "Across every level of our organization, we believe that technology plays a pivotal role in operational excellence, risk management, and ultimately delivering the best client and employee experience possible."

Attracting and retaining talent

By 2025, digital natives are expected to comprise 75% of the global workforce.[4] Gen Z and millennials — for whom digital platforms have always been the way of life, socializing and working — have higher technology expectations as employees and aren't as willing to perform manual tasks that could be more efficiently accomplished by using technology. A good digital strategy will help companies harness their skills, while also driving employee satisfaction.

Keeping digital natives satisfied and engaged isn't just about retaining talent either. Understanding this generation of tech-savvy knowledge workers can directly affect your bottom line. According to a Citrix study, a one-percentage-point increase in digital-native population in a country is associated with a 0.9-percentage-point increase in profitability in terms of EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) margin.[5]

What are the three key elements of digital transformation?

Even when you've convinced your stakeholders that doubling down on your digital strategy is the best way to stay relevant, increase efficiency and attract top talent, there will always be a range of business needs competing for dollars. Figuring out how to prioritize these needs can feel like a game of whack-a-mole. Harris recommends the following three tenets as you think about prioritizing new digital initiatives:

1. **Begin with the customer in mind:** Many companies start with the back office and are tempted to implement the latest technology to improve difficult processes and/or cut operating costs. Instead, Harris suggests, encourage your company's leadership to start by measuring customer satisfaction and understanding their pain points. "Customer insights based on hard data should be at the center of every business decision."

> "If you're not growing with your customers — as they embrace digital technologies in the rest of their personal and business interactions — you're not going to retain your customer base, much less increase it."
>
> **Julie Harris**
> Enterprise Chief Experience Officer, Bank of America

Digital natives are expected to comprise 75% of the global workforce by 2025, bringing higher expectations for workplace tech.

Source: Citrix.

2. **Clear the path for rapid response:** Innovative firms must nurture a culture of rapid testing and learning in order to iterate and execute new capabilities. Investing in an environment of rapid response, with the ability to get customer feedback in real time and adapt quickly, is critical for mapping out your strategy for moving ahead.

3. **Innovation is everyone's job:** Make innovation part of the fabric of your company and don't keep it siloed to one separate team. This means getting feedback from across the organization. Engaging your employees up and down the hierarchy and actively seeking creative ideas and input from across ages, experiences and locations will not only harness skills and digital savvy across your company, but will also help you tap into a potential treasure trove of new solutions.

Ultimately, demonstrating a digital transformation's ROI to skeptical stakeholders means challenging them with the following: As you look at metrics such as sales growth, user preferences, customer retention and customer needs, what is the data telling you? When thinking about your company's human resources, do you need to invest in tools to enable an increasingly digital-savvy workforce, or lose your competitive edge when hiring and retaining the best talent? And lastly, where do you see your business in the next two years — as a disruptor, or the one being disrupted?

ARTICLE #5

Protecting the bottom line

How treasurers are becoming data protectors

A data mountain that grows every day means more opportunities for cyber criminals. How do you manage your risk? With intelligent data management processes and technologies and investment in new skills.

Using data to protect your data

For treasurers, the data explosion means increasing availability of different types of data, both structured and unstructured, plus more sophisticated tools for dealing with it. Technologies like artificial intelligence (AI), machine learning (ML) and natural language processing (NLP) are now widely used to find patterns that point to potential errors and fraud. These innovations have been supported by improvements in computing and data engineering over the last few years.

Fraud-preventing tech

- Artificial intelligence
- Robotics
- Natural language processing
- Smart contracts
- Machine learning

“Treasury departments that are large enough to act as data scientists need to upgrade their skills in two key areas: data science and data quality management.”

Joan Gelpi
Head of Data & AI, Global Transaction Services, Bank of America

Tech innovation grabs the headlines, but we’re finding that new ways to use existing tools are also playing their part. Joan Gelpi, Head of Data & AI of Bank of America’s Global Transaction Services, notes that “Clients are using APIs to link treasury systems with managed bank accounts data, ensuring a more real-time reflection of transactions and authorized individuals.” Similarly, regression analysis is being used to spot fraudulent commercial card or wire payments, and Natural Language Processing (NLP) is allowing treasurers to process non-structured data more effectively. Treasurers are also adopting tech from other business areas, including data science tools and data visualization tools. These can be useful in helping monitor real-time processes and flows of data through the organization, allowing for more proactive methods of fraud prevention and risk management.

While harnessing technology is undoubtedly important, companies should not overlook process management and structured workflows. AI and machine learning can be helpful, but processing data on a real-time basis often adds more in terms of fraud prevention. More companies are now continuously monitoring data, not only to look for fraud patterns but to apply controls that reduce errors.

Treasury departments need to become data scientists

As data analytics becomes more sophisticated, data is shifting from being the sole remit of IT departments to becoming a wider issue that treasurers need to have a hand in to guard the bottom line. But treasury departments that are large enough to act as data scientists need to upgrade their skills in two key areas: data science and data quality management. For newly hired data scientists to fully support treasury in its fight against fraud, subject-matter expertise is needed. We’re starting to see staff with treasury backgrounds being hired, and corporate leadership in many organizations is supportive of this shift. But that’s not all that’s required. Data quality management also needs to be a key area of focus, with people dedicated to cleaning up data that’s incomplete or erroneous. This means hiring treasury staff with data literacy, technology and data architecture backgrounds.

Partnering with IT is key

Given the need for specialist skills, one of the things companies need to ask themselves is, “How and where am I going to manage my data?” Taking the IT route may require a change in mindset. Traditional IT departments tend to be built around applications, with siloed teams to manage each one, meaning that they’re not well equipped to work across applications. But the skills required by today’s treasury departments involve bringing together data sets, cross-referencing them and moving quickly to identify trends. It makes sense for organizations to invest more in IT so that they can develop the data architecture and data engineering skills they need. IT and treasury are beginning to partner more closely on this, but there’s still work to be done.

What can treasurers do to help?

Gelpi’s advice is, “Go to your IT and shared service departments and learn from them, because they are driving the use of data and automation.” Treasurers can also request extra investment and data-related skillsets that will ultimately benefit the entire business. They need to think about data standards, and how to work with IT to onboard people with the right skills. At present, many treasury departments are early in the process of bringing data scientists in.

Looking ahead

Organizations will likely need to make larger investments to combat evermore sophisticated fraud. We’re seeing identity resolution, or authentication, become a key area of investment. Additionally, companies are increasingly working with each other, potentially making the whole process safer. There’s a willingness to share information — when a payment goes through, it’s now possible to check that same vendor, based on payments to other organizations. Gelpi notes, “One thing is certain: Data is quickly changing treasury departments, and they’re ramping up to meet the challenge.”

Tips for managing data

Establish a good data quality program: Define what’s important, how data flows and what could corrupt it.

Embrace tech: Make the most of innovations like AI, ML and NLP.

Optimize existing tools: Find new ways to use APIs, TMSs and OCR.

Hire data scientists in the treasury department: Start using their skills immediately.

Partner with IT: Request data engineering and data protection skills.

Learn from IT and shared service departments: Leverage their knowledge as drivers of automation.

Prioritize your data: Decide what you want to work on and monitor.

Put your plans into practice: Get into a cycle of continuous improvement.

Be persistent: You’ll see a step change in your ability to detect fraud risks.

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[4]Citrix, "Driving Digital Transformation with a Secure Digital Workspace," October 2017.

[5]Fieldwork by Citrix, "The Born Digital Effect: Young workers and the new knowledge economy," May 2021.