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Wealth and Asset Management 2022:

The Path to Digital Leadership

A global thought leadership project produced in conjunction with:

Appway, Broadridge, Cisco, eToro, J.P. Morgan Asset Management, Oracle, Protiviti, Sapient Consulting, and Vauban Group

Distribution partner: Robo-Investing

Research background

To provide the investment industry with a digital vision of the future, Roubini ThoughtLab conducted comprehensive global research in conjunction with a coalition of organizations across the industry. These include Appway, Broadridge Financial Solutions, Cisco, eToro, J.P. Morgan Asset Management, Oracle, Protiviti, Sapient Consulting, and Vauban Group.

As part of the study, we established an advisory group of industry executives and experts to help guide the research and provide their insights. From April to June 2017, the Roubini ThoughtLab team surveyed a spectrum of 1,503 investment providers from around the world. At the same time, we conducted 42 in-depth interviews with senior executives from financial institutions, consultancies and technology firms.

The ThoughtLab team analyzed the survey data to spot and forecast trends across sub-sectors, regions, and levels of digital maturity. Our economists then created models to assess the impact of digital adoption on corporate performance and provide the business case for going digital.

This report summarizes our key findings.

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Introduction

Like many industries, wealth and asset management is going through a radical transformation that will reshape the industry in the years ahead. Chief among the forces of change is the inexorable shift to a digital marketplace, which will almost certainly thrust some firms into new prominence and leave others behind.

Last year, Roubini ThoughtLab's Wealth and Asset Management 2021 study surveyed more than 2,000 investors and 500 providers from the financial services industry. Our results indicated that investors throughout the world look to manage their money in the same way they now shop, socialize, communicate, and learn: using a range of digital tools, social media, and mobile apps. The study underscored rising investor expectations for technology-based services and a seamless customer experience.

Last year's study also debunked a common misconception that only young and mass affluent investors want to use digital investment tools. On the contrary, our research revealed that older and richer investors are even more concerned about digital access than their younger, less wealthy counterparts. As in retail and other industries, the digital divide has been breached, and investors from across generations and wealth levels want the same customer experience from investment providers that they are receiving from Google, Apple, and Amazon.

"In today's digital era, investors judge investment providers not just against their financial peers, but against technology leaders like Google, Apple, and Amazon."

John Marcante, CIO, Vanguard

A comprehensive research program

To help investment providers respond to these tectonic shifts, Roubini ThoughtLab focused this year's research on how financial institutions across the industry are rethinking their strategies, processes, products, and business models to meet the digital needs of investors. Titled *Wealth and Asset Management 2022: The Path to Digital Leadership*, this paper provides a vision of the digital future for the investment industry and offers actionable insights and the business case for getting there.

As part of our research effort, the Roubini ThoughtLab team organized a cross-industry group of sponsors and advisors and surveyed 1,503 investment providers from around the world. These organizations included not only universal banks and full-service investment management firms, but also more specialized asset management firms, mutual funds, private banks, retail banks, investment advisers, broker-dealers, alternative investment firms, and a range of institutional investors. To ensure a forward-looking view, our survey also covered fintech companies and online trading platforms.

At the same time, we conducted 42 in-depth interviews with senior executives from a similar range of financial institutions to gain insight into their latest thinking, best practices, and future strategies. We also spoke with industry experts from consultancies, technology firms, and academia to get a more rounded perspective. Our team analyzed the quantitative and qualitative data to understand trends across sectors, regions, and levels of digital maturity. To validate the business case for going digital, our economists created models to assess the impact of digital adoption on corporate performance across an array of indicators.

To do this, we classified respondents into four stages of digital maturity: (1) **beginning**—just starting to think about digital transformation; (2) **transitioning**—investing more in technology and digitalizing some elements of the business; (3) **maturing**—completing digitalization of many business elements, with measurable impacts; and (4) **digital leader**—using fully integrated systems, with strong digital growth. We based these classifications on where respondents put their firms on the digital maturity spectrum and their answers to questions about technology use.

Interestingly, only 2.3% of the 1,503 respondents emerged as digital leaders, and 26% as digitally maturing firms. These digital front-runners often gave different, more sophisticated answers to a wide range of questions regarding digital transformation. They also reported larger digital investment and returns.

Throughout the study, digitally advanced firms emerged as bellwethers of best practice—and as a prism for analyzing the results. Together with the insights from our advisory group of experts and senior executive interviews, the responses of digital leaders served as our guide to the future of the investment industry.

We have highlighted their responses throughout this paper to show how digital advanced firms differ from others in their strategic thinking and technological applications. These differences will illuminate the path to digital leadership for other firms looking to make this critical journey.

Special thanks to the study sponsors

We would like to thank the sponsors of *Wealth and Asset Management 2022: The Path to Digital Leadership*, who contributed financial and intellectual support to this ground-breaking research program. They graciously provided valuable direction and feedback during the course of the project. Without them, this study would not have been possible.

Appway

Broadridge

Cisco Systems, Inc.

eToro

J.P. Morgan Asset Management

Oracle

Protiviti

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In addition, we would like to thank the senior industry executives who took the time to speak with us for this paper: Gonzalo Rodriguez, head of digital transformation, BBVA Spain; Bill Murphy, CTO, Blackstone; Clara Durodie, CEO, Cognitive Finance; Erik Steffen, head of robo advisory investment solutions, Credit Suisse; Andrew Carmody, chief strategy officer, Digi.me; Dean Butler, head of retail wealth, HSBC UK; Paddy Ramanthan, CEO, iValley; Steven Dorval, head of advice and innovation, John Hancock; Brian Egan, private banking manager, Johnson Bank; Sanjay Matthew, financial services field director, Oracle; Adam Hamm, managing director, Protiviti; Jonathan Wyatt, managing director, Protiviti; Bob Reynolds, CEO, Putnam and Great-West Financial; Mark McKenna, head of global marketing, Putnam; Jean-Louis Schiltz, partner, Schiltz & Schiltz; Neesha Hathi, chief digital officer, Charles Schwab; Michael Williamson, executive director, State of Wisconsin Investment Board; Wiwi Gutmannsbauer, global head of omnichannel management, UBS Wealth Management; Rainer Hauser, global head of strategy and business development, UBS Wealth Management; Shane Williams and Nick Middleton, co-heads, UBS SmartWealth; John Marcante, CIO, Vanguard; and Andy Rachleff, CEO, Wealthfront.

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We are proud to be part of this initiative and hope it will help wealth and asset management companies find a successful path to digital leadership.

Lou Celi, program director, *Wealth and Asset Management 2022: The Path to Digital Leadership*, chief executive, Roubini ThoughtLab

1 An industry in flux

Our survey of 1,503 investment providers and personal interviews with senior executives and experts across the globe point to one undeniable trend: The financial services industry is going through a massive digital disruption, similar to the one seen in retail and other industries. For most executives, the question is no longer whether the industry will go through a digital metamorphosis, but how can they ensure they are not left behind. Gonzalo Rodriguez, head of digital transformation, Spain, at BBVA, speaks for many when he says: "The industry is going through a major digital transformation, and it is going to look very different 5 to 10 years down the road."

With the industry facing irreversible change, investment providers need to act now to ensure their digital futures. Firms out in front are already seeing leaps in assets under management, profitability, productivity, and market share. Those behind are not only paying a financial penalty in lost revenue and cost savings, but run the risk of falling out of the race altogether.

"The digitization of the investment industry is happening. If you are not yet on board, you can expect to start losing business as you're unable to meet customers' ever-changing online needs"

Dean Butler, head of retail wealth, HSBC UK

The big shift

The convergence of digital transformation, globalization and market trends will reshape the investment industry over the next five years (see Figure 1.1). "Digital transformation is unstoppable and in some cases, happening faster than expected," says James Cronk, director, financial services at Cisco. Neesha Hathi, chief digital officer at Charles Schwab, believes financial institutions need to respond now. "Most large legacy firms see the writing on the wall. Everyone uses Uber and Amazon and sees what's going on there. It's hard for me to imagine that all of those incumbent firms are just going to sit and watch the movie happen in front of them. They have a lot to lose."

Erik Steffen, head of IS&P digital wealth solutions at Credit Suisse, a leading global wealth manager and investment bank, is preparing for a generational shift. "The big money is still with elderly investors. When this money is inherited by the next generation, they will not have the same relationship with the bank. Technology will allow us to provide them investment advice and support their decision-making at a reduced cost."

At the same time, digitalization is working in tandem with globalization to create an interconnected global marketplace for wealth and asset management services. This gives investment organizations direct access to a wider set of clients across markets and greater opportunities to expand their businesses. CEOs in our survey ranked the rise of emerging markets and local wealth levels as among the most important trend for their businesses.

The power of combining technology with globalization is exemplified by eToro, the social trading and investment platform. Since its humble beginnings in 2007, eToro has mushroomed into a giant global marketplace linking over 6 million users in 140 countries. "When we started eToro," says its 36-year-old CEO and founder Yoni Assia, "we wanted to build a platform that opened the global markets to everyone to trade and invest in a simple and transparent way."

Credit Suisse also believes that technology can enlarge its global footprint. "Digital technology can bring your

Waves of change over the next five years

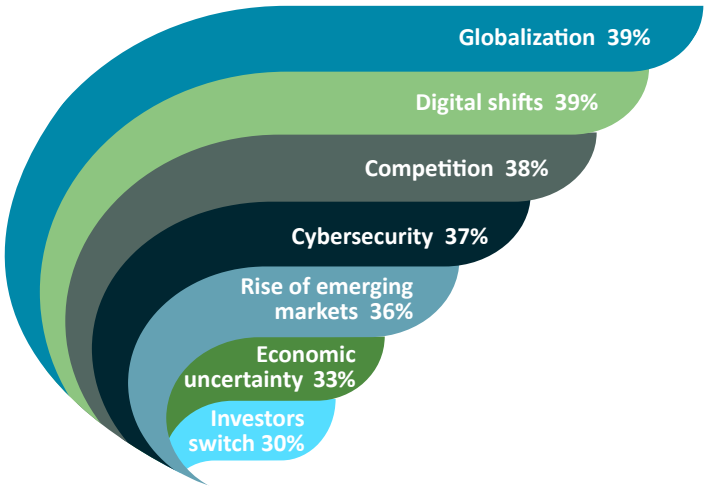


Figure 1.1: Changes respondents believe will have the greatest impact on their organizations over the next five years.

investment ideas to a much broader audience of clients," says Steffen. "It is absolutely key—top of the agenda for senior management. In addition to driving revenue growth through client activation, digital transformation offers great opportunities to leverage our business and go beyond the limits of today's advisory service model."

Turbulence ahead

For many of the firms surveyed, this new interconnected market also means more complex risks. Over the next five years, surveyed executives cite growing competition (38%), data privacy and cybersecurity (37%), and economic uncertainty (33%) as changes that will have a large impact on their businesses. The perception of risk varies considerably by type of institution, location, and executive role.

For example, competition is a bigger worry for fintechs (48%) and full-service investment providers (43%), while data privacy and cybersecurity are seen as higher risks by firms in the Middle East (48%), the UK (45%), and, not surprisingly, by marketing teams (45%).

Adding further complication, executives expect a growing maze of global regulations (see Figure 1.2). This includes greater scrutiny in areas such as conduct and control (47%), risk management (46%), fintech (40%), anti-corruption (38%), and cybersecurity (37%).

Regulatory pressures ahead

Conduct and control	47%
Risk management	46%
Fintech products and services	40%
Anti-corruption	38%
Cybersecurity	37%
Data privacy	37%
Anti-money laundering	34%
Tax reporting	33%
Investor protection	32%
Overseas regulation	32%

Figure 1.2: Where respondents expect increased regulatory pressure in their regions over the next five years.

These pressures vary by institution. For example, fintech regulations are naturally a larger worry for fintechs (56%) and organizations that are embracing fintech, such as full-service investment firms (49%). Likewise, anti-corruption pressures are higher in emerging markets (45%) and for CEOs (47%).

"We work in a market incredibly driven by regulation," says Dean Butler, head of retail wealth at HSBC in the UK. "When you're trying to sell true advice online in a highly restricted regulatory framework that hasn't kept up with the digital medium, it can become painful."

As companies embrace technology, data privacy and cybersecurity will become even bigger issues. This is already the case for digital leaders, which expect the greatest regulatory pressures from data privacy (71%) and cybersecurity (68%). Investment providers have particular worries about recent developments in Europe, where new rules on data privacy (the EU's General Data Protection Regulation) and cybersecurity (the Network and Information Systems cybersecurity directive) are coming into force this year and next.

"The private equity industry is prime for digital disruption. We are essentially using the same business model as since the industry was founded in the 1970s."

David Rubenstein, co-CEO, the Carlyle Group

"If you have even one European customer, the rules will still apply, so you had better be prepared," says Jean-Louis Schiltz, a former Luxembourg cabinet minister and a partner at law firm Schiltz & Schiltz specializing in technology and regulation. This may be one reason why digital leaders have honed in on these issues more than most, putting them on the top of their list of concerns. Although most providers view these regulations as burdensome, Schiltz believes that "clear-cut regulation can in general foster innovation, because it ensures confidence—although it remains to be seen whether this is the case for all of Europe's new privacy rules."

For example, the digitalization of financial services has created an opportunity for providers of digital identity, says Schiltz—but regulation will be key. "If I were to set up a company that offers digital identities and does all sorts of checks, people wouldn't entrust me with their credentials and personal details unless my company were regulated," he argues.

Rethinking strategies for a 24/7 world

This fast-changing business and regulatory environment is causing investment firms to rethink their strategic priorities over the next five years. Our research indicates that providers are leveraging technology to improve both the bottom line by driving efficiencies (51%) and the top line by penetrating new customer segments (50%), expanding distribution (46%), using predictive analytics (45%), and deepening client relationships (43%).

"For the large institutions we work with, the big areas of focus are creating a set of digital tools, capabilities, and experiences for retail investors and digitizing service models to reduce expenses," says Vinod Raman, VP digital advice solutions at Fidelity Institutional.

Cisco's Cronk says that technology becomes more essential as firms look to move from operating models segmented by products to a more agile, seamless, customer service-oriented model—while at the same time reducing costs and driving operational efficiency.

"Achieving these business outcomes without being keenly aware of how to use technology as an enabler will be extremely difficult, if not impossible," he says.

Steffen of Credit Suisse says it's important for firms to think it through, rather than adding technology through bottom-up initiatives. "It needs to be top-down from management—a clear, precise strategy for the business model and how the firm will make money from it in the future. Then you build the technology capabilities according to your business strategy."

According to Jason Bettinger, director, financial services, industry solutions group at Cisco, "As mobility, cloud, and analytics fuel digital transformation and reshape customer expectations, technology becomes an increasingly integral part of the business conversation. C-suite and line-of-business leaders and IT will need to be more tightly aligned than ever before to stay ahead of the digital disruption."

Coping with GDPR

The EU's new General Data Protection Regulation that goes into effect in May next year shows both the downside and upside of regulatory change, according to Andrew Carmody, the chief strategy officer for Digi.me, a fintech specializing in personal data. "Financial institutions will need to go through the intricate exercise of sorting through silos of scattered data, so that they can give back all personal data to their customers in a machine-readable format. They will then need to get their customers' permission to use personal data. That's happening in Europe—and any US bank that does business in Europe has to do this globally."

But Carmody sees a benefit for those firms that find innovative solutions for reconciling these disparate data sets. "What if all your divisions gave the data back to each customer and then said to the customer, would you give a copy of that back to us? Of course, you gave it to me, you're my bank, no problem. Now you've got a fully associated, fully aggregated financial picture for the first time ever, fully permissioned by the customer."

Providers resetting priorities

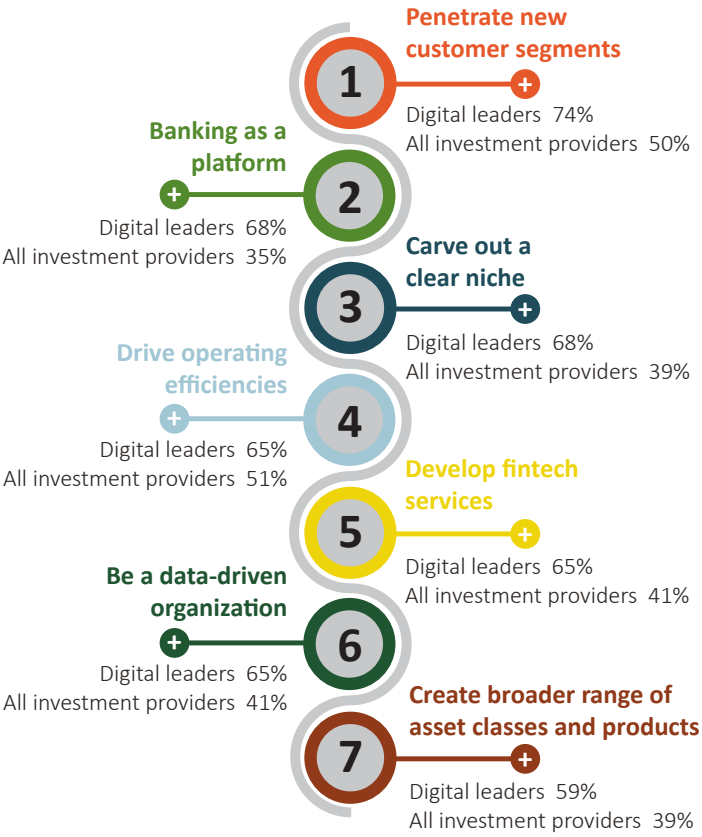


Figure 1.3: Strategic priorities over the next five years.

A key part of what defines digital leaders is that they are moving faster than other firms in reordering their strategic priorities for a digital marketplace. They are putting a far greater emphasis on using technology to drive growth by winning new customers, developing a fintech ecosystem, and expanding product offerings. Similarly, they are optimizing their operations by focusing on platform banking, driving efficiencies, and becoming data-driven (see Figure 1.3).

Meeting evolving customer expectations

Rethinking strategy starts with understanding the evolving needs of customers. According to Wiwi Gutmannsbauer, global head, omnichannel management for UBS Wealth Management, successful organizations in today's digital environment must shift from an inside-out view to an outside-in one. "An outside-in perspective enables you to position yourself, your services, and your advisors in a way that defines what the client wants, how they want it, and when they want it."

Rising customer expectations

Product simplicity and transparency	49%
Anytime, anywhere, any device access	45%
Robust cybersecurity and data protection	43%
Deep knowledge of investment and tax issues	34%
More innovative and customized products	32%
Meet investment needs or they will switch	32%
Investment products across asset classes, themes, and geographies	31%
Socially responsible investment options	27%
Reduced fees and special incentives	27%
Greater fintech capabilities	23%

Figure 1.4: Percentage of respondents who see client expectations changing significantly in each area.

An outside-in orientation is critical for staying on top of rising customer expectations in today's digital marketplace. John Marcante, CIO of Vanguard, believes that technology is causing a sea change in these expectations: "I strongly believe that what has happened in the retail space with Amazon, Google, and Apple is now occurring in financial services. Look at what Jeff Bezos has done with building client-centricity at Amazon—understanding the client journey, defining a need, and fulfilling it quickly. It is that level of client-centricity, that frictionless ease of doing business, and the lowering of prices that follows, which investors will come to expect."

Our survey provides evidence that many investors want a retail-style digital experience. Executives report fast-rising customer expectations in many areas, from product simplicity/transparency (49%) and anytime, anywhere, any device access (45%) to robust cybersecurity (43%,) more innovative products (32%), and reduced fees (27%). (See Figure 1.4.)

These expectations can vary by market. For instance, the push for product simplicity is higher in Japan (60%) than other markets; similarly, the need for anytime, anywhere, any device access is stronger in the Nordic countries (55%) and the desire for cybersecurity is greater in Dubai (56%). "There are wide mixes across different markets," says UBS's Gutmannsbauer. "If you compare the Nordics versus Switzerland versus Russia, you see huge differences in how they use technology."

For Raman of Fidelity, meeting the expectations of customers in the future will come down to three words: holistic, personalized, and social. "First, holistic—offering customers holistic advice across all of their financial needs, not just investment, but also broader financial planning, healthcare, and banking/lending. Second, personalized—using a platform or a technology leveraging techniques like artificial intelligence, to provide the right products and services at the right time to customers without invading their privacy. And third, social—where customers feel connected with a social community and are able to leverage the evaluations and viewpoints of others to make decisions."

Providers are not fully prepared

Figure 1.5: Percentage of respondents not adequately prepared to meet investor expectations.

Nathan Erickson, the chief investment officer of MRA Associates, a boutique investment advisor with $2.8 billion in AUM, expects a two-fold impact on investment firms: “First, we will need to be more flexible. If clients don’t want to come into the office, they shouldn’t have to. It will be critical to use any medium possible to deliver to clients what they need.”

The second factor is clearly demonstrating the value that the provider is offering to the customer, which Erickson sees as a failure for the industry on the whole. “We see clarity of value as our biggest challenge—how to communicate transparently exactly what you’re paying, what you get for that, and why it’s worth it.”

Given the speed and degree of change, not all providers are prepared to meet customer needs (see Figure 1.5). Some investment subsectors are particularly struggling. For example, 71% of broker-dealers are not ready for fintech; 50% of mutual funds companies are not prepared for holistic goal planning, and 36% of institutional investors have inadequate cybersecurity.

To avoid losing customers, many incumbent firms will need to play catch-up. “On a scale of one to ten, the consequences of our industry moving too slowly on technology is a 12,” says Matthew Peterson, chief wealth strategist, LPL Financial.

How Pictet is using technology to go global

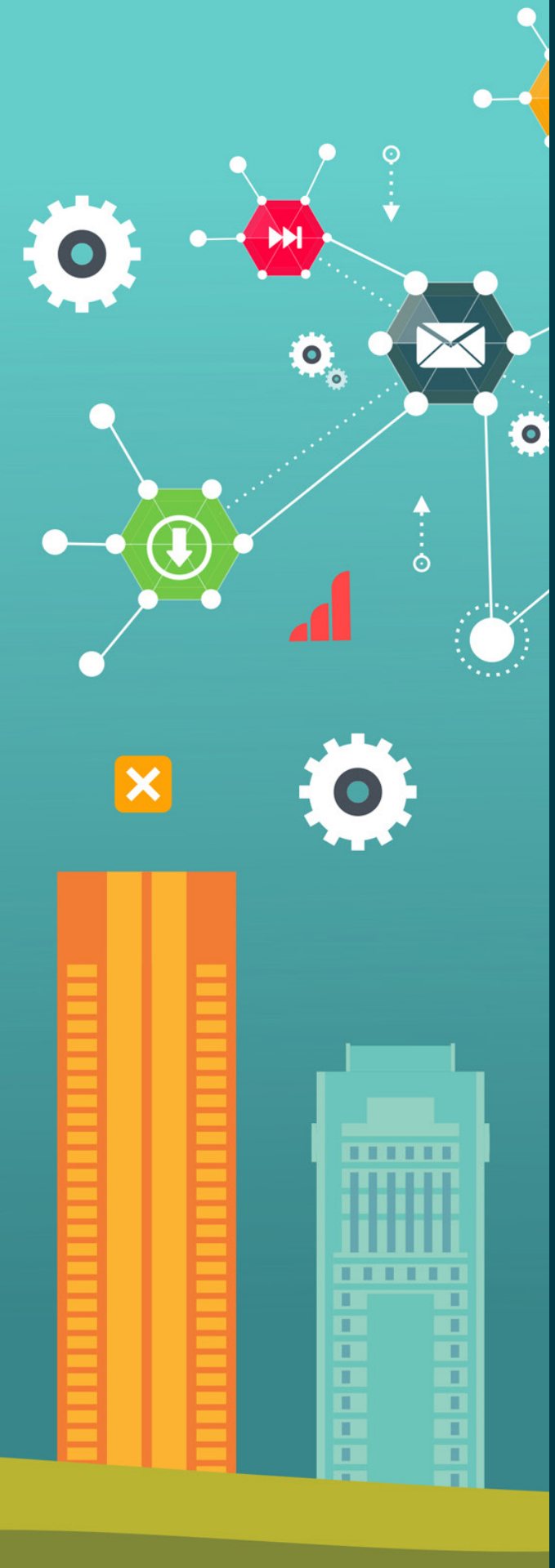
Hoping to build on its 200 years of success in the investment community, Pictet, a Swiss bank, is using digital technology to expand its horizons. “We looked at where our customer base was for our thematic funds and then tried to identify new opportunities,” says Stephen Gunkel, head of communications, Pictet Asset Management.

Already the top player in Europe for global thematic investing, Pictet targeted three emerging segments: (1) North America, where Pictet has not traditionally operated, (2) institutions, which have been underinvested in thematic strategies, and (3) millennials, who want socially responsible investing options.

Pictet decided to reach these potential customers through digital channels. “Our thematic funds have advisory boards of scientists, academics, and entrepreneurs, who specialize in the fields where we invest. They have great stories to tell,” says Gunkel. “We use those assets, including infographics, photography, punchy headlines, and videos, and host them on a hub called Mega.” Pictet also heavily promotes Mega content on social media. “If somebody is looking at megatrends or thematic investing, then we really want to be at the top of that page,” says Gunkel.

So far, he says, Mega has garnered about 8,000 visitors a month and some 10,000 regular followers, a good result for a private bank website. Mega has also helped Pictet sell its recently launched robotics fund and has been instrumental in the firm’s efforts to find a North American distributor for its funds.

Pictet uses its digital expertise not just to reach investors, but also to select investments. According to Gunkel, portfolio managers typically invest in innovative technology solutions for the megatrends in their thematic investment portfolios.



2 The digital imperative

Digital transformation is now at the top of the CEO agenda. Faced with rising digital expectations from investors, growing competition from early fintech adopters, and an inter-generational wealth transfer, leaders across the industry recognize the need to go digital. Across the industry and around the world, the message is clear: Digital leadership is crucial for thriving and surviving over the next five years.

For many firms, the goal is to become omnichannel, customer-centric organizations. This will require harnessing advanced analytics and the latest technologies to ensure a seamless customer experience built around back-office efficiencies. Fintech will become table stakes in an industry that will need to combine investment and digital savvy to create a high-tech, high-touch investment approach to service customers. To engineer such a dramatic transformation, CEOs will need to instill an innovation culture through the enterprise and ensure they have the right talent to win the next war.

"We are a technology company with a banking license."

Michael Corbat, CEO, Citigroup

CEOs embrace digital transformation

Top executives across the industry agree that going digital is essential for succeeding in a 24/7 marketplace. "If you don't master technology, you won't survive," says Francisco Gonzáles, chairman of BBVA. Bob Reynolds, president and CEO of Putnam Investments and Great-West Financial, adds: "Technology is the future of our industry. You have to embrace it as a culture and make it part of who you are."

One of the most striking changes from last year's research is the elevation of digital transformation on the CEO's priority list. Last year, 12% of CEOs said that digital transformation was unimportant, and another 12% said that it was just slightly important. This year, nearly all CEOs (96%), across all sub-sectors and locations, view digital transformation as central to their businesses and report that their companies are actively undergoing digital transformation.

CEOs and their teams see digital transformation as a way to improve performance, from boosting revenue growth and enhancing decision-making to attracting customers and driving cost efficiencies (see Figure 2.1). "Digital transformation can make you both more efficient and more relevant to your existing customers and distribution channels," says Steven Dorval, head of advice and innovation for John Hancock, "but it's also an opportunity to fundamentally re-imagine and create new business channels for yourself."

Investment providers use digital technology to create value in ways that are most relevant for their businesses. For example, private banks (40%) see the biggest benefit in improved decision-making, while institutional investors (38%) derive the highest value from client information. Boosting revenue is the main value driver for asset management providers (50%) and full-service investment institutions (44%).

Wiwi Gutmannsbauer, global head of omnichannel management at UBS Wealth Management, adds that technology benefits not just clients, but also employees. "Technology is our friend and our inspiration in our efforts to deliver the perfect client and employee experience," he says.

How technology creates value

Figure 2.1: Percentage of respondents reporting how technology drives value.

The race to digital leadership

This year's survey shows that just about all investment providers (99%) are in the process of digital transformation. This is true for every organizational type we studied, including universal and retail banks, alternative investment and asset management firms, private banks and investment advisors, and broker-dealers and institutional investors. It is also true across geographic regions and institution sizes.

While nearly all investment providers are pursuing digital transformation, they are doing so at different speeds. As part of our analysis, we categorized investment providers into four stages of digital development: beginning, transitioning, maturing, and digital leaders (see Figure 2.2 for definitions).

About a quarter of firms surveyed are just beginning their digital journey, almost half are transitioning, and slightly over a quarter are maturing. Only about 2% see themselves as digital leaders (see Figure 2.3).

Four stages of digital maturity

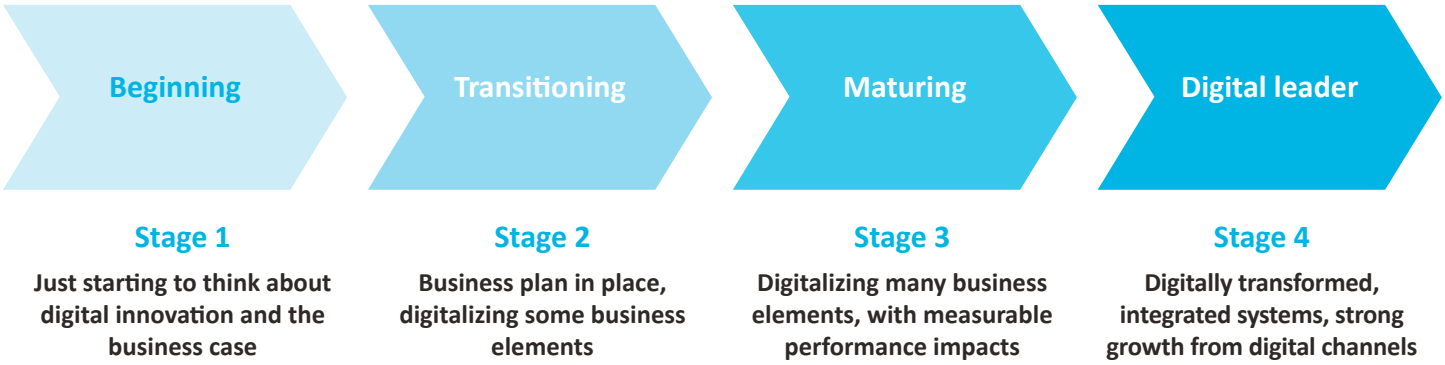


Figure 2.2: How respondents classified themselves on the digital maturity spectrum.

Full-service institutions are out front in the race to digital leadership. Of those surveyed, 7.5% consider themselves digital leaders and almost 50% are digitally maturing. Retail banks are a pace or two behind them: 4.8% are digital leaders and 33% maturing. We identified no digital leaders among broker-dealers and alternative investment firms, which are typically in the early stages of digital transformation.

Over the next five years, two-thirds of investment providers plan to leap forward. One out of five firms expect to be digital leaders, and just under half plan to be maturing. Full-service institutions expect to stay ahead: 87% plan to be digitally maturing or digital leaders by 2022. Next in line are private banks (81%), retail banks (80%), and asset management firms (68%).

"In today's digital era, investors judge investment providers not just against their financial peers, but against technology leaders like Google, Apple, and Amazon," says John Marcante, CIO of Vanguard. This has raised the bar for investment providers: Not only do they need to recast their investment business through a digital lens, but they must also adopt a Silicon Valley style of continuous evolution.

Few digital leaders now, but many are gearing up

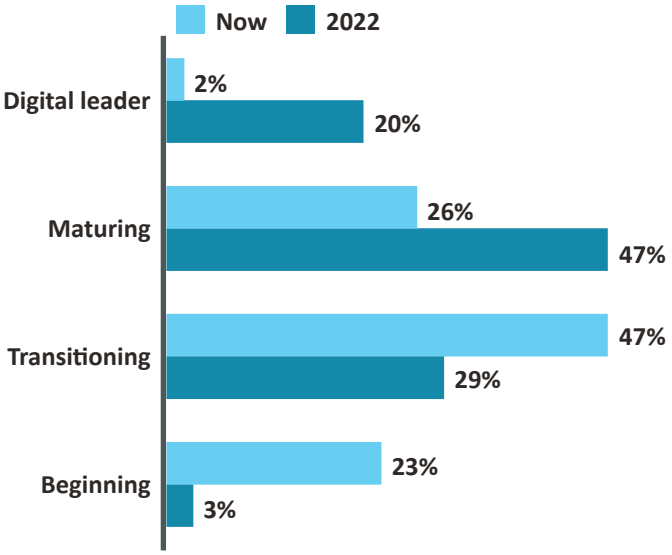


Figure 2.3: Where investment providers see themselves now in digital transformation, and where they plan to be over the next five years.

What makes a digital leader?

Our economists ran statistical correlations to examine the common characteristics of digital leaders. Our research shows that digital leaders excel in seven key areas:

1. A digital vision and business case. "Digital leaders have a clear vision of where their company should go," says Jonathan Wyatt, managing director, global head of Protiviti Digital. "They are superb at aligning technology with their business goals and growth plans." Our research shows that just about all digital leaders (97%) identify future areas of growth from digital innovation, 85% ensure close coordination between digital and business teams, and 74% have developed a digital vision and value proposition.

2. A cogent digital transformation plan. Digital leaders approach transformation methodically, says Cory Gunderson, head of global financial services at Protiviti. "They start with an assessment of where they are and where they want to be, and then sequence their plans accordingly. But they also recognize that digital leadership is not a destination but an ongoing journey." Indeed, our survey shows that 82% are executing a full digital transformation, and 77% are following a properly staged road map.

3. A culture of innovation. To deliver on their vision, digital leaders foster a culture of innovation (85%), encourage the cross-pollination of digital ideas (79%), and reward intrapreneurship (77%). "You have to create a culture that change is good," says Bob Reynolds, CEO of Putnam and Great-West Financial. "From day one, I said, if you don't like change you're in the wrong organization, because we know things are going to change – from regulations to technology to making the organization better."

4. A customer-centric mindset. For digital leaders, customer-centricity is not just a goal, it is a passion. "Customer centricity gives us a different North Star and allows us to do things that other firms may not be willing to do," says Neesha Hathi, chief digital officer at Charles Schwab. "It's liberating. If we're doing what's right for the client, then we are free to disrupt ourselves." Digital leaders in our study agree: 91% focus on analyzing changing customer expectations, and 88% put the customer at the center of digital innovation.

5. An agile product development process. Digital leaders manage product development as a continuous process, according to Steven Dorval, head of advice and innovation at John Hancock. "We're trying to take a start-up mentality, where we're constantly building, testing, and trying to find that elusive product-market fit," he says. Like John Hancock, digital leaders in our survey strive to shorten times to market (85%) and adapt products to meet evolving customer digital needs (82%). In addition, three out of four digital leaders use the cloud as a platform to enable agile product development.

6. Early adoption of advanced technology. "Digital leaders are data- and analytics-driven companies that are starting to treat data like a precious commodity," says Protiviti's Wyatt. Indeed, 94% of digital leaders harness analytics throughout their businesses, 88% have a range of fintech capabilities, and 85% have scanning systems to track emerging technologies. Most digital leaders (88%) report that they have airtight cybersecurity. "When you are able to demonstrate to your customers that you have manifestly stronger measures to protect their data and money, then you start to create blue water between you and the competition," says Bill Egerton, chief strategy officer at Vauban Group, a cybersecurity provider.

7. A digital team to drive change. For Erik Steffen, head of IS&P digital wealth solutions at Credit Suisse, the secret to digital success is having the right technology expertise across management levels and functions. "Having a precise strategy built around technology is not enough; you need people that understand both technology and business models." To achieve this level of excellence, digital leaders provide training on technology and business (94%), create dedicated digital teams (79%), and are creative in attracting and retaining staff (79%).

Embracing fintech

For digital leaders, fintech is a core capability. Like other investment firms, digital leaders build fintech expertise through partnerships, acquisitions, and licensing. But they are more advanced in their use of fintech: 44% (vs. 16% of all firms) integrate fintech into the end-to-end business, 27% (vs. 8%) operate fintech as a stand-alone business, and 24% (vs. 14%) develop fintech capabilities in-house (see Figure 2.4).

Digital leaders are also more apt to apply a broader range of fintech solutions, combining robo-advisory, financial planning, and online trading. While most fintech startups see their future linked to incumbents, some fintech entrepreneurs, like Andy Rachleff, CEO of Wealthfront, consider fintech a classical disruptive innovation that

Approaches to fintech

Approaches	Digital leaders	All firms
Integrate fintech into core processes and products	44%	16%
Operate fintech as a standalone business	27%	8%
Buy/license fintech software	27%	15%
Build fintech capabilities in-house	24%	14%
Acquire fintech companies	24%	21%
Partner with fintechs	17%	30%

Figure 2.4: Percentage agreeing with corresponding statements regarding their firm's approach to fintech.

may ultimately displace established competitors over the next few decades. "Wealthfront's customers are typically under 45, with less than $1 million to invest. This is an audience that is uneconomic for the incumbents to serve," says Rachleff. "They are digitally native and prefer to do everything through technology versus talking to people. If incumbents try to compete today, they will undermine the economics of their own businesses. But inevitably this younger audience will own the lion's share of assets, so if incumbents ignore them, they will lose out."

Most incumbents surveyed disagree: Only 7.3% think fintech is a competitive threat. Rather than a disruptive innovation, they see fintech as a foundational innovation that can help incumbents expand their customer bases, as UBS is doing (see box), and provide an integrated, omnichannel customer experience. Our research validates this view, showing that the majority of customers, regardless of wealth and age levels, want a mixture of high-touch with high-tech.

Charles Schwab views fintech as a "core competency" says Hathi, which is one reason it opted to build its Intelligent Portfolios robo-advisory offering in-house. However, she says, "we do integrate third-party fintech technology into different parts of our business." These include an asset aggregation service through Yodlee, and electronic signatures through Docusign. "A lot of the time, clients don't really know that there's a third-party technology involved. We obsess about making it feel seamless," says Hathi.

Schwab acquires, partners, licenses, or builds fintech solutions, depending on a number of factors, from internal resources to need for speed. "There are providers out there that are doing things really well," says Hathi. "Why not partner and leverage what they've already built? It really does come down to: Is it a core competency, and how strategic and critical is it? Does it need to scale? If it's something we're trying to learn from,

UBS: Forging ahead with fintech

The world's largest manager of private wealth, 150-year old UBS has long catered to the very rich. Now, however, the bank is extending its services to the mass affluent in the UK, with UBS SmartWealth, a robo-advisory offering it built itself to serve as a front-end to the bank's existing investment business.

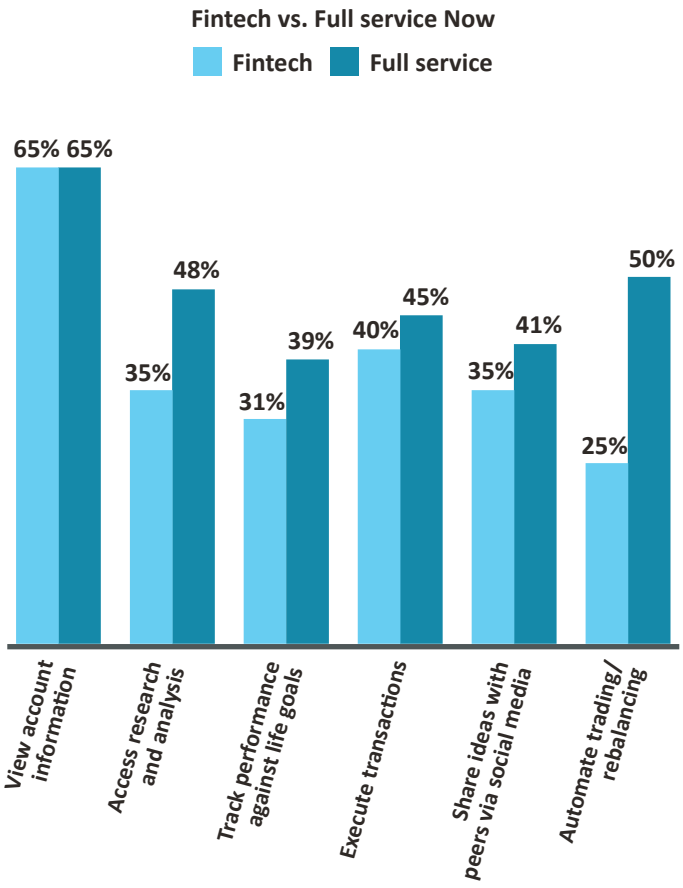
The service automates client onboarding, risk appetite and goal planning, and recommends an asset allocation—which is actually based on the work of UBS human asset managers. "With a minimum of £15,000, clients can get the power of UBS effectively in their pockets on their phones," says Nick Middleton, co-head of UBS SmartWealth.

According to Middleton, UBS SmartWealth is the only automated service in the UK that offers a goal-planning tool. It also takes a more sophisticated approach to risk assessment. "Most of our competitors have a little slider that clients can move up the risk curve as they see fit," says Middleton. "We go much deeper to understand the client's financial situation and capacity to bear loss, using a behavioral finance tool we developed."

UBS SmartWealth provides a digital substitute for the highest-cost element of its wealth management operation for high net worth individuals—the human advisors—while maximizing the use of the bank's vast investment management resources and expertise. Both the digital and personal sides of the bank benefit. "We leverage the talent within the bank, but they also can leverage our ideas to take the overall business forward faster," says UBS SmartWealth co-head Shane Williams.

Incumbents are catching up to fintechs

Full-service banks are already on par with or ahead of fintechs for digitally enabled investment activities.



In five years, other investment providers will catch up to fintechs in many ways.

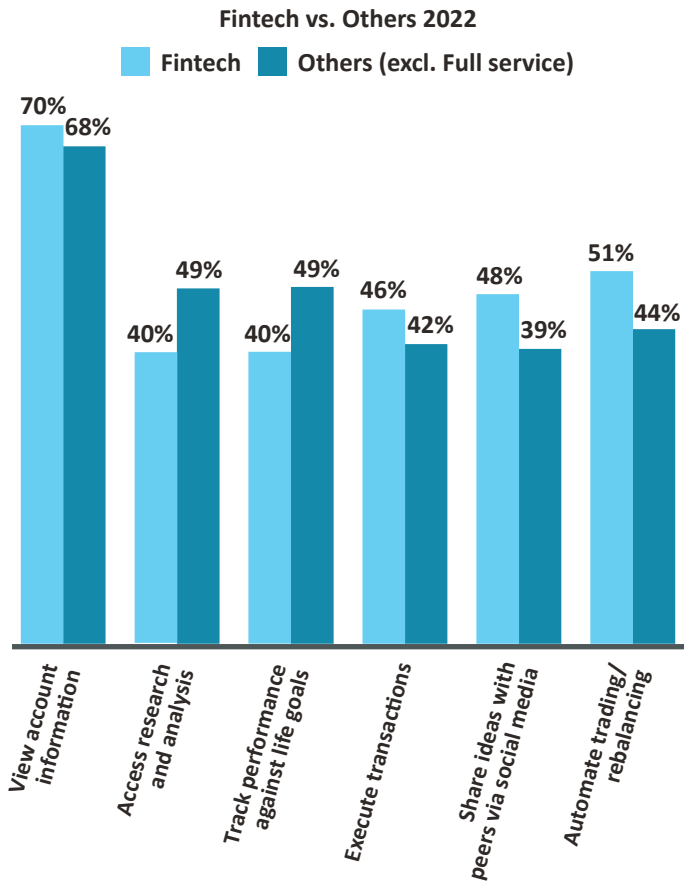


Figure 2.5: Individual investor activities respondents are enabling digitally now and plan to enable in five years.

we may be more likely to take a partner than we would to purchase or build."

Adam Hamm, managing director at Protiviti, sees pros and cons for each method, but generally favors partnership or acquisition. "Under those two models, you have the advantage of bringing in information and ideas from companies that already know how to do this. You can leverage that to then take your business from A to Z in your digital transformation," he says.

For incumbents, many of these partnerships are with robo-advisory fintechs, but not all. They include those offering services like automated client onboarding and identity verification, or social trading and investment firms like eToro, which has partnered with two of its venture capital investors, Russia's Sberbank and China's Ping An, to offer services to their clients. "Becoming a fintech business is probably only suitable for very specific financial institutions," says Yoni Assia, CEO and founder of eToro. "For others, the right route is cooperation. I know that a lot of fintech firms are actively interested in working with existing wealth management and financial institutions."

Dean Butler, head of retail wealth at HSBC in the UK, also believes collaboration is in the interests of fintechs—and most of them are looking to merge with incumbents in the long term. "To me, fintechs need corporates and corporates need fintechs. For every fintech that starts up, probably 1,000 will fail," he says.

In fact, many full-service investment providers are already on a par with or ahead of fintechs, when it comes to providing digitally enabled services (see Figure 2.5). But other types of investment providers are not standing still and believe they will catch up over the next five years.

In the long run, incumbents have greater worries about competition coming from giant internet platform companies, such as Amazon, Alibaba, and Google, which have much greater scale than fintechs and are already making inroads into financial services. "I see a further convergence of the banking industry with the platform economy," says UBS's Gutmannsbauer.

Overcoming obstacles

Despite the benefits of going digital, for many organizations, getting there won't be easy. The obstacles range from budgetary constraints and unproven return on investment to concerns about data security and market uncertainty (see Figure 2.6).

These hurdles can vary by institution: Broker-dealers, for example, lack a digital strategy and implementation plan, while investment advisors have a shortage of digital talent. The obstacles also vary by region: In the Middle East, for example, budgetary concerns loom large, while in Asia-Pacific, firms face organizational resistance.

HSBC's Butler argues that not having the right technical infrastructure is another stumbling block. "Legacy systems are the key problem," says Butler, who adds that financial institutions have a great many that will have to be rebuilt. "Now businesses are trying to quickly deploy new sophisticated systems, start again, and that's where you see the pain points from an integration perspective."

Overcoming organizational obstacles is also important, executives say, since technology doesn't address all issues. Bringing everyone on board in a thoughtful and strategic way is the key.

For digital leaders, the constraints are less about budget, and more about cybersecurity. "It's an unfortunate fact that people have little trust in this industry—so it would destroy that trust even further to have security-related events concerning their financial information," says Hathi of Charles Schwab. "That's one reason we're very selective about how we choose more innovative approaches and cloud-based applications—we really kick the tires and build controls and safety valves around those innovations."

Main obstacles to digital transformation

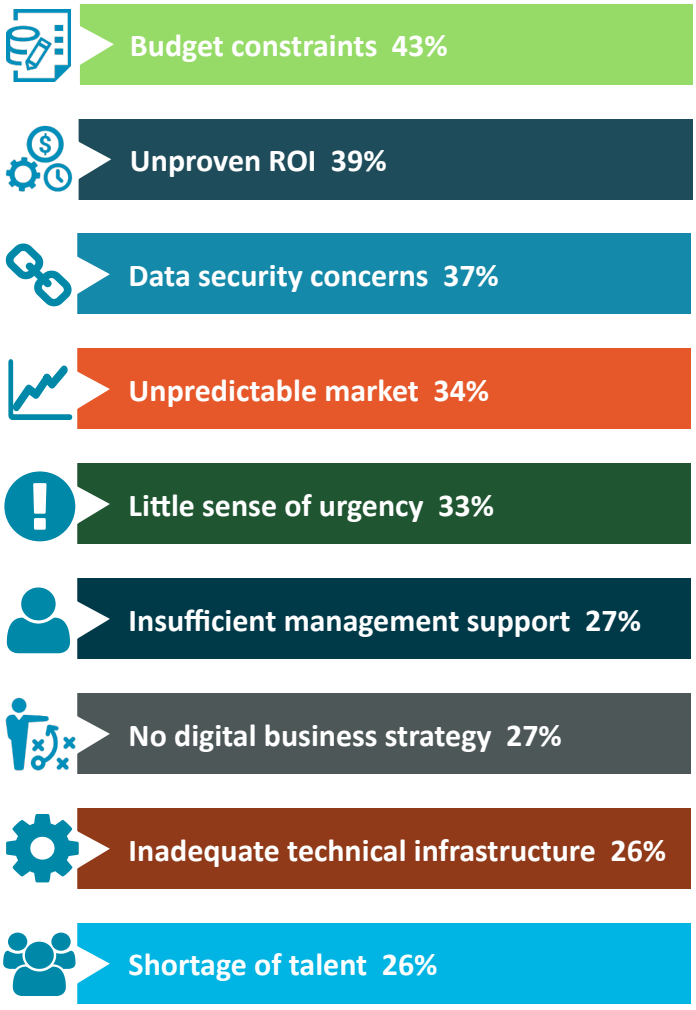


Figure 2.6: Obstacles to digital transformation that respondents ranked as 'large' for their organizations.

Fintech factoids

24% of CEOs do not see fintech as a priority

13% of mutual funds companies see fintech as a major competitive threat

27% of investment firms with greater than $1 trillion in AUM operate fintech as a standalone business

10% of fintechs see internet companies, like Amazon and Alibaba, as major competitive threats

How Putnam uses technology to drive value

With $165 billion under management, Putnam Investments has practiced an active approach to investment since its first fund was established in 1937. While many firms harness technology to enable customers to self-direct their investments, Putnam is doing the opposite: using technology to build value for investors beyond what smart beta or an index fund can do.

CEO Bob Reynolds sees many benefits of digital technology for active investment management. "Active management is about the arbitrage of information," explains Reynolds. "Whether you are using big data, artificial intelligence or machine learning, new technology enables us to arbitrage information much more quickly and less expensively. Technology allows us to take a broad look at data across the board, and put it into the hands of an individual who is skilled in making decisions about whether to buy or sell." The firm provides risk tools, exposure analysis, and other proprietary data analytics that deliver insights to individual portfolio managers every morning when they come into the office.

New digitally enabled tools for adding value

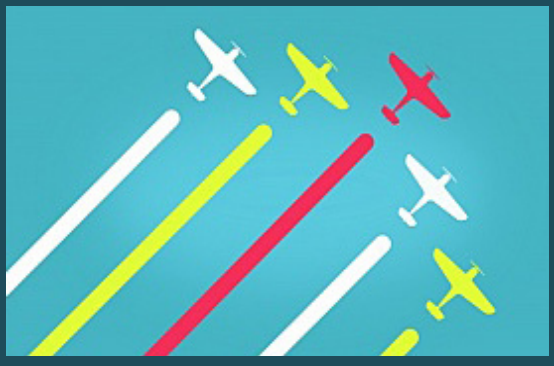
According to Reynolds, adding value for investors has several dimensions. "One way of defining value is performance net of fees over any type of benchmark. Another way is to drive long-term consistent performance by making smart decisions aided by technology. Not only does technology help deliver critical information to portfolio managers, but it also takes a very complicated subject and helps to make it easy to understand."

One such tool is Putnam's Fund Visualizer app, which allows advisors and their clients to analyze funds from across the industry and model portfolio performance under different approaches. "It lets you assess the impact of adjusting mutual funds and holdings in your portfolio, and what that does to the risk characteristics," Reynolds says.

Social media also helps Putnam create more value for customers, according to Reynolds. "One of the most significant changes in our business has been social media. We're spending a tremendous amount of time on social media to reach people that have an interest in a specific part of the market or fund. To us, it's proved very valuable in getting our products to the right people."

Differentiating through product innovation

Putnam is seeking fresh ways to differentiate its firm's offerings through greater specialization. "Over the next five years, we want to continue to push the envelope to areas that are non-correlated to indexes and where we know we can add value for the investor," Reynolds says. One such area is ESG (Environmental, Social, and Governance) funds.



Reynolds is quick to point out that he believes his firm's new ideas are not just aimed at millennials. "My mother is 89 years old, and she texts, emails, and uses an iPad and iPhone. Technology is extremely important to all segments of the population. As you get older, a blend of personal advice and technology becomes essential."

3 Staying ahead of technology

By 2022, the SMAC stack (social, mobile, analytics, and cloud) will be table stakes for investment providers. Cloud platforms will largely replace legacy systems to support agile innovation, customer-centricity, and internal collaboration. Wealth and asset management firms will integrate new sources of data from within and outside their organizations and rely on sophisticated analytics to extract greater value for engaging clients, managing portfolios, and streamlining back office operations.

To drive growth and leap-frog past competitors, investment providers will embrace a variety of game-changing technologies, from artificial intelligence, blockchain, and APIs, to predictive analytics, web collaboration tools, and facial recognition. Companies will also harness these technologies to cope with evolving regulations and cybersecurity risks, as they strive to make their IT systems more secure, resilient, and adaptive.

"We are on a mission to basically take every customer interaction and every process of the bank—and digitize the whole thing."

Darryl West, CIO, HSBC

Building the digital foundation

By 2022, data analytics, cloud, mobile, and social media will become utility technologies for investment firms (see Figure 3.1). The SMAC stack will be the technology baseline for firms, onto which they can build the more advanced technologies that will offer digital leaders a competitive edge. "The base data collection technologies may not be very sexy, but you need a solid foundation to build anything that's new and novel," says Bill Murphy, chief technology officer at Blackstone (see box).

The SMAC stack will become pervasive

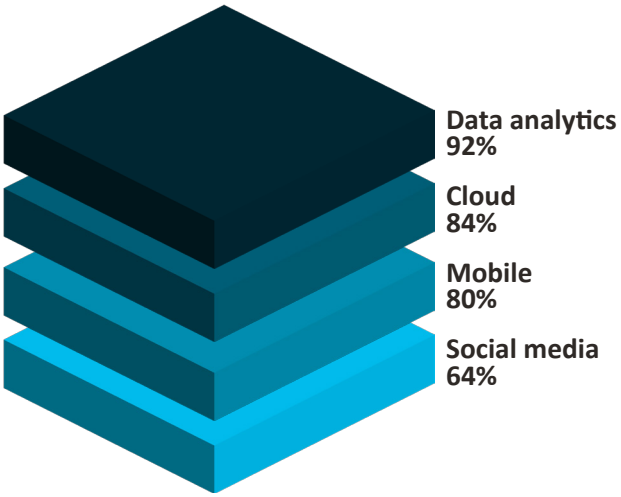


Figure 3.1: Basic technologies respondents expect their firms to be using by 2022.

An agile cloud-based system provides the groundwork for digital leadership. Such platforms, which facilitate the use of application programming interfaces (APIs), enable firms to quickly add services or adapt to market and regulatory shifts. More than half (53%) of providers surveyed plan to use a cloud platform to replace their legacy systems, particularly alternative investment firms (61%), full-service institutions (58%), fintechs (56%), family offices (56%), and digital leaders (59%).

"Some big asset managers are still on mainframes," says Chirag Shah, global head of fintech for Sapient Consultants. "They are trying to figure out how they can change the customer experience—provide all the social, mobile, and high-touch offerings people are expecting nowadays. They will need to move to the cloud to be able to do that."

Blackstone: Replacing the plumbing

When Bill Murphy left Capital IQ to join Blackstone as chief technology officer six years ago, his mission was to completely revamp the firm's IT infrastructure. "We had to rip down a lot of it—fix the plumbing and electricity, to use an analogy," he says. That included all the IT and data infrastructure and the client relationship management system.

Murphy says his aim was to get the firm to stop relying on a Microsoft Excel-based "back of the envelope" approach, and adopt instead "an auditable, repeatable, efficient process to lower our costs and risk by making information accessible to more people, however they want it."

This involved building in a cloud-based, software-as-a-service (SAAS) mentality as much as possible, with a combination of home-grown systems and third-party APIs, explains Murphy. "We didn't want to build technology for technology's sake, and we also didn't want to build things in a way that's going to be outdated."

The new systems include an investor portal on a master data management system that Murphy calls best-in-class. "We are about to launch a full electronic onboarding capability to put everything limited partners do with subscription documents online," says Murphy. He adds that the process is much the same for Blackstone's high net worth private equity and hedge fund clients as for retail client onboarding at full-service asset managers, "but even more critical and complicated given the additional regulatory and other types of checks that have to happen, since we are taking in much larger amounts of money, and using more complex investment vehicles."

He adds that in some ways, alternative asset managers are benefiting from the relatively small number of transactions they do compared to public markets investors. "Because of the nature of the industry, it hasn't been a hotbed for technology historically," he says. "The good thing is there's relatively little technology debt that has built up in our industry versus the traditional asset managers who have been heavily investing in technology for 30 years."

According to our survey, moving to the cloud will help investment providers support customer centricity, reduce operating costs, accelerate time to market, and facilitate agile innovation (see Figure 3.2). John Marcante, CIO at Vanguard, is already reaping the benefits. "Cloud plays a big role in allowing us to quickly create an environment and deploy it in a fashion that is nimble, cheap, scalable, and repeatable," he says. In fact, although Vanguard uses a private cloud system, it is moving toward a public cloud implementation. "The public cloud is the future," says Marcante.

The cloud will facilitate digital leadership

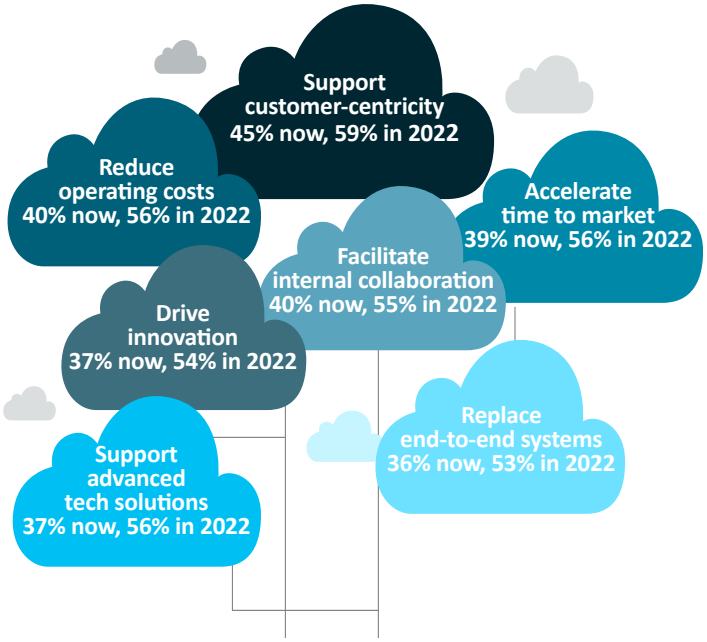


Figure 3.2: How respondents are using the cloud now and how they plan to do so in five years.

For most investment providers, even the most digitally advanced, shifting to the cloud will take time. "Like lots of other firms, we use cloud-based applications all throughout the organization," says Neesha Hathi, chief digital officer at Charles Schwab. "Like other firms, we haven't yet moved our legacy systems to the cloud. My guess is that it will be many years before firms will be all the way there."

Beyond the SMAC stack

A cloud-based platform makes it easier for firms to harness new technologies, such as blockchain, robotics, artificial intelligence, and APIs, all of which our research shows will be rising in importance and vital for staying in the digital lead (see Figure 3.3).

A cloud platform, coupled with a data warehouse, is crucial for leveraging advanced analytics to personalize offerings, improve forecasting, and target clients. "Once you have moved to a cloud platform and consolidated your data, you have access to new ecosystems of data sources and innovative third-party software. By combining your own data with these new sources, you can derive more holistic insights into your customers," says Tyrone Canaday, managing director at Protiviti.

Harnessing data is critical; customer intelligence will be the most important predictor of revenue growth and profitability. Some firms have already begun using data gathered from a variety of internal and external sources—

Fastest growing technologies to 2022

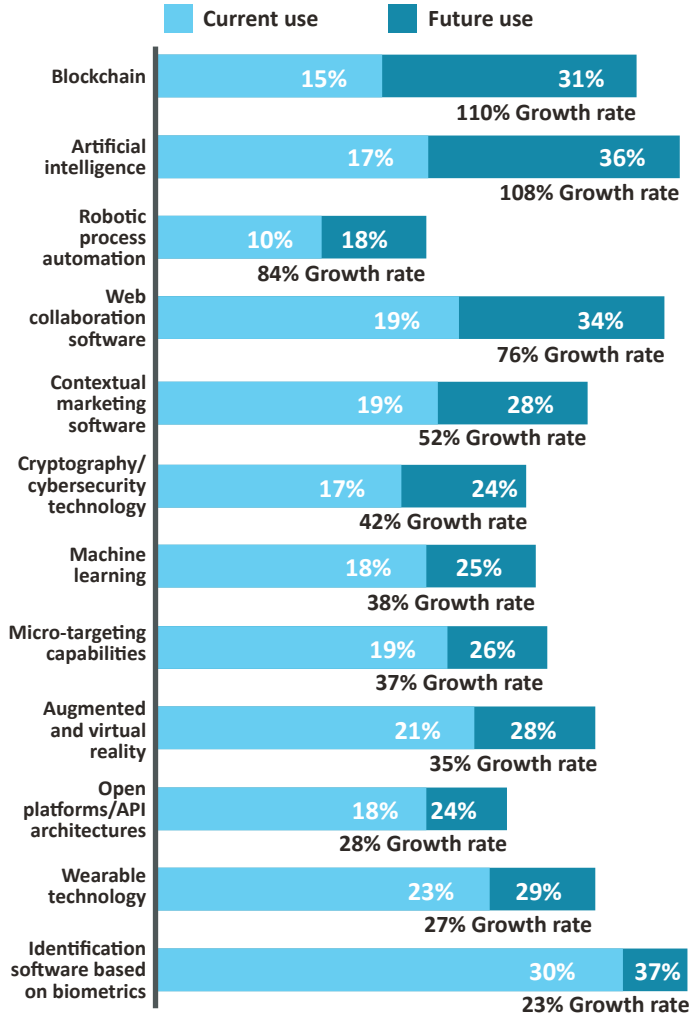


Figure 3.3: Advanced technologies respondents expect to be using by 2022.

including social media—to put together a picture of their clients and prospective clients for use in marketing and to improve the advice they are offering.

Steve Scruton, president of Broadridge Advisor Solutions, says data analytics will help investment managers become "bionic" advisors. "Statistics and data will drive the action," he says. "An advisor will come into the office and get notifications on a mobile device about social media posts or life events of their customers—such as the birth of a child. At the click of a button, the advisor can send out relevant content to that customer about a 529 college savings plan, for example."

Gonzalo Rodriguez, head of digital transformation, Spain, at BBVA, agrees. "For us, data is the cornerstone of our strategy. All the investment recommendations that we make are based on data."

Artificial intelligence

Bill Gates called it the biggest technological breakthrough in our lifetime. Andrew Ng, founder of Google Brain, says it is the new electricity. If you follow the technology investment curve, says Mark Smedley, global lead for the wealth industry at Oracle, then the smart money is on artificial intelligence (AI). Indeed, AI received $5 billion of venture capital funding in 2016 alone, according to CB Insights, and many billions of dollars more in investment from IBM, Google and other leading tech companies.

AI will disrupt every industry, including the investment business. "Data can make us better portfolio managers," says Blackstone's Murphy. "It is still very early days in the use of machine learning and AI, especially in private investing. The thought of combining machine learning with our human and organizational experience is exciting and an area of great potential."

AI, in one form or another, will enable firms to fully leverage their data and turbo-charge key activities, such as customer engagement, portfolio management, and back-end operations (see Figure 3.4). More than half of digital leaders are already using AI to increase productivity, and more than four out of ten are using it to improve investment management and predictive analysis. In the future, the majority of digital leaders will use AI across their enterprises.

"AI is the new alchemy of growth."
- Clara Durodie, CEO of Cognitive Finace Group

Use of artificial intelligence

	Now		Next five years	
Uses of AI	**Digital leaders**	**All firms**	**Digital leaders**	**All firms**
Increase productivity of advisors	55.9%	10.7%	64.7%	19.1%
Improve portfolio management	44.1%	11.3%	50.0%	21.0%
Detect and anticipate cybersecurity risks	44.1%	10.5%	50.0%	18.3%
Improve predictive analysis	41.2%	11.0%	50.0%	18.8%
Find and attract investors	41.2%	10.7%	52.9%	18.5%
Create automated financial advisors	41.2%	10.2%	55.9%	20.5%
Optimize and streamline back office	38.2%	9.2%	47.1%	17.7%
Automate key elements of compliance	32.4%	9.6%	35.3%	16.9%
Track and assess market opportunities	29.4%	10.8%	32.4%	19.7%
Monitor investor behaviors	29.4%	10.2%	35.3%	17.0%

Figure 3.4: Percentage of respondents using AI for each purpose now and those they plan to use in five years.

According to Clara Durodie, CEO of the Cognitive Finance Group, a London-based AI consultancy, most wealth and asset management firms are only at the earliest stages in their use of AI—which our survey confirms. She sees AI maturing along a continuum from linear "unintelligent" robotic process automation (RPA), through intelligent process automation, machine learning, to deep learning, where systems can not only learn, but come up with new lines of reasoning.

Durodie views AI, in fact, as "the new alchemy of growth" in the wealth and asset management industry. "People have to stop thinking about AI as a technology and start to think about it as a strategic tool to get them to grow their businesses."

Sapient's Shah sees multiple applications for AI within investment institutions, but some are easier to

implement than others. “Robotic process automation will become more widespread, since it offers a clear business case and immediate cost savings. Investment research is another important use case, but that can be more hit and miss. Some portfolio managers are skeptical about AI’s ability to truly inform investment decisions. They have the additional worry about explaining the role of AI to institutional clients and even regulators.”

Shah sees a great fit between AI and customer analytics. “Machine learning will enable firms to go beyond the data they collect internally, and pull in third-party behavioral data from different sources.” Similarly, he believes AI will play a growing role in risk assessment and analytics. “For example, AI can help financial institutions predict defaults and analyze potential recoveries. It would be ideal for answering questions such as, ‘How many cents on the dollar am I going to get back from a mortgage or an asset backed security?’”

An early adopter of AI, Charles Schwab uses natural language processing (NLP), which enables computers to understand human speech. “It’s critical to creating impactful personalized insights and experiences for clients and to supercharge our human advisers with the right information to help investors,” says Hathi. She points out that Schwab’s business model, with only 1,200 financial consultants to support 10 million accounts, almost demands AI. “That ratio is quite different from most firms—we need analytics to create those client experiences, since we don’t have a huge army of humans to do it.”

BBVA in Spain is also using NLP to engage with customers who use its messaging system to ask questions or get help. “We use AI to read those messages and automatically route them either to the contact center or to a wealth manager, depending on how complex the question,” says Rodriguez. “In 2018, we will be rolling out the capability to reply to contact center messages automatically, without human intervention.”

In contrast, Credit Suisse is applying AI to understand client behaviors, according to Erik Steffen, head of IS&P digital wealth solutions. “We are using it to find client profiles and better target our services to their needs.” He is planning to introduce similar technology in the firm’s digital wealth management product to learn more about the types of clients likely to take up these technology-enabled services.

At eToro, the social trading and investment platform, machine learning is at the heart of one of its main products, “copy funds,” which invest in stocks favored by its top traders. “We’re using machine learning to select the traders that are going to generate the best performance over the next quarter based on all of their historical data,” says eToro’s founder and CEO Yoni Assia.

Blockchain

Like AI, blockchain is slated for rapid growth, with investment firms planning to more than double their use of this technology over the next five years.

Although blockchain is best known as the operating system behind Bitcoin, investment providers see many other applications for the technology: smart contracts, better customer data, faster payments, and greater transparency (see Figure 3.5). Full-service banks are ahead—28% are already piloting blockchain, and over half expect to be using it by 2022. However, most investment providers will be doubling their use over the next five years.

Future use of blockchain

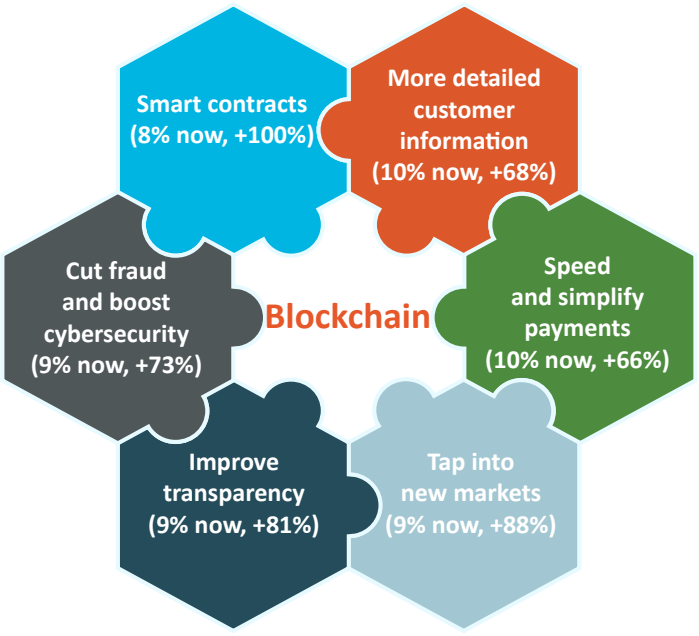


Figure 3.5: Blockchain applications firms are now using or piloting and those they expect to use in five years.

Blockchain is a "distributed public ledger" for transactions, credentials, or other information. Since the ledger is encrypted to prevent tampering with the encoded information, it has the potential to replace trusted third-party intermediaries like banks, brokers, or custodians for many types of transactions, and for identity management.

This is why many think blockchain will revolutionize financial services. "In the capital markets, and for things like customer onboarding, blockchain will be huge," says Oracle's Smedley. "If your identity is embedded in a block, then organizations can onboard you more efficiently, whether it's on a wealth or asset management platform or a banking platform."

Assia of eToro also thinks blockchain will be a game changer. "Blockchain is going to be as big as the internet," he says. Assia, who began looking at Bitcoin as early as 2010, sees many uses for blockchain in asset management, including reduction of counterparty risk, market exposure risk, and operational risk.

Currently, eToro is focused on bringing the technology into the mainstream by developing a blockchain digital wallet, simplifying the process of buying and safekeeping digital coins for its clients. It is also working closely with blockchain startups. Assia previously collaborated with the founder of the Ethereum blockchain consortium on the Colored Coins project. "We want to open up more investors to the world of cryptocurrencies," he says.

Sapient's Shah believes blockchain will be important for creating an "internal book of record" for transactions and portfolio positions. "If you are a large bank or a large asset manager, you may have multiple data sources for security and account reference and you're not able to get a common view of what your portfolio positions or trades are," he says. Blockchain could become the "fabric stitching four or five different systems or databases together. That is something that resonates with people."

There are some obstacles to widespread adoption, however. "Blockchain will be important in the future, but it will have difficulty gaining momentum," says Vanguard's Marcante. "The limitation to blockchain will not be the technology, it will be getting asset managers and banks to work together on a common platform."

"Blockchain is going to be as big as the internet."
- Yoni Assia, founder and CEO, eToro

He points out that banks make much of their revenue by acting as intermediaries in transactions. "With its digital ledger components, blockchain promises to eventually lower that cost to near zero," says Marcante.

Charles Schwab's Hathi agrees. "We believe that blockchain will be a major force in our industry over the long run, but it will take some time before it really disrupts the market." And Bill Egerton, chief strategy officer at Vauban Group, a cybersecurity provider, adds another note of caution: "Blockchain has the potential to fundamentally change the nature of the financial services sector and how it does business. The danger is if the security and encryption is compromised in any way, blockchain could become discredited very quickly and compromise the entirety of the financial system."

Other new technologies to watch

AI and blockchain may be the fastest growing technologies, but others are also on the rise. These include **facial recognition software**, which BBVA is using for client onboarding, and **web collaboration tools**, which allow advisors to share and view documents simultaneously with clients. About 34% of investment providers expect to be using collaboration technology in five years, up dramatically from the current use by only 19% of firms.

"We are piloting a "co-browsing" experience for customers right now, so they can view the same documents on their computers or mobile devices that the manager is seeing," says BBVA's Rodriguez. "We find that they value that ability much more than simply a video conference with the manager."

Augmented and virtual reality, while not expected to see such spectacular growth in the industry, may have engaging applications for investors. For example, Stephen Gunkel, head of communications at Pictet, says the bank recently used VR headsets at an investor conference to take clients on a "virtual field trip" to their investments. A crew filmed in 360 degrees in Singapore, says Gunkel, recording street scenes, a vertical farm, the Xylem Water

Park, driverless cars, and the inside of a factory. With the headsets, clients were able to "look around" for themselves at each location.

"Through the use of virtual reality headsets, we were able to take people to see how their investments are being employed on a day-to-day basis," says Gunkel. "It demonstrated that all the tech that we're investing in is really supporting how we live our daily lives."

And while the **Internet of Things** may not have immediate applications in investment management, it certainly will yield valuable data and insights for portfolio managers in the future, according to Sapient's Shah. "When you can monitor with sensors how goods and services are moving and where the bottlenecks are you can start predicting future cash flows and revenues more accurately," he says.

"APIs are the operating system of the digital economy" - Rik De Deyn, senior director, Oracle

Regulation and cybersecurity

Digital technology also offers new solutions for complying with the ever-growing regulatory burden. Our research shows that providers are taking steps to automate compliance as much as possible, building it into all of their systems as they modernize and upgrade (see Figure 3.6). Digital leaders are going further, prioritizing the development of resilient systems that can recover quickly from breaches and disruptions.

Technology will help firms keep up with regulatory change

Figure 3.6: Steps firms are taking to respond to regulatory change using technology.

With regulations on data privacy and cybersecurity rising around the world—from the EU's Network and Information Services Directive and General Data Protection Regulation to New York's Department of Financial Services rules—rigorous end-to-end cybersecurity will continue to be a top priority for investment providers. "Financial institutions will have to invest more to protect themselves and their clients in cyberspace," says lawyer Jean-Louis Schiltz, partner at Schiltz & Schiltz. "The legal liability will continue to increase along with cyber-attacks, since data protection regulations oblige firms to report security breaches."

Protiviti's Adam Hamm agrees. "The regulators are coming, and they're going to start reviewing the data protections companies have in place," he says. "Companies are starting to realize that they had better have a good story to tell when they come, or there is serious risk that the regulators are going to find them deficient, with significant damage if word hits the street." Making things more complicated, says Vauban's Egerton, is that many of these regulations will have massive extraterritorial implications for financial services organizations.

Cybersecurity also remains a critical issue for investment providers, starting at the board level and permeating throughout the organization. These vulnerabilities will grow in tandem with the widening use of imported data, mobile devices, the Internet of Things, and the cloud.

Major security breaches threaten not only an investment firm's clients, but also its most precious asset—its reputation. "We've always believed that if we don't have strong cybersecurity, we're not going to have a digital business long-term," says Steven Dorval, head of advice and innovation for John Hancock. "While we are focused on speed and agility, it can't be at the expense of safety and security of the data we're capturing; otherwise, we'll cut off our nose to spite our face."

As a result, firms are moving to improve their overall cybersecurity—from shifting to secure cloud platforms and tighter privileged access management to active network monitoring and cyber risk forecasting (see Figure 3.7). Over the next five years, firms plan to integrate advanced technologies like predictive analytics and AI into their cybersecurity approaches.

This may include using AI to detect and counter attacks. "A lot of the different cybersecurity solutions that we use employ machine learning to identify threats and abnormalities," says eToro's Assia. Durodie of Cognitive Finance says AI can also help cybersecurity systems detect and correct false positives. "Cybersecurity should be considered an AI product—you cannot talk about rigorous cybersecurity if you're not using AI," she says.

While many firms are prioritizing end-to-end, all-device security, gaps remain; only a minority of firms are doing what is needed now, and our research shows that by 2022, fewer than 50% expect to have plugged these gaps.

Vauban's Egerton says some firms don't make cybersecurity a CEO imperative, or look at it from the right perspective. "You have to regard cybersecurity as a business problem, not a technology problem—as an opportunity, not a threat. Cybersecurity is a source of competitive advantage if you get it right."

As firms go digital, they will upgrade cybersecurity

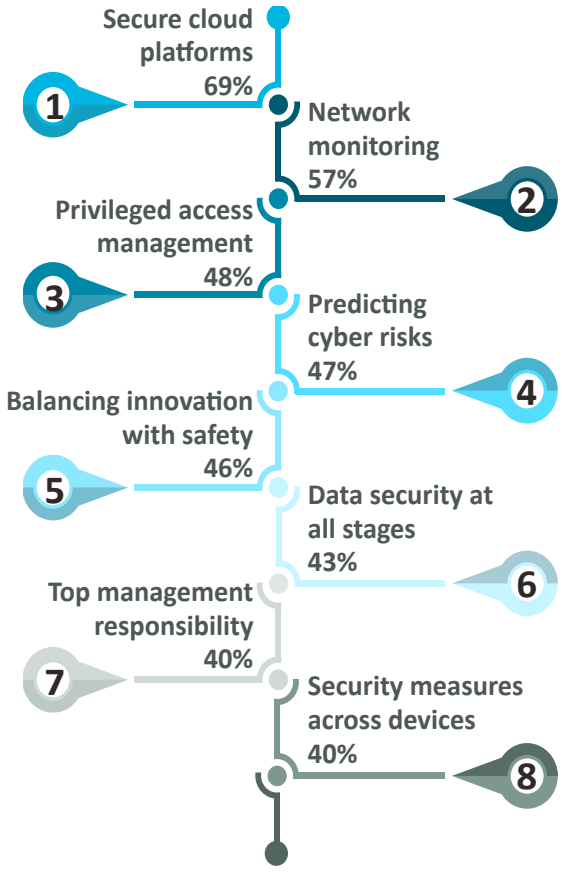


Figure 3.7: Steps firms will take to upgrade cybersecurity over the next five years.

How SWIB uses technology to better manage data, risks, and costs

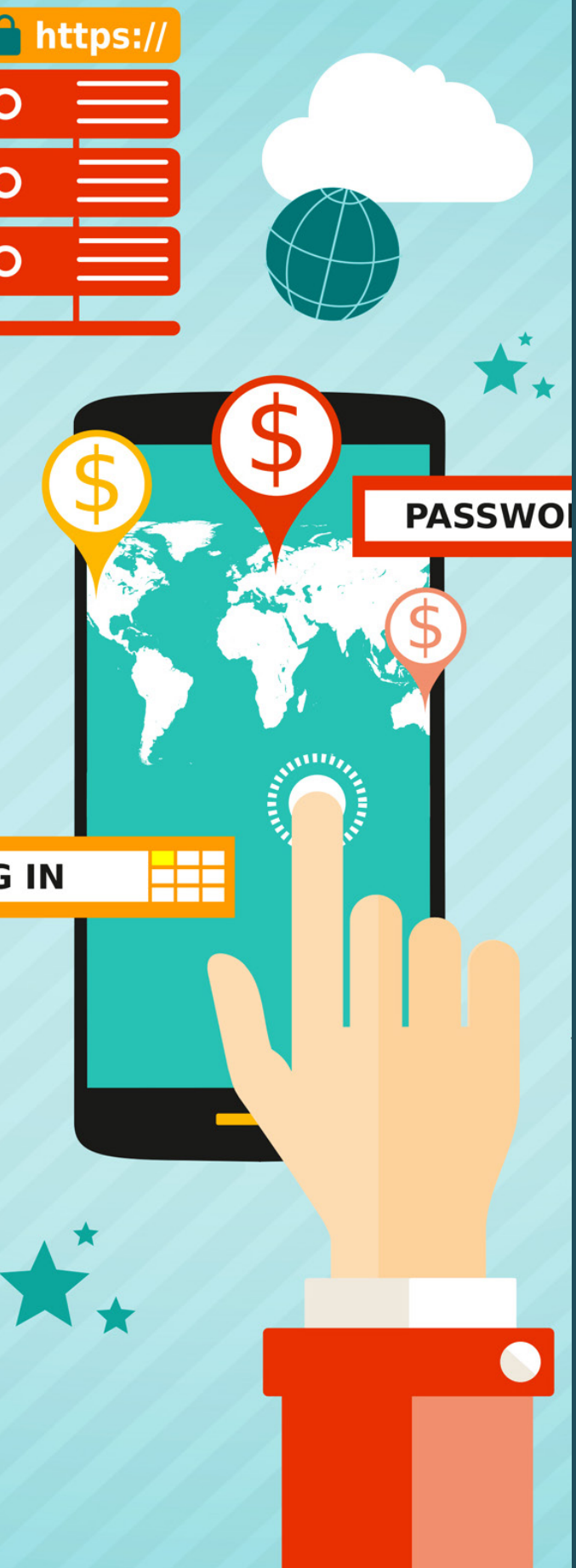
On July 1, 2017, the State of Wisconsin Investment Board went live on an entirely new technology platform comprising eight new systems, the fruit of a 3½-year, $46-million project that it completed on time and $2 million under budget. "This was a historic accomplishment," says Michael Williamson, SWIB's executive director. "When organizations undertake these types of comprehensive IT projects, about 50% don't get completed at all."

For Williamson, the main reasons for SWIB's digital revamp were threefold: (1) access to high quality and timely data, (2) comprehensive risk analysis, and (3) increased efficiency. "To be competitive in today's low-return, increasingly complex environment, you need all three of these things working together," he says. The data—which includes daily reports on transactions and performance instead of monthly—is crucial to support "fast and furious" investment decisions and take advantage of emerging opportunities.

Calculating risk not just by asset class but across the entire portfolio is also essential, says Williamson. "In the U.S., this is probably the most comprehensive portfolio management and financial management system that's up and running today." Before, the spreadsheet-based process would assess individual risk segments, "but oftentimes the comprehensive risk is different than the sum of the various parts," he says.

Eliminating use of spreadsheets and manual workarounds was part of the efficiency drive as well. "I pay our analysts to make investment decisions, not to process data," says Williamson, adding that SWIB manages 65% of its investments in-house.

SWIB uses a data warehouse and integrates several systems and data feeds from outside vendors, including from its custodian bank, BNY Mellon. It plans to continue looking for ways to utilize technology to improve its investment management business. "Our intention is not to build our own systems unless they contribute to our strategic advantage," says Williamson. "I'd love to declare a victory on this new system that we put in place, but you are never done. This is a journey, not a destination."



4 Digital-first engagement

With firms like Amazon, Apple, and Netflix revolutionizing the customer experience, investment providers will need to reframe their customer interactions for a digital-first world. Communication through digital channels will predominate in wealth and asset management, as firms harness technology to reach clients and power most investment activities. Adapting the channel mix, providing 24/7 digital access, and leveraging analytics will be vital for creating a seamless investor experience that people now expect.

Technology will also become a primary means for engaging employees. Embracing technology will improve decision-making and productivity, and make jobs more specialized, automated, and collaborative. But going digital will require new technical, analytical, and innovation skills as automation displaces humans for many routine activities. For more complex tasks—and providing the best service to investors—high tech will meld with high touch.

"Technology is our friend and inspiration to deliver the perfect client experience and employee experience."

Wiwi Gutmannsbauer, global head of omnichannel management, UBS Wealth Management

Starting with digital

By 2022, it will become the norm for wealth and asset management firms to engage digitally with their customers, who will look to the internet and social media for information on investments. Although offline communication—like phone calls and face-to-face meetings—will continue to be important for investors, communication through smartphones, telepresence, webinars, and online chats will rise dramatically (see Figure 4.1).

Communication methods

- **Webinars (+20 pts.)**
- **Web collaboration (+20 pts.)**
- **Chat conversations (+19 pts.)**
- **Video (+18 pts.)**
- **Smart phone/tablet (+5 pts.)**
- **Telephone (+5 pts.)**
- **Social media (+4 pts.)**
- **Internet/PC (-2 pts.)**
- **Face-to-face (-8 pts.)**
- **Email (-13 pts.)**

Figure 4.1: How digital technology will transform client interactions by 2022.

"A digital leader has a digital-first orientation," argues Neesha Hathi, chief digital officer at Charles Schwab, who believes that this requires an entirely different mindset (see box, p. 34). "It's important for the customer experience to assume that clients may visit 100% digitally. If you start there, then you're going to build differently than if you design for an advisor and client model, where the advisor prefers certain investments and ways of doing things."

For understanding digital trends, Hans Peter Wolf, CEO and founder of Appway, a software company that works with leading financial institutions on digital transformation, believes that millennials provide a unique glimpse into the future. "Millennials were the first to use the computer as their preferred mode of operation. They don't want to talk to a human, but when they're talking to a computer, they want to feel like they're talking to a human," he says.

Like Schwab's Hathi, Wolf suggests that this means a "design change in your business thinking," unlike the move to the telephone from face-to-face interaction 30 years ago. "Now they gravitate first to the computer—not only, but first," he says. "That's a completely different animal, which requires all modes of interaction—the digital and the physical—in one. You now have to do everything equally well."

Dean Butler, head of retail wealth at HSBC in the UK, a millennial himself, agrees that firms need to design investment service for customers whose first touchpoint will be digital. "We now live in the world of digital change," he says. "I'm 34; my iPhone is attached to my hand. The way in which I interact with anybody is firstly by my smartphone, or if I'm at home, on my desktop or laptop. I expect that now of my wealth provider."

John Marcante, CIO at Vanguard, says that his firm is preparing for the kind of digital transformation that has taken place in other industries like retail with Amazon and transportation with Uber, which he believes is "highly relevant" to financial services. "Today, about 95% of every client interaction at Vanguard is digital," he says. "People think that's great, but we're perpetually dissatisfied—we look at the 5% and say what's going on there?"

As part of this shift, firms will offer more digitally enabled tools for both retail and institutional investors (see Figure 4.2). Many of these, including digital onboarding, anywhere/anytime access, and customized products, are equally prevalent for both, although an integrated customer experience naturally falls into the retail sphere, while for institutions, firms are focusing on tools for performance review and portfolio analysis.

Digital onboarding becoming the standard

The starting point for a digital-first customer experience is simplified digital client onboarding—something that 39% of firms are already offering to retail customers,

Firms will provide more technology-enabled tools

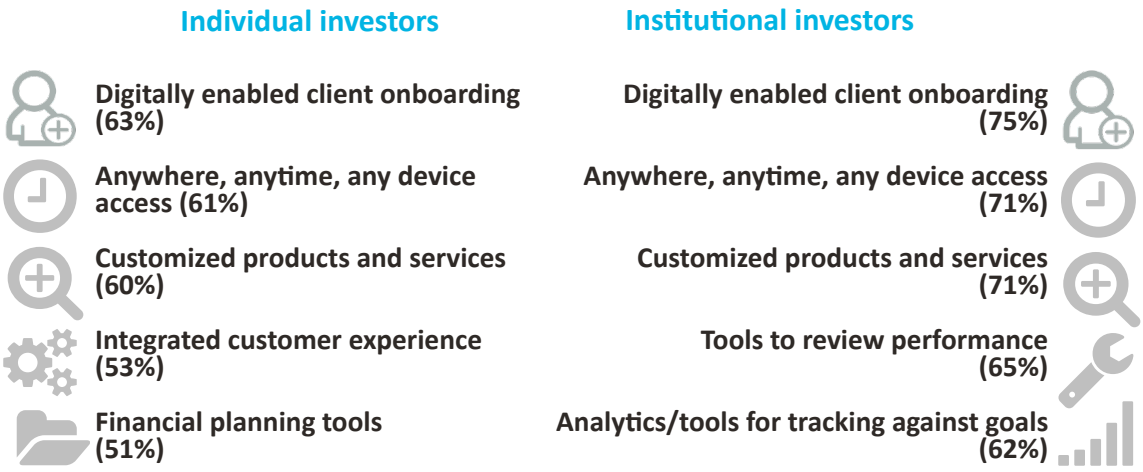


Figure 4.2: Digitally enabled tools that firms plan to offer clients by 2022.

and 48% to institutional clients. By 2022, the use of online methods will rise as offline methods decline (see Figure 4.3).

According to our research, by 2022, 69% of investment providers will be offering digitally enabled client onboarding. About 75% of firms servicing institutional clients will use digital client onboarding vs. 63% of those servicing the retail market. About 74% of full-service banks and alternative investment firms will offer digital onboarding by 2022, followed by 73% of mutual fund companies, and 72% of retail banks.

Onboarding channels

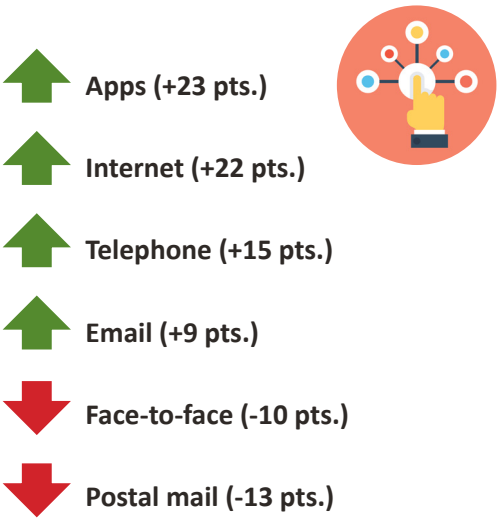


Figure 4.3: How customer onboarding will change by 2022.

Rainer Hauser, global head of strategy and business development at UBS Wealth Management, says the processes for digital onboarding of wealth clients will need to catch up with retail banking practices. "Because of our tight collaboration with the retail banking side in Switzerland, you can open a wealth account with UBS purely digitally there," he says. "You just wave your passport into a video camera and we read the hologram and onboard you."

For a client signing up for UBS SmartWealth in the UK, the process takes about 15 minutes, according to co-head Shane Williams. "That's with no signatures, no real hassle for the client, and includes all the due diligence checks digitally, which includes risk profiling," he says. The system uses natural language processing to do online news searches, as well as using a variety of available information to verify identity.

Spain's BBVA takes digital client onboarding a step further, using facial recognition software for identification. "Any customer that wants to join BBVA should be able to do it from a mobile app in less than two minutes," says Gonzalo Rodriguez, head of digital transformation, Spain, at BBVA. "The customer is asked to take a picture of both sides of her ID and a selfie, then fill out no more than five fields." The system then uses facial recognition to compare the selfie photo with the ID picture. In Spain, regulations require that the client then have a video call with an advisor, adding up to a process totaling about 10 minutes, says Rodriguez.

Charles Schwab: How a digital pioneer thinks about the future

"We believe we have a 45-year head start on most firms, because we often think of ourselves as one of the original fintechs—we were always digital first," says Neesha Hathi. "A lot of other firms start with a human relationship. As much as we believe in the combination of technology and relationships, we believe that technology is foundational. We come at it from a very different perspective than firms with more traditional wealth management models."

At Schwab, an "elegant, seamless" digital client experience is the "foundation that powers everything, while the human is the secret sauce on top," according to Hathi. Schwab has only a relatively small number of advisors to serve its millions of online customers—regardless of wealth level—unlike most firms, where the advisor is primary, particularly for higher-end clients. "Maybe that's why so many wealth management firms have kept the channels more distinct, using the online channel to target a different segment of clients. That comes down to their cost structure and business model," she says.

As more traditional firms realize that high-end and older clients want digital access too, many now are playing catch-up. But in Hathi's view, they often don't have the necessary infrastructure, since their existing systems are meant for advisors, not clients. Schwab's robo-advisory platform, Intelligent Portfolios, was meant for clients of all types, many of whom use multiple channels, dealing with both human advisors and different Schwab platforms.

To support Intelligent Portfolios and other online platforms, Schwab has modernized its infrastructure with cloud-based software-as-a-service and APIs; however, it hasn't yet moved all its legacy systems to the cloud. Although it uses third-party APIs and fintech in some aspects of its business, Schwab opted to build Intelligent Portfolios in-house, because it sees robo-advisory as a core competency.

"We look at that as an opportunity for us to innovate internally and to build something that can scale for a very, very large client base," explains Hathi. "Our business model is all about accessibility, bringing offerings to clients at a very low price. It requires technology that is highly scalable, highly efficient and highly performing for mass volumes of clients, while keeping our costs down. The cloud will end up playing a significant role in that, going forward."

Andy Rachleff, CEO of fintech Wealthfront, argues that while many "so-called robo-advisor firms" have a digital-front end for onboarding, they sometimes fall down on funding the account. He mentions one prominent firm that asks the client to print out an online form and mail it in with a blank check attached to provide banking information. "Who has a printer anymore? Who uses checks?" he asks, adding that clients should not have to provide anything physical for the process to be considered truly 100% digital.

"You have to be able to electronically fund the account through multiple means—not just by transferring cash, but by transferring securities. Amazingly, no one in our world supports transfer of securities. Everybody calls themselves automated when they only automate a tiny portion of the problem," Rachleff says.

Appway's Wolf agrees that end-to-end automation is critical. "If digital onboarding becomes the standard, then just providing a sexy self-service interface won't suffice. That's the equivalent of putting lipstick on a pig. To truly provide a great customer experience, onboarding needs to be fully streamlined and coherent or you will lose potential clients." He adds that clients, who focus on getting the products and services they want, ideally shouldn't notice the onboarding process.

Wolf says the company's ten years in the field have taught it that onboarding isn't just one-off exercise for opening new accounts, but also comes into play when existing customers add products or update personal information. "Onboarding happens continuously along the client lifecycle and customers expect a coherent experience every step of the way," he says.

By 2022, as digital onboarding becomes an industry standard, investment providers will take further steps to make digital onboarding faster, simpler, and more integrated into their technology platforms and compliance systems (see Figure 4.4). Digital leaders (73%) and firms with AUM over $100 billion (76%) are

particularly focused on creating onboarding systems that can handle multiple regulatory regimes.

Sanjay Mathew, a senior director at Oracle, says that firms can quickly implement an onboarding process by using third-party APIs that can combine different elements, such as a "know your customer" engine, a mobile onboarding application, and a credit scoring mechanism. Matthew says Oracle recently completed an onboarding project in a few weeks by using five APIs from different providers. "In the old world, it would have been a 9-month project."

Delivering a seamless customer experience

Onboarding digitally should be the entrée to a seamless, omnichannel experience—which industry executives and experts agree is a critical success factor for investment firms. To deliver a seamless experience, firms need to develop interconnected systems that can pass an investor from smartphone to computer, from app to chatbot, or directly to an advisor, who will be able to pick up each interaction where the last one left off.

How retail and institutions differ digitally: MRA Associates' view

With about a 50-50 split in high net worth and institutional clients, Nathan Erickson, chief investment officer of MRA Associates, has a unique perspective on the digital needs of both segments. "For our private clients, their money is much more personal. They want more frequent touch, feel, and accessibility. That's why you see this push towards digital interaction."

In contrast, says Erickson, the firm's institutional clients are used to thinking on a quarterly basis. "Portfolio reviews are typically organized around committee meetings that often have broader agendas. There is less of a need for digital engagement or accessibility, however they require more detailed reporting."

In the future, Erickson expects to see a bigger push towards comparative benchmarking. "These institutions have always demanded benchmarking of their investments, but more and more we're being asked to compare the performance and asset allocation of our institutional portfolios to their peers. In this environment of low returns, they want to make sure they're not experiencing widely different results."

How firms will improve digital onboarding by 2022

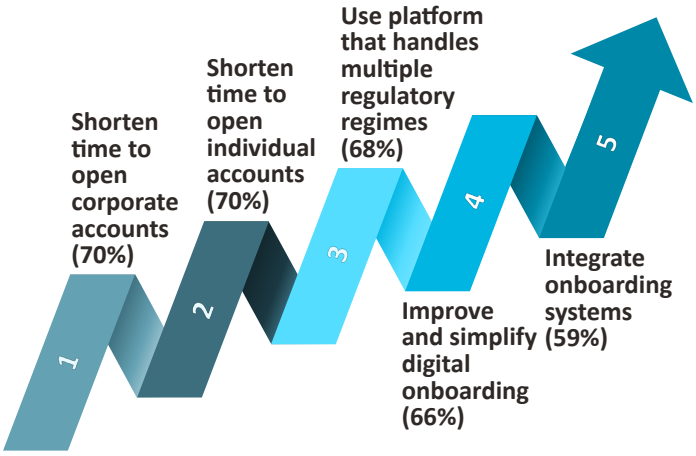


Figure 4.4: Steps firms are taking to improve the onboarding process.

To do this, all parts of the system must be integrated, and advisors need to have all the information about the customer's digital actions instantly available to them at the time of contact. "You have to be able to orchestrate your data and get it to the right person at the right time, regardless of the channel, both online and offline," says Appway's Wolf.

Our research reveals the key steps that firms are taking to create such a customer experience (see Figure 4.5). These include adapting the channel mix to support a customer's journey (44%), putting the client at the center of the process (43%), and analyzing the impact of client servicing on channels (41%).

Digital leaders are far ahead: 71% have already taken steps to understand the customer journey, and 74% are already providing anytime, any device access. Digital leaders are also ahead in leveraging data and analytics to fully understand client needs and behaviors (62%).

John Hancock is trying to do just that by "understanding the customer at a micro level," according to Steven Dorval, head of advice and innovation. "We don't want to run the risk of believing that customers have universal sets of problems. Somebody who is 21 years

Steps for building a seamless customer experience

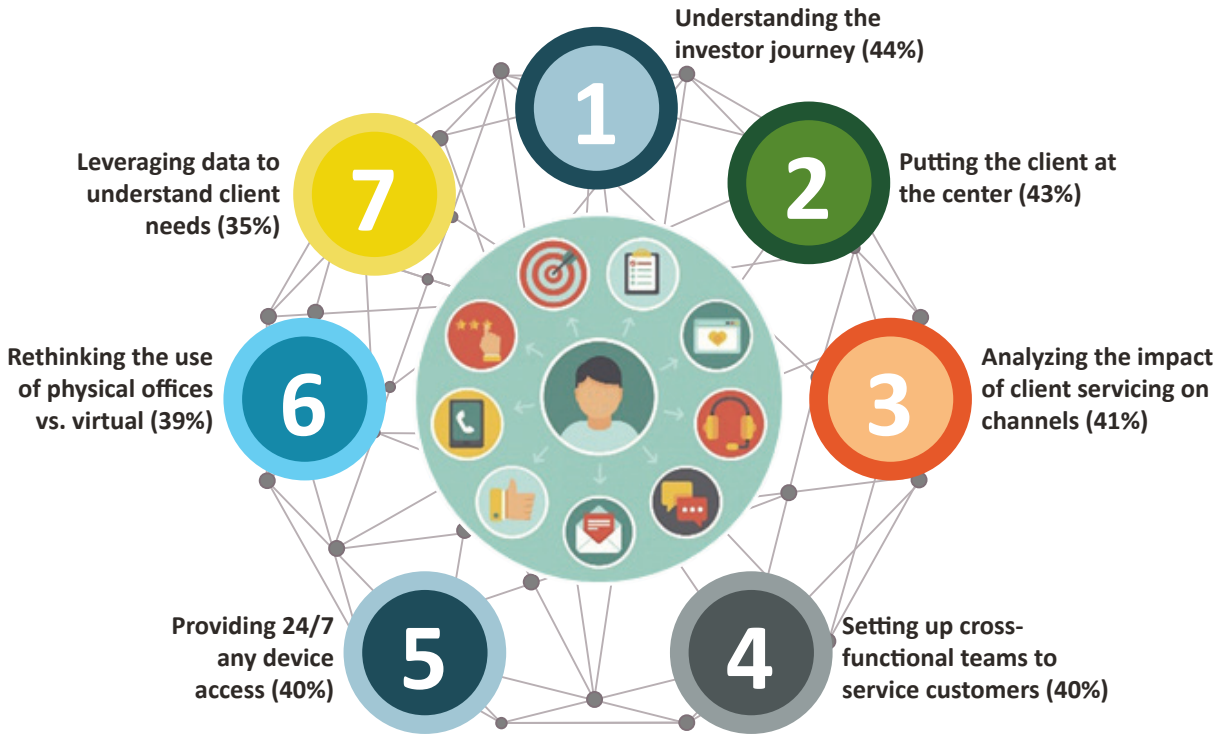


Figure 4.5: Steps firms are taking to create an integrated, cross-channel customer experience.

old with investable assets and somebody 85 years old with investable assets have overtly different needs and problems. We are trying to isolate their priorities and build an experience that specifically addresses them."

Executives agree that it's all about understanding exactly what clients want, and giving them the choice of channels from website chatbots to personal meetings. UBS's Hauser says his bank takes an "outside-in" perspective. "This means we position ourselves, our services and our advisors in a way where the client defines what they want, how they want it, when they want it," he says. "That's why I like the term 'omnichannel'—it's not us telling them, this is our brand and our product, it's them telling us. And if we do it that way, we will always be able to serve them the right way."

Vanguard's Marcante says that ensuring a frictionless, client-centric interaction that flows smoothly from channel to channel is crucial because that's what people

A millennial banker's view: Dean Butler, head of retail wealth, HSBC UK

HSBC's Dean Butler, who is 34, is developing the bank's robo-advisory offering with millennials like himself in mind. "Instant gratification is now what customers expect in wealth management. If I'm an HSBC customer, I expect to be able to go in a branch, sit down, have a cup of coffee and receive personalized advice," he says. "If I'm at work or at home, I should be able to pick up my smart phone or tablet and receive a very similar experience. I should have easy digital access to my portfolio, be able to make quick buys and sells, and tap into a rich archive of information. I should be able to switch from one medium to another without losing a beat."

However, he points out, in wealth management, it's not always possible to offer a true omnichannel experience to everyone—at certain wealth levels, face-to-face meetings are not possible for cost reasons. That is why HSBC seeks to offer "true online advice" tailored to the client's goals, "It's not about giving everybody every tool. It's giving the right tools at the right point to the right customer."

now expect. “Years ago, they would compare financial services firms like Fidelity, Vanguard and Schwab,” he says. “It’s not like that today—now they are comparing how easy it is to put money into an investment vehicle with how easy it is to use Uber or Lyft.”

Engaging employees through technology

The shift to digital will not only transform how firms engage with their customers, but also their employees. “Sometimes we forget it’s not just about client centricity, it’s also about the employee experience,” says Marcante. “It’s about creating modern ways—like chatbots that understand natural language—to help people retrieve data for clients instead of making them find it in five separate places.”

UBS’s Hauser also believes that harnessing advanced technology will be essential for engaging employees. “We must have the best, most efficient and scalable platform for our people. Then we put them in a position where they can focus on a client’s needs, rather than spending the entire day dealing with broken processes and time-consuming administration.”

By 2022, robotics and AI will increasingly automate routine activities, including many aspects of trading and back office operations. While AI will displace human staff in some areas, it will have an enormous upside for employees. “Using robotics to take away routine operational stuff will allow people to spend time, creativity on things that add much more value for our clients,” says Marcante. Appway’s Wolf agrees, "Improving the employee experience should not only focus on increasing efficiency. It's also a fantastic chance to really give people purpose, to empower them in their work."

AI is already replacing humans in high frequency trading, and some aspects of portfolio management, since machines have the ability to quickly analyze news feeds and tweets, process earnings statements, scrape websites, and trade on these instantaneously. However, most believe that AI will be unable to replicate all aspects of human intelligence needed for investment. These include tasks such as assessing market turning points and making forecasts that involve interpreting more complicated human responses—such as those of politicians and central bankers.

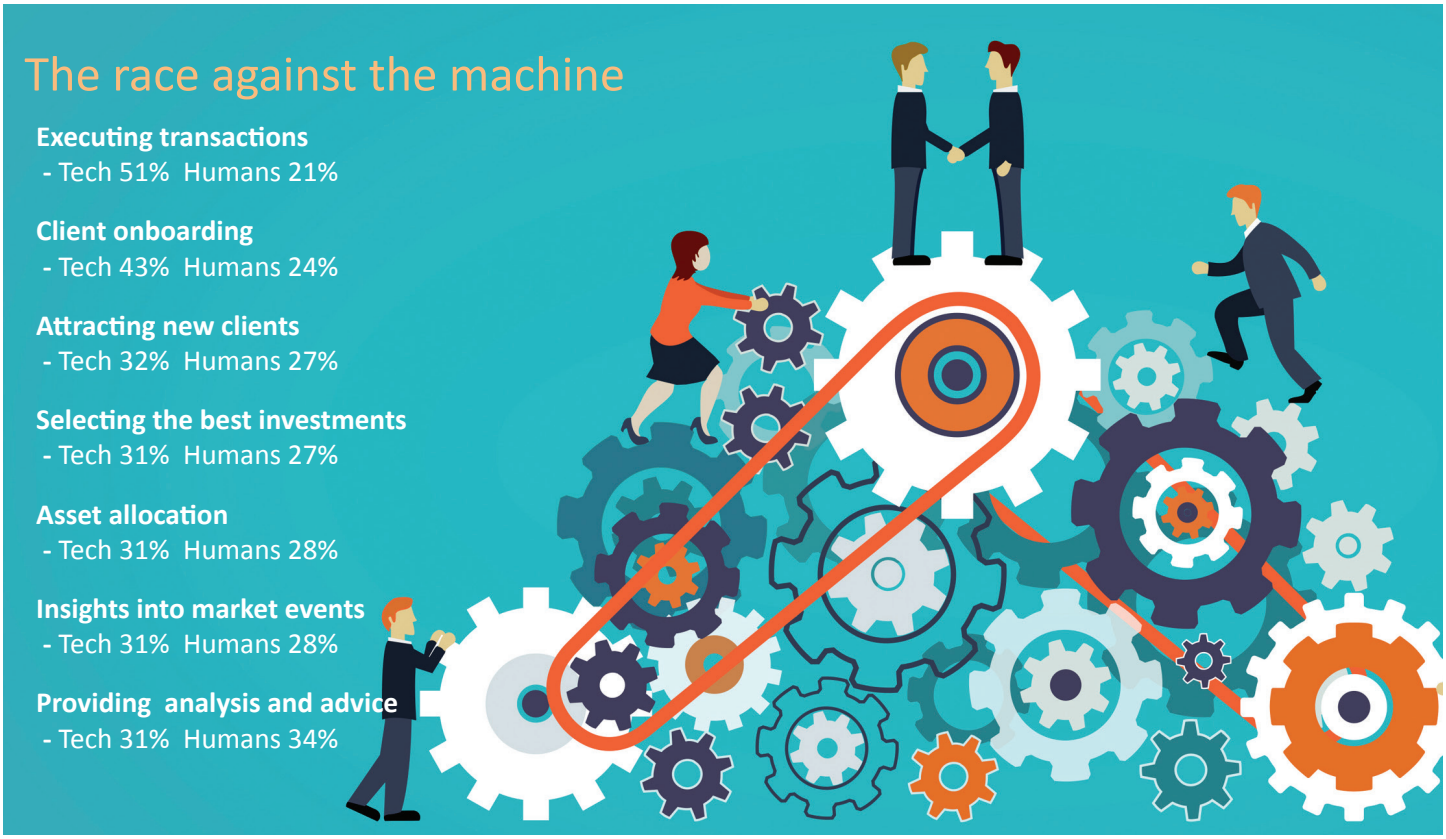


Figure 4.6: Tasks respondents expect to handle through technology vs. humans over the next five years.

On the retail and high-net-worth side, it is increasingly evident that over the next five years, high tech will merge with high touch to optimize customer service. Our research shows that by 2022, for many investment activities, there will remain a roughly even balance between the roles of human advisors and portfolio manager and automated solutions, with people slightly ahead on providing analysis and advice (see Figure 4.6).

This "bionic" model will become the norm for most providers by 2022. "Rather than digital replacing people, they will work hand-in-hand as part of the omnichannel experience," says HSBC's Butler. "Moving forward, human advisors will incorporate robo-advisors into their work to create richer conversations with customers." The technology will allow advisors to service more customers and make the service more personal.

BBVA already takes a hybrid approach (see box, page 39). "When it comes to advice, we truly believe in combining the best of a human and technology," says Rodriguez. "To be honest, I'm a little skeptical of the digital-only value proposition—customers often need to talk to a human advisor."

Erickson of MRA sees "a fluid relationship" between the digital and the human in the future. "In the future, advisors and customers might talk face-to-face only once or twice a year, or only over the phone as needed," he says. "I think the personal is always going to be part of it."

Not everyone is on board with this vision of the future, however. Some fintech entrepreneurs, such as Wealthfront's Rachleff, are convinced that millennials will continue to want a digital-only experience for decades to come, and the firm already has about $8 billion in AUM to prove it (see box, page 39).

Engaging and attracting talent

Embracing technology will have a major impact on workers, both altering the way they work and the skills they need (see Figure 4.7). Many of those changes will be positive for employees, helping to improve decision-making, increase productivity and automate routine tasks. At the same time, as jobs become more specialized and collaborative, the skills around innovation, digital, analytics, and communication will be in higher demand.

Technology will transform employee skills and behaviors

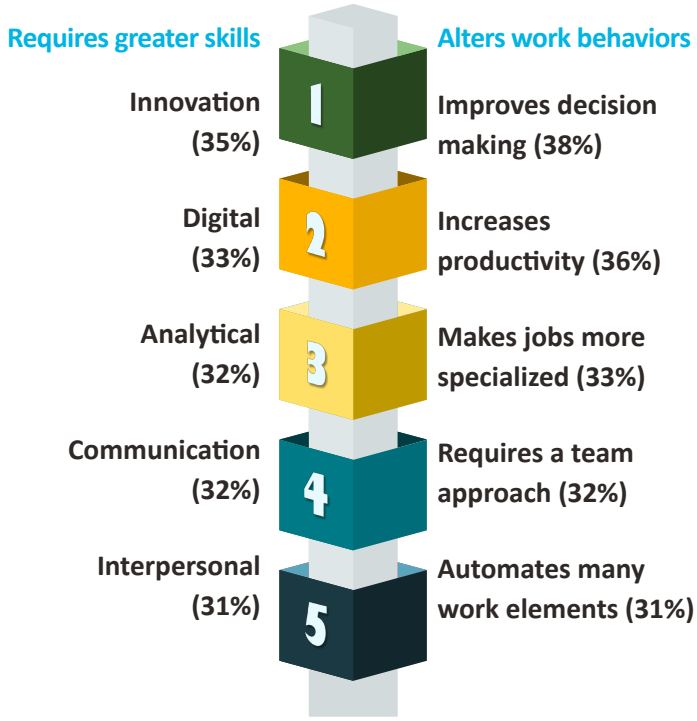


Figure 4.7: How technology will transform the future of work.

Investment providers are now taking measures to ensure they have the right talent to capture their digital futures. Some firms have created a talent matrix to assess the current state of the organization and see where they need to add skills. They then look to fill these skill gaps by developing its current employees or by bringing in new blood from outside the organization.

One key decision that incumbents face is whether to develop or acquire the digital talent they need. Hiring from outside enables them to kick-start their digital plans and introduce fresh thinking. However, bringing existing staff up the digital curve can improve employee engagement and ensure that the digital team understands business issues. Most market leaders strive to find the right balance between the two approaches.

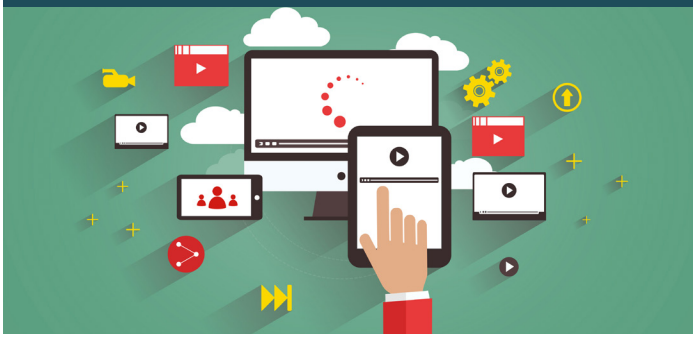
For example, Hancock's Dorval says the firm is working to develop new skills in its existing workforce and augment them with "new capabilities that had no reason to exist in a company like ours 10-15 years ago." These include mobile software developers, user experience and visual designers, and product managers, "especially those who

BBVA: Taking a hybrid approach

BBVA believes that its wealth management customers should be able to get the best advice without needing to walk into a branch. Its "hybrid" model combining high-tech and high-touch uses "remote" managers that sit in back offices in its branches around Spain, interacting with customers via mobile apps, online chats and video conferences, earning it the top spot in the 2017 Forrester Global Mobile Banking Benchmark.

Once onboarded using BBVA's automated two-minute process, a customer can use its mobile app to call "a manager, who knows who is talking," says Gonzalo Rodriguez. The bank also has a "secure wall" behind which customers can exchange documents with the manager and sign on their mobiles. "You get the best of the technology, because you have convenience of doing everything from your mobile phone, but at the same time, you get the best human advice because you're actually talking to a manager." While most interactions are remote, customers can set up an appointment through the app to meet managers in person.

Managers use a combination of automated portfolio management and advisory tools, plus the recommendations from BBVA's human portfolio managers, according to Paloma Piqueras, head of BBVA Asset Management & Global Wealth. BBVA's model does not involve a robo advisor, although it will be launching one that incorporates 10 questions about risk and goals. "We truly believe that when we launch the service, the percentage of customers who will initially do everything completely digitally will be very limited," says Piqueras. "Everyone else will engage on the questions, and see the proposal, but they are going to end up talking to a manager."



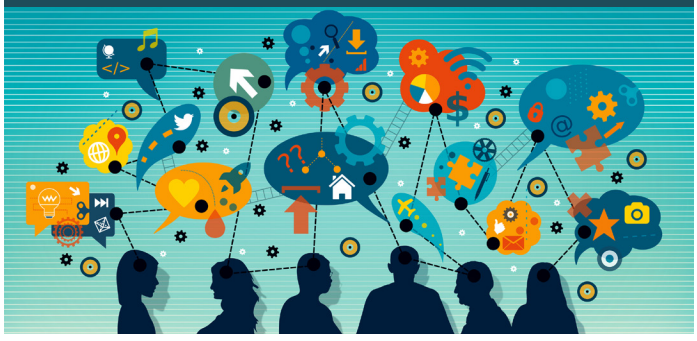
Wealthfront: Serving a digital-only generation

Andy Rachleff, CEO of pioneering fintech Wealthfront, believes in-person interaction will be a thing of the past for the next generation. Some 85% of his firm's customers are under 45 years old. "Our clients tell us, 'We pay you not to talk to us,'" he says. "If you are around my age, 58, you might laugh when I say that. If you are 32, you would nod your head."

He contrasts the behavior of "baby boomers" like himself—the target customers for most incumbent wealth firms—with that of his millennial clients. "My generation likes talking to people. If I have a problem, I'm going to seek out the help of an expert and I literally want to sit down and talk to that person," says Rachleff. "My children, who are 22 and 25, are the exact opposite: They prefer doing everything electronically and actually avoid having to talk to people. Like all of their friends, they have turned the ringers off on their telephones—if I want to talk to my kids, I have to text them to call me."

Wealthfront is the only robo-advisor that is digital only, because "we're the only firm focused solely on people in their 30s and 40s," says Rachleff. "Others are trying to put a foot in both camps. You will find if you actually drill down on the numbers, though, that they're not very successful at getting new clients, particularly those under 45."

Rachleff says most incumbent firms expect today's young investors to "come to their senses" when they get older and richer, and realize that they need to talk to someone. "I think that's equivalent of saying to someone who grows up listening to rock music, 'when you turn 50, you'll listen to symphony.'"



are used to working in an agile fashion and operating in a collaborative team environment versus a classic functional silo."

Industry executives agree that to become digital leaders firms need to go beyond improving skills to completely change the culture of their organizations. "We're trying to educate, train, and build a culture for our existing company around becoming a more agile organization," says Dorval. "This includes developing a more agile mindset into the hearts and minds of individuals. There are people for whom that is second nature. There are other people who have grown up in a very classic environment and will probably struggle."

Creating an enticing environment

Changing the work environment can help, according to Matthew Peterson, senior vice president and chief wealth strategist at LPL Financial, which is one reason the firm recently consolidated its technology resources into a new campus in Fort Mill, S.C. "We've done things to try to attract and retain talent the way Silicon Valley firms have done," he says. "We have a gym in our office, and a game room with ping pong tables and pinball machines. The office looks a lot more like a technology company's, but then again, LPL looks more like a technology company."

Michael Williamson, executive director of the State of Wisconsin Investment Board, says the pension fund's recent technology rebuild was astounding for the staff. "It wasn't a cultural shift, it was a cultural earthquake," he says. "Cultural change has to be led. It's not something that works on its own energy in an organization."

The changes included a restatement of the fund's mission, plus setting expectations and processes to encourage certain behaviors. "We achieved a level of collaboration, understanding knowledge and cooperation that we hadn't had before," says Williamson. "People are more connected to the vision of where we're going and what their role is in accomplishing that."

A checklist of skill requirements for going digital

Our research identified a number of skills that become more important as investment firms move up the digital curve. Here is a checklist of some of them:

Technology

- ✓Artificial intelligence and machine learning
- ✓APIs and open banking platforms
- ✓Blockchain
- ✓Web collaboration tools
- ✓Fintech
- ✓Cloud systems

Cybersecurity and data privacy

- ✓Data analysis
- ✓Big data analytics
- ✓Predictive and risk analytics
- ✓Consumer behavioral analytics
- ✓Web-based analytics

Business and marketing

- ✓Digital strategy and business
- ✓Innovation and digital solutions
- ✓Rapid product development and prototyping
- ✓Social media, apps, and content marketing
- ✓Search engine optimization, contextual and micro marketing

Customer engagement

- ✓Collaborative and interpersonal
- ✓Communication and presentation
- ✓Multicultural and language skills
- ✓Broader financial expertise on taxes, retirement, etc.

5 The business case for going digital

Taking the digital leap is not without its challenges, from budget hurdles and organizational resistance to increasing exposure to cyber-threats. But the payback can be enormous: Firms that have already reached an advanced digital stage report an 8.6% increase in revenue, an 11.3% rise in productivity, and a 6.3% improvement in market share. Advanced firms now generate 32% of their revenue through digital channels, and expect that amount to rise to 48% by 2022.

Meanwhile, the cost of moving too slowly can be high—we calculated a "laggard penalty" of nearly $80 million per $1 billion of revenue. For large organizations, such as full-service financial institutions, the laggard penalty can exceed $1.5 billion. However, our analysis shows that late adopters may lose more than revenue. They may lose their relevance to the next generation of investors and their position in tomorrow's marketplace.

"We see huge business potential in the clients we have on the books now, which we could service even more effectively with the support of technology"

Erik Steffen, head of IS&P digital wealth solutions, Credit Suisse

Making the case for digital

The business case for going digital is compelling. Our research demonstrates that digital transformation drives substantial performance improvements across strategic and financial measures. Moreover, our analysis shows that these benefits vary by a firm's industry category and stage of digital maturity.

To build our performance impact and benchmarking models, we first classified organizations into three stages of digital transformation by correlating the self-assessments of respondents with their progress on different areas of digital transformation. Of the 1,503 respondents, we classified 29% as advanced (which includes digital leaders and firms that are digitally mature), 48% as transitioning, and 23% as beginning.

How the subsectors stack up

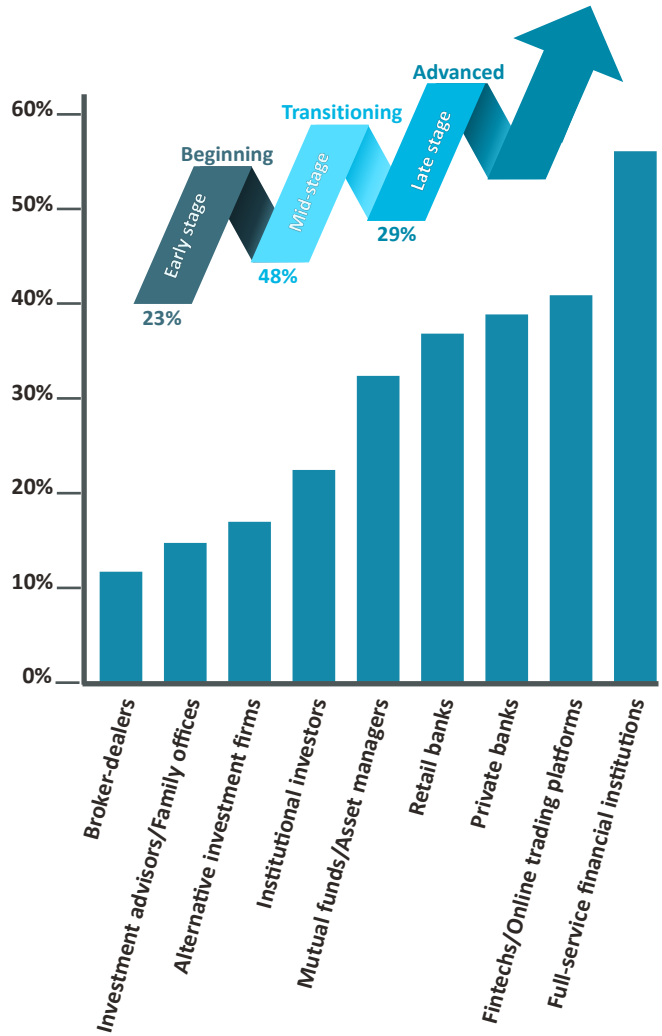


Figure 5.1: Percentage of respondents classified as advanced in each sector.

Some subsectors showed more digital progress than others—in general full-service firms, retail banks and fintechs were in front, while broker-dealers, alternative firms, and investment advisers/family offices were behind (see Figure 5.1)

Boosting performance

Our research shows that over the last year, investment providers have seen sizable performance gains that they attribute to their use of technology (see Figure 5.2). This performance varied across sectors. Not surprisingly, fintech did the best across most performance measures. But private banks also saw big tech-related jumps in revenues (8.5%) and profits (12.7%), while universal banks reported a spike in AUM (6.6%) and market share (6.1%). Institutional investors showed strong profits and productivity in line with their use of technology to improve efficiency, data access, and risk management.

There are wide variances by region. For example, North America and European firms tend to see greater impacts on growth measures, such as revenue, market share, and AUM, than Asian and Middle Eastern firms. In contrast, Asian and Middle Eastern firms realize bigger gains on productivity and cost reduction.

Advanced firms now spend 16.8% of their revenue on technology, and plan to increase their investment to 24% by 2022 (see Figure 5.3). While these investments are large, the payback can be even larger. Over the last year, digitally advanced firms generated an 8.6% increase in revenue, an 11.3% jump in productivity, and a 6.3% improvement in market share from their additional technological initiatives (see Figure 5.4). Further, advanced firms now derive 39% of their revenue through digital channels, and expect that percentage to rise to 59% by 2022.

Our analysis shows that, when orchestrated correctly, digital transformation creates a virtual circle of growth: As firms invest more, they move up the digital maturity curve, and make larger performance gains—a process that continues as companies progress to the next stage.

Our study shows that as firms move along the digital maturity curve, their investment in digital technology increases. For example, private banks on average invest

Digital performance scorecard

	Total	INSTITUTIONAL	ALTERNATIVE	BROKER-DEALERS	FINTECHS	UNIVERSAL BANKS	MUTUAL FUNDS	PRIVATE BANKS	RETAIL BANKS	ADVISORS
Revenue	**5.6%**	5.1%	4.7%	2.9%	8.0%	6.8%	3.9%	6.8%	3.2%	6.9%
Profits	**8.9%**	11.1%	6.9%	12.0%	10.2%	5.7%	9.4%	9.3%	7.3%	9.3%
AUM	**4.0%**	3.5%	2.6%	2.9%	6.2%	5.7%	4.2%	3.6%	2.3%	4.6%
Productivity	**10.6%**	11.7%	7.5%	11.7%	15.8%	9.5%	10.7%	11.9%	8.0%	10.6%
Market share	**3.6%**	3.0%	2.2%	1.7%	5.3%	5.5%	2.6%	3.8%	2.4%	4.3%

Figure 5.2: Performance gains due to technology over the past year reported by respondents across sectors.

Revenue from and investment in digital, now and by 2022

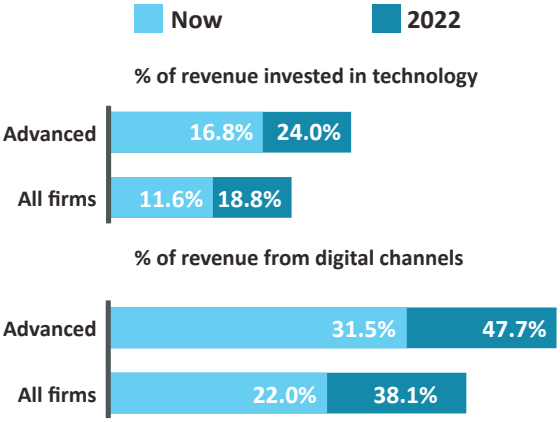


Figure 5.3: Percentage of revenue invested in technology and revenue from digital channels now and in five years.

5.6% of their revenue into technology when starting their digital journey, then 10.7% when transitioning, and 12.9% when advanced. Fintechs, not unexpectedly, start out investing much more (26.8%) and plow back much more when advanced (41%). (See Figure 5.5.)

There is also a clear correlation between investing in technology and generating higher revenue from digital channels. Fintechs, full-service institutions, private banks, and asset management firms are making the biggest investments in technology and seeing the largest gains in revenue from digital channels. For example, fintechs on average receive 56.3% of their revenue through digital channels*, full-service institutions, 24%, and mutual

*While most people think of fintech as B2C digital platforms, there are a number of fintechs that make their money by selling services to financial firms.

How the digitally advanced perform

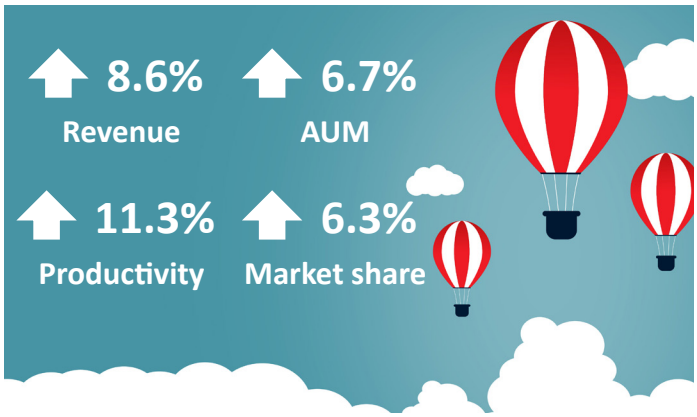


Figure 5.4: The impacts of technology on how digitally advanced firms perform.

funds and private banks around 22% each. (See Figure 5.6.) As with technology investments, revenue from digital channels rises as companies become more digitally mature.

Over the next five years, investment providers expect their revenue from digital channels to rise dramatically—from 22% on average now to 38.1% by 2022. Over 70% of revenue will come from digital channels for fintechs, and over 40% for full-service financial institutions and private banks. Asset management firms will be narrowly behind (see Figure 5.7). These numbers show the huge revenue increase from digital channels from investing more in technology.

Technology investments by stage of digital maturity

Organization	Beginning	Transitioning	Advanced	Average across stages
Fintechs	26.8%	26.4%	41.0%	32.5%
Full-service	9.1%	9.8%	14.8%	12.6%
Private banks	5.6%	10.7%	12.9%	10.7%
Asset managers	7.2%	9.3%	14.2%	10.4%
Investment advisors	5.8%	10.4%	17.3%	10.3%
Institutional investors	5.6%	8.0%	15.8%	9.4%
Broker-dealers	6.5%	10.6%	12.1%	9.1%
Retail banks	8.6%	7.9%	10.9%	9.1%
Alternatives	4.8%	9.1%	14.6%	8.7%
All firms	**7.7%**	**10.2%**	**17.0%**	**11.6%**

Figure 5.5: Percentage of revenue invested in digital technology by subsector and digital maturity level.

Revenue through digital channels by stage of digital maturity

Organization	Beginning	Transitioning	Advanced	Average across stages
Fintechs	46.9%	42.1%	73.7%	56.3%
Full-service	21.1%	18.8%	27.6%	24.0%
Private banks	12.7%	21.8%	26.9%	22.4%
Asset managers	15.8%	21.7%	28.8%	22.3%
Investment advisors	11.5%	18.3%	28.5%	18.1%
Institutional investors	11.5%	17.5%	26.1%	18.2%
Broker-dealers	15.4%	21.9%	18.3%	18.8%
Retail banks	15.8%	17.3%	25.3%	20.1%
Alternatives	10.6%	16.0%	24.3%	15.7%
All firms	**15.6%**	**19.6%**	**31.2%**	**22.0%**

Figure 5.6: Percentage of revenue from digital channels today by subsector and digital maturity level.

Digital sweet spot

For most investment firms, going digital delivers a favorable revenue and cost outcome. As companies move up the digital maturity curve, the positive impact on revenue rises, and the negative impact on costs decreases (see Figure 5.8).

Our analysis shows that overall revenue generally rises as firms move up the digital maturity curve, although the performance of broker-dealers and retail banks can be wobbly (see Figure 5.9). At the same time, overall costs typically decrease due to efficiency and productivity gains that can outweigh higher technology expenses. But this is not always the case, particularly for investment advisors, private banks, and retail banks, whose costs are also affected by the need to fill talent and product gaps (see Figure 5.10).

Erik Steffen, head of IS&P digital wealth solutions at Credit Suisse, offers a simple example of the beneficial effect on revenue and costs: the impact of technology on the productivity of investment advisors, who can serve more clients with less effort. "Currently, we see huge business potential in the clients we have on the books now," says Steffen, "which we could service even more effectively with the support of technology, as it frees up an advisor's time to focus on the areas where the advisor really adds value."

According to Steffen, a typical advisor can have more than 200 clients in the lower high net worth client segment. With that many clients, it's impossible to service everyone and stay in touch when new opportunities arise. "We need technology support to create digital client touchpoints to service our value proposition and communicate ideas," says Steffen.

Functions driving performance

According to our research, the four functions that drive the largest revenue impact from digital transformation, in descending order, are information services, new product development, marketing/customer service, and strategic

Executive perspectives on digital growth opportunities

"Selling digitally to our customers through digital channels is a high priority," says Gonzalo Rodriguez, head of digital transformation, Spain, at BBVA. "On average, about 25% of our total sales are digital—more than that for investment products." Rodriguez says that the bank's net promoter score (NPS), a key measure of client experience, has risen from -6 to +13 in the past two years, and the bank's mobile app NPS is rated +63.

Neesha Hathi, chief digital officer at Charles Schwab, says that since her firm launched its Intelligent Portfolios robo advisory platform, it has accumulated more than $20 billion in assets under management, 25% of which are new assets, rather than money switched over from other Schwab offerings. "In two years, we have become the biggest robo out there," she says. "When it comes to market share and asset growth, we have fabulous metrics for new households that join Schwab every single day. Many of them come to Schwab for a digital experience. If we didn't have a robo platform, we would be limiting our market potential."

Even for firms that are not yet digitally advanced, there are clear revenue benefits from digital investment. Matthew Peterson, senior vice president and chief wealth strategist at LPL Financial, says that independent investment advisors, for example, can increase revenue through digital simply by the effective use of social media.

"Most financial advisors define their client target list by geography," says Peterson. "Through social media, advisors can expand their business opportunity beyond the town they live in." He says digital outreach can help advisors find a niche: He cites one advisor who focuses on funeral directors, and another who works with the LBGTQ community, both of whom have national, rather than local businesses. "That may sound obvious, but it is a sea change for advisors."

LPL is also benefitting from a new "client lifecycle management" system that serves 30,000 users. "Digitalization has increased advisor productivity and significantly reduced the time needed to adapt to changing regulations," says Hans Peter Wolf, CEO and founder of Appway, which put in the platform for LPL.

Revenue through digital channels, now and by 2022

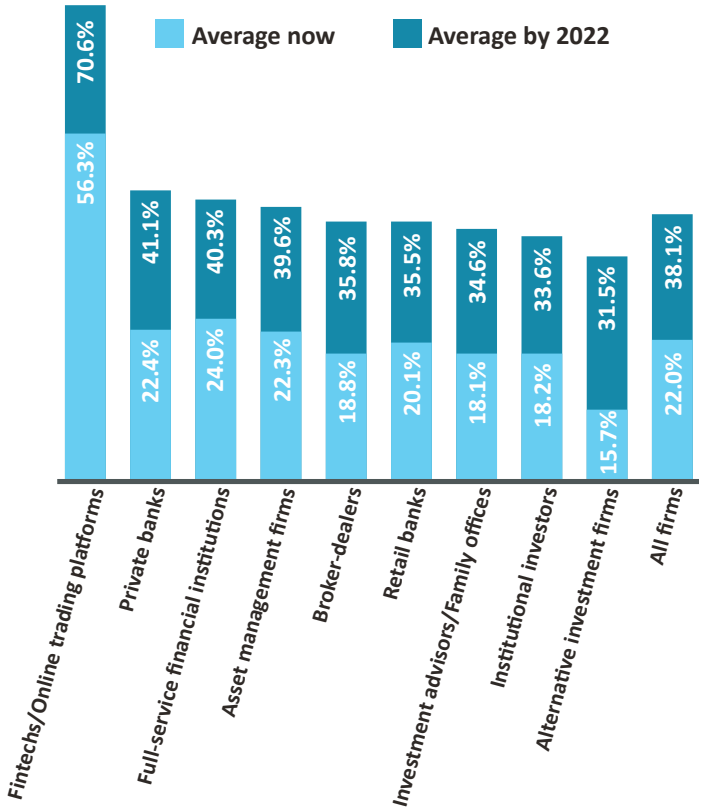


Figure 5.7: Percentage of revenue through digital channels now and by 2022 as reported by 1,503 firms surveyed.

Revenue vs. cost of going digital

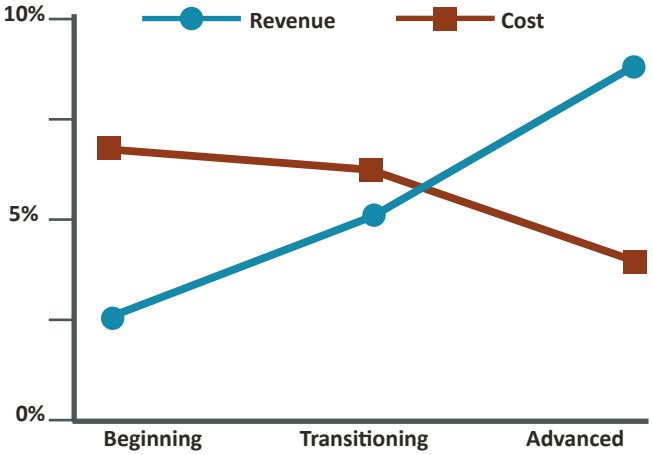


Figure 5.8: Impact of going digital on revenues and costs by maturity stage as a percentage of revenue.

How revenue impacts increase along the maturity curve

Organization	Beginning	Transitioning	Advanced	Average
Full-service	3.8%	4.9%	8.5%	6.8%
Investment advisors	3.2%	6.9%	12.7%	6.9%
Private banks	3.8%	6.4%	8.6%	6.7%
Institutional investors	1.6%	4.3%	10.0%	5.1%
Asset managers	2.4%	3.4%	5.6%	3.9%
Broker-dealers	2.4%	2.0%	8.5%	2.9%
Retail banks	3.7%	2.8%	3.6%	3.2%
Alternatives	1.3%	5.3%	8.6%	4.7%
Fintechs	3.8%	6.1%	12.1%	8.0%
All firms	**2.6%**	**5.1%**	**8.9%**	**5.6%**

Figure 5.9: Impact of digital transformation as a percentage of revenue by subsector and digital maturity level.

How cost impacts decrease along the maturity curve

Organization	Beginning	Transitioning	Advanced	Average
Full-service	6.1%	7.1%	3.1%	3.7%
Investment advisors	5.5%	6.9%	9.5%	6.8%
Private banks	7.7%	-0.8%	6.8%	5.7%
Institutional investors	6.3%	6.5%	5.3%	7.6%
Asset managers	5.8%	5.6%	4.0%	5.7%
Broker-dealers	6.5%	5.0%	2.3%	7.9%
Retail banks	1.8%	5.8%	5.1%	4.0%
Alternatives	5.3%	5.1%	1.8%	4.8%
Fintechs	5.3%	6.5%	-4.8%	3.2%
All firms	**6.8%**	**6.2%**	**4.0%**	**5.7%**

Figure 5.10: Cost impacts of digital transformation by sub-sector and digital maturity level as a percentage of revenue.

planning. These are the same areas that also have the biggest impact on costs, although the order changes, with new product development moving to the bottom of the top four list. (See Figure 5.11.)

The return on investment for going digital

Based on our sample of 1,503 investment firms, our economists calculated an indicative ROI based on the performance impact that various types of investment firms expect from digital technology over the next five years. In particular, our analysis shows both the ROI on going from a digital stage of beginning to transitioning, and then from transitioning to advanced.

To estimate the indicative ROI, we analyzed the incremental costs of reaching the next stage, along with the revenue and cost impacts expected over a five-year period. Figure 5.12 presents the aggregate ROI over a five-year period and by annual average return.

The ROI over the next five years is expressed as the percent of revenue. For example, the net-present value of the benefits for a full-service financial institution going from beginning to transitioning over the next five years is equal to 31.9% of revenue, or an average of 6.4% a year. The net-present value for a full-service financial institution going from transitioning to advanced is 21.8%, or an average of 4.4% a year.

For half of the organizations studied, such as institutional investors, asset managers, broker-dealers, and fintechs, the ROI increases as the firm moves from an early stage (beginning to transitioning) to a later stage (transitioning to advanced).

However, for the other half, the ROI falls as the firm advances in digital maturity. These firms expect their costs to jump as they re-platform their businesses and incorporate more advanced technologies to stay ahead. Some of these firms also have more moderate expectations for future revenue.

Where digital is having the largest positive impact on revenues or costs

Business process	Revenue	Costs
Information services and technology	82.5% (1)	42.4% (1)
New product and service development	75.5% (2)	40.3% (4)
Marketing/customer service	74.1% (3)	41.0% (2)
Strategic planning and implementation	73.9% (4)	41.0% (3)
Production and operations management	73.8% (5)	36.3% (8)
Investment management	73.4% (6)	39.7% (6)
Financial management/ accounting	72.1% (7)	30.8% (11)
Sales/distribution	72.1% (8)	39.8% (5)
Risk management and compliance	71.3% (9)	34.7% (9)
R&D and innovation	69.3% (10)	37.6% (7)
Partner management	66.7% (11)	32.2% (10)
HR and people management	60.1% (12)	30.6% (12)

Figure 5.11: Percentage of respondents scoring each area where digital is having the largest positive impact on revenues or costs. Figures in parentheses indicate the order.

The biggest surprise was retail and private banks, which both expect low or even negative returns on their digital investments. These firms expect a higher cost of technology investment than other firms, and often see going digital as more of a defense than growth strategy. This attitude was summed up by Markus Hujara, head of marketing and innovation, wealth and asset management at Berenberg, a private bank founded in 1590. "We don't need to be first movers on technology. We are very successful right now, and when we see that we need to move, we will do it much faster than big financial companies."

Digital transformation can make you both more efficient and more relevant to your existing customers and distribution channels."
Steven Dorval, head of advice and innovation, John Hancock

How ROI changes from earlier to later stage

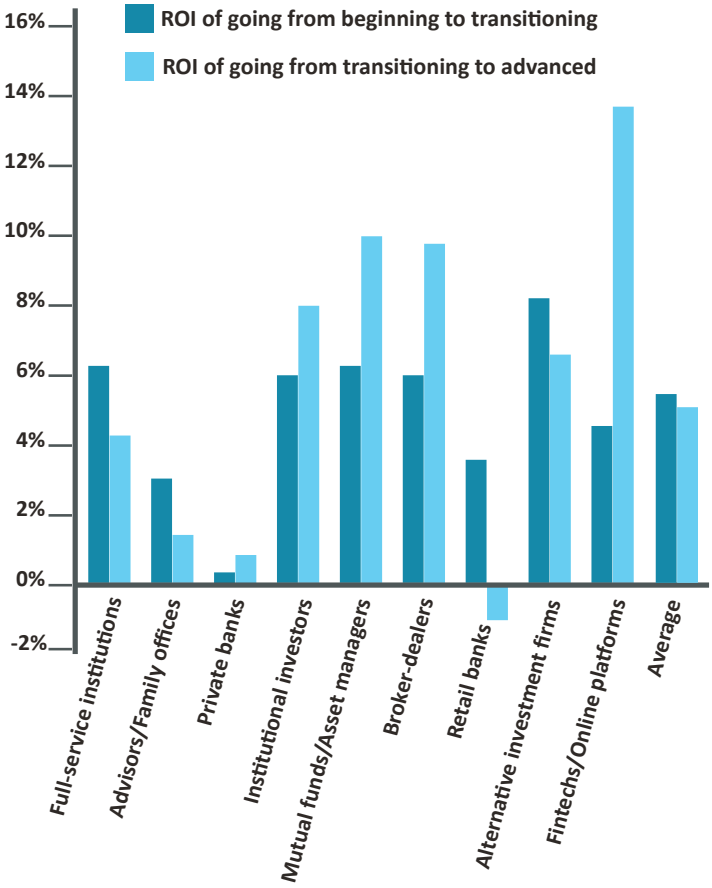


Figure 5.12: Return on investment of going from beginning to transitioning and of going from transitioning to advanced.

Laggard penalty

Our model not only calculates the financial benefits of going digital, it also identifies the penalty for falling behind. To calculate a "laggard penalty," we determined the difference between the financial results of advanced firms and beginners. We then calculated what this penalty might be in absolute dollar terms for firms of different sizes; it works out to $79.2 million per $1 billion of revenue.

This laggard penalty varies considerably by subsector—although that is partly due to the differences in the average size of each type of firm. On average, big players like full-service institutions, institutional investors, and asset management firms pay the largest penalty for moving too slowly (see Figure 5.13).

Presenting the laggard penalty as a percentage of revenue shows just how much money is at stake. For

How much average firms in each subsector might be leaving on the table

Organization	Total Impact Advanced	Total Impact Beginning	Laggard Penalty
Full-service	$872.90	-$665.70	$1,538.50
Investment advisors	$97.10	-$112.70	$209.80
Private banks	-$29.50	-$70.90	$41.40
Institutional	$389.80	-$826.60	$1,216.40
Asset managers	$120.90	-$1,031.10	$1,152.00
Broker-dealers	$308.90	-$428.60	$737.50
Alternatives	$281.00	-$246.50	$527.50
Fintechs	$412.40	-$292.40	$704.80
All firms	**$258.90**	**-$417.20**	**$676.10**

Figure 5.13: Laggard penalty in millions of dollars for average firms in each subsector. Average size of firms varies by subsector.

**We were unable to calculate the laggard penalty for retail banks due to the insufficient number of such banks in the beginning digital stage of our sample.*

example, broker-dealers are paying a penalty tax of over 14%. Fintechs, institutional investors, and alternative investment firms also pay a high price for resisting digital change (see Figure 5.14).

But digital laggards may pay an even bigger price: losing the business of future investors. "The younger generation wants to be with a firm they view as a technological leader," says LPL's Peterson, "even if its services aren't materially different. They like the wow factor of having an 'enhanced digital experience.' The younger cohort doesn't want to be involved with a stodgy firm—a dinosaur."

"The younger generation wants to be with a firm they view as a technological leader."

- Matthew Peterson, senior vice president and chief wealth strategist, LPL Financial

The laggard penalty can really add up

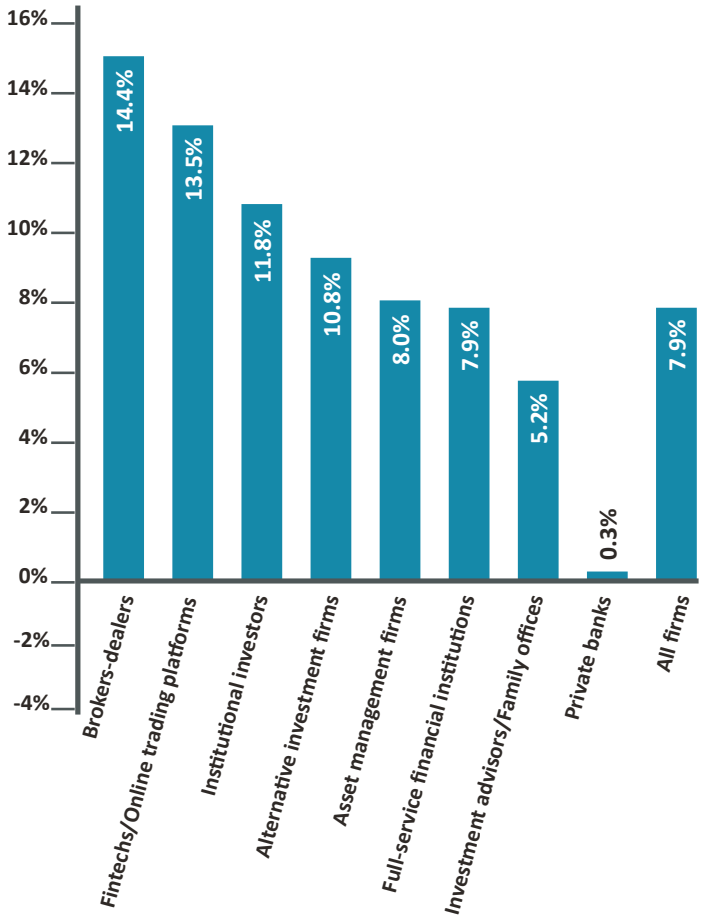


Figure 5.14: The laggard penalty as percent of the average firm revenue by subsector.

6 Calls to action

Earlier this year, Jean-Laurent Bonnafé, the CEO of France's biggest bank, BNP, announced his plans to double its investment in technology to more than $3 billion as part of plans to accelerate digital transformation through 2020. At the same time, Germany's biggest bank, Deutsche Bank, committed more than $750 million to digitalization in its three-year budget.

For investment providers, however, the strategic, organizational, and operational implications of making this digital transition are enormous. To become digital leaders, they will need to invest in the right technologies and solutions, while making smart strategic bets on the investment services and business models that will ensure future success. At the same time, they must reinvent their organizations, cultures and skill sets to drive their digital futures without disrupting distribution channels, cannibalizing existing businesses, and exposing themselves to new risks.

"We need to revolutionize our business because the world has changed so much."

John Cryan, CEO, Deutsche Bank

Eight steps to digital leadership

To help investment providers reinvent their businesses for the digital age, Roubini ThoughtLab, in conjunction with a coalition of leading firms, conducted one of the most comprehensive studies on the digital transformation of the investment industry. Our economists analyzed and benchmarked 1,503 institutions in 15 countries, and our financial specialists spoke to more than 100 senior executives through peer group meetings and one-on-one interviews. Our research enabled us to frame eight calls to action to help investment firms successfully navigate the digital disruption ahead. These calls to actions are outlined below:

1. Create a digital vision and business case

Bridging the gap between business and technology is crucial for developing a digital vision. Says Erik Steffen, head of IS&P digital wealth solutions at Credit Suisse: "On the one hand, you need top-down management that provides a clear strategy and business model for making money in the future. On the other hand, you need a bottom-up approach for building the technology capabilities to support your business strategy. You can only succeed when you combine people who understand business models very well and people that understand technology equally well. You always have to define a sound business strategy before you can implement the business processes to support it."

A key step is to build a strong business case for the organization—and revisit it on a regular basis. One common method is to create a matrix tool for assessing investment opportunities, grading them based on customer value, organizational value, and business value. Some also score for durability of the investment, and the need for new people, capabilities, and business processes. This can provide an objective, quantitative score for whether the investment is going to add value, which can be updated as the market evolves.

2. Map out a clear path to digital transformation

To map out a path to digital leadership, firms should first determine where they are on the digital maturity spectrum. The checklist on page 56 (Figure 6.1) would be a good starting point for self-assessment—our survey showed that a high percentage of digital leaders have made strides in all these areas. From this list, we have also developed a benchmarking tool, available online at RoubiniThoughtLab.com/wealth2022.

Cory Gunderson, global head of financial services at Protiviti, explains how best to create a digital roadmap: "Transformation starts with assessing where you're at, where you want to be, and why. It encompasses a review of your assets and liabilities, not from the balance sheet perspective, but from the point of view of the customer experience. How much technology debt do you really have? How fast can you adjust that?"

Gunderson points out that firms can't wipe out their legacy systems all at once. "You have to sequence it in the right stages, depending on where you get the most bang for the buck," he says. Some large firms have carved out digital into its own business function, for a while, he adds. "That's to promote innovation, spark thinking and get things done more quickly, because it's not tied into the legacy bureaucracy, which can exist in so many of these extremely large institutions."

Next, Gunderson suggests that firms "expand their ecosystems" by buying or partnering with fintech startups. "Large, complex institutions are not just going to watch while their $2 trillion of market share evaporates due to fintech," he says. "Where they can't develop the technology fast enough, or somebody has already figured it out, large institutions can buy that acceleration, either through direct investment or through acquisition of the startups."

Jason Bettinger, director, financial services industry solutions group at Cisco, agrees. "The vision of becoming a technology company that is in the financial services business is achievable, but firms need a complete understanding of the realities of their current competencies," he says. He added that realizing this vision will mean bringing in a wide ecosystem of technology, application, and integration partners to "future proof" the business.

3. Nurture a culture of innovation

To deliver on a digital vision, investment providers should aim to instill a culture of innovation throughout their

enterprises. “The cultural mindset of an organization is paramount,” says Neesha Hathi, chief digital officer at Charles Schwab. “Firms must believe that a digital-first orientation is not only nice to have, but must-have. Having the leadership support is critical.”

For Hathi, digital transformation is an ongoing process. “It’s a different way of working—a new mentality for a lot of firms. It requires you to disrupt yourself,” she says. Schwab knew it was doing just that when it launched its Intelligent Portfolios robo advisory service. “But we felt that it was right for our clients,” she explains.

With technology evolving at hyper-speed, digital training at all levels of management is essential, according to Dean Butler, head of retail wealth at HSBC. “We’re trying to educate our senior team on what agile is, what digital is, and what it means to customers.”

Some firms, like Vanguard, are exploring even more radical routes, such as “servant leadership,” which turns the management pyramid upside down, according to John Marcante, CIO of Vanguard. “Most people draw a hierarchy diagram with the leaders at the top of the organization with everyone reporting to them. We like to flip that around and put the leaders at the bottom of the organization, in support of the organization.”

Marcante sees clear benefits to this leadership style: “It unlocks creativity and creates an environment where you get the best ideas from a fully engaged team. The team’s job is to experiment, learn, work together, and use their cross-disciplines to come up with a solution. Failing is okay if you can do it very quickly and cheaply. Servant leadership is about creating that culture within a team.”

4. Drive continuous product development

In a market where the FANGs (Facebook, Amazon, Netflix, and Google) are setting the pace, investment firms need to emulate Silicon Valley by continuously reinventing products and business models (see box). One firm moving in that direction is insurance firm John Hancock. “We are trying to take a start-up mentality,” says Steven Dorval, head of advice and innovation. “We are constantly building new products, testing them with customers, and trying to find that elusive product and market fit.”

For example, the firm is now building new digital products targeted at the mass market. “We have our sights on people with less than $500,000 of investable assets who are hard to reach through traditional channels. We are listening to their needs and aspirations to develop products that they want. We are primarily focused on self-serve digital solutions. But we’re also looking at how we could build tools to make advisors more efficient.”

Rather than making one strategic bet, says Dorval, “we are conducting multiple experiments in the marketplace. By spreading our chips out over the roulette table, we can increase the probability that something is going to win.” For example, John Hancock has been experimenting with different ways of establishing robo-advisory services, both partnering with a third-party vendor and developing specialized solutions for key customer segments with unique needs and expectations.

Dorval recommends that investment firms constantly challenge their thinking. “How can we become more efficient? How could we do more with the same? And how can we leverage technology to expand our opportunities with the customers we serve?”

Incumbents may also want to follow the lead of firms like Vanguard that are setting up innovation labs. Vanguard recently cut the ribbon on its innovation studio in Philadelphia, which houses 100 people focused on new product development. Says Marcante: “We are implementing a lean start-up mentality where cross-functional teams own the client experience, and experiment and learn. They’re held accountable to outcomes versus schedules and costs. We see that as a pattern by which we want to roll out products through all of our businesses.”

5. Build a seamless, omnichannel customer experience

Combining digital engagement with a personal approach is the key to delivering the best possible client experience, according to Rainer Hauser, head of strategy and business development for UBS Wealth Management. “I see the interaction between our front people and clients as ‘high touch to no touch.’ High touch is when the client says ‘I don’t like these technical gimmicks. I want to talk to a client advisor and that’s it.’ Then you have clients that say, ‘I know what I want to do, and I don’t need to talk with a client advisor.’ I call that no touch. Given the

What investment providers can learn from Amazon

As investment firms come to grips with massive disruption in their industry, there are lessons to be learned from Amazon's impact on the retail industry. Here are some of the takeaways offered by executives.

Lesson 1: Make it easy for your customers to do business with you—John Marcante, CIO, Vanguard

"We at Vanguard see some of the principles that Amazon was born on playing out in financial services," says Vanguard's Marcante. "Early on I bought something on Amazon, but got the wrong thing. I called Amazon, actually got hold of a person, and was told to just keep the wrong one without paying for it, and they would send the right one. The point was, keep it simple and in favor of the experience for the client." Or in the words of Jeff Bezos: 'If you want to be pioneering, if you want to be inventive, and if you want a culture that's experimental, then you want to be customer-obsessed.'"

Lesson 2: Consider the impact of digital on your physical footprint—Vinod Ramon, VP digital advice solutions, Fidelity

Fidelity's Raman believes that investment firms should look at events in the retail sector to better understand where their industry is heading. "In the early 2000s, people said malls could never go extinct—sure, Amazon could sell textbooks online, but I'm never going to go to Amazon and buy clothes or shoes, I need to go to a mall and try them out before I buy them. Guess what happened? Malls are closing down; my wife and I never go to malls. Now I'm hearing very similar predictions about financial services, that people will always want to meet someone in person in a branch before they throw in $100K. I think that's going to change, maybe not right away, but as people start getting more and more comfortable with digital as a medium, that will happen in the next 5-6 years."

Lesson 3: Be digital first, but not digital only—Neesha Hathi, chief digital officer, Charles Schwab

Amazon's opening of multiple book stores around the country and recent acquisition of Whole Foods reflects the importance of an omnichannel approach integrating both digital and personal. "If you think about the integration of the channels in retail, it's advanced so quickly, but generally not as fast in investment management," says Hathi. "Because we're trying to bring the multi-channel experience to all investors, it's more similar to the retail model for us than for firms whose business model is digital for the low end and human for the high end. We want to be able to provide a human to everyone who needs the human: Sometimes that happens at a local branch, but sometimes it happens over the phone or on video conference with one of our contact centers."

Lesson 4: Get control of customer data—Yoni Assia, CEO, eToro

Part of Amazon's success is its huge database on 152 million customer accounts. If eToro's Assia, a successful fintech entrepreneur, suddenly headed a large incumbent, he would do two things very differently—more like Amazon does. "First, I would gather all of the customer data of the organization, across all of the multiple business units, and held in multiple databases and captured through every possible touchpoint, to get a clear view of each customer's interaction with the company," says Assia. "Second, based on what I learned, I would develop products focused on the consumer." He would "definitely put it all on the cloud," so that he could drive rapid product innovation by creating APIs to connect with various technological solutions and Fintech products. Says Assia: "I would harness the biggest advantage of any large financial institution—its trusted brand."

Lesson 5: Think audaciously—Chris Peretta, chief information and operations officer, Bank of Toyko - MFUG

To stretch the thinking of his colleagues, Bank of Tokyo-MUFG's Perretta poses the following theoretical question: "Say we now have infinite computing power at our disposal. What would we do with it? We need to start thinking as audaciously as Amazon does. He says firms need to think about their back offices and portfolios like factories or warehouses, despite all the controls and compliance rules they need to apply. "You have to have a mindset like Jeff Bezos, saying there are no people here—we automate everything. They're relentless about it."

Lesson 6: Explore platform as a business model—Wiwi Gutmannsbauer, global head of omnichannel management, UBS Wealth Management

A key to Amazon's success is an open platform model connecting thousands of providers of goods and services with millions of consumers. Taking a leaf from the Amazon lesson book, over the last year BBVA, Citi, HSBC, Capital One, just to name a few, have opened their APIs to third-party developers. For UBS's Gutmannsbauer, the shift to platform model may be the biggest change for investment firms over the next five years. "I believe that the financial industry will go through paths of disintermediation where parts of integrated value chains might be attacked and where you might find individual players covering different spots. I see a further convergence of the industry with the platform economy, meaning firms finding more and more ways to engage with the big platform players."

Lesson 7: If investment providers don't step up, Amazon will step in—Mark Smedley, VP, financial services, global industry lead, Oracle

According to a 2015 PwC survey, more than half of bank executives in the US indicate that alternative players and tech giants are a threat to their business. A 2017 survey from Accenture showed that roughly one in three banking and insurance customers would consider switching their accounts if companies like Amazon, Google, Apple, and Facebook offered financial services like wealth and asset management. Oracle's Smedley muses: "What happens then? I see that on the horizon—lots of evidence that smart players are already moving in that direction. Your strategy can't just be how do you differentiate from your existing competitors any more, but how do you live and thrive in this new digital economy when Mark Zuckerberg, Jeff Bezos, and Tim Cook decide that their platforms can offer a variety of financial services?"

wide mix of people in different markets, you have every gradation in between. Our goal is to offer the form of interaction that each client wants."

To get this right, Schwab's Hathi suggests that incumbent firms reverse their thinking from a personal-first to a digital-first perspective. "Firms that are leading here either started that way, as we did, or are undertaking a cultural shift to create exceptional customer experiences that don't feel like compromises to their clients. Then they might look at the digital experience and say, 'In step 2 and step 6 and step 9 a person could add tremendous value—let's leverage the human talent in those areas.'"

Investment providers seeking to create a seamless customer experience will first need to integrate their back-end operations, says Tyrone Canaday, managing director at Protiviti. "Firms should look at how all types of customers interact with their platforms. For example, how do you need to rethink your products and services to meet the evolving needs of millennials? Which digital channels should you leverage? The leaders will be the ones that reimagine the customer experience."

But aligning the customer experience with the back end can be challenging because of legacy systems, says Hans Peter Wolf, CEO and founder of Appway. "If you pull back the curtain, many financial institutions have legacy systems that are mostly disconnected and look like spaghetti. Making it worse, many investment providers are trying to go digital by adding more noodles. Instead, they should be moving to a lasagna-style architecture with a streamlined back-end and an orchestration layer on top to really engage customers."

Rather than spending a lot of time sprucing up the front end, Wolf recommends orchestrating interactions and harnessing data across the enterprise as well as across the firm's third-party ecosystem. "That's the genius of Amazon. They sell products from a huge number of suppliers, but because they have full orchestration from front to back, they can provide the customer with a truly seamless, omnichannel experience."

6. Stay ahead of the technology curve

With most legacy systems no longer fit for their purpose, the best solution is often to migrate over to a more agile and cost-efficient cloud-based platform. Says Canaday of Protiviti: "Right now, you need to be in the cloud to even be in the game. It's just harder to move as quickly and get the scale you need without a cloud infrastructure."

Sanjay Mathew, a field director in Oracle's financial services consulting practice, adds: "For most financial institutions, the question is not if I should move to the cloud, but how? My point of view is that a systematic approach works best for most organizations. It doesn't matter if their view toward the cloud is mature or risk-averse, or whether their aim is to drive innovation or cost savings."

Mathew believes that institutions should first tackle the simpler activities. "They should start by exploring which kinds of smaller workloads they can move to the cloud. It doesn't have to be the entire production environment, but it could be a small portion of a less critical function, such as life cycle development. That's where they can start and experiment."

One investment provider that has made the shift to cloud is Vanguard. "Cloud plays a big role in creating the capabilities to very quickly string up and deploy in a fashion that is nimble, cheap, scalable and repeatable," says Marcante. "Today we have a private cloud inside of Vanguard where our developers work to do continuous delivery. They create and design applications that enable all of the cloud capabilities. Today, we do much of that work internally, but we are on the verge of migrating all of that development, and more, to the public cloud."

Migrating to the cloud will also help in tackling another technology imperative: leveraging data. "Dealing with data is the biggest challenge," says Steve Scruton, president of Broadridge Advisor Solutions. "Data will drive your knowledge, your recommendations, and how you treat your customers. If you get your data shop in order, things will fall into place."

Scruton and others agree that it is best to consolidate data in a data warehouse or lake, most likely in the cloud. "It's just more cost-effective, and as secure, if not more secure," says Scruton. "It's also easier to bring in additional external data when needed if operating in the cloud."

That data will offer a basis for using technologies like AI for portfolio management, robo-advisory, or cognitive marketing. "Whatever type of AI, whether it's pattern recognition, genetic algorithms, logistic regressions—it's all based on access to consistent data," says Scruton.

7. Develop digital talent to drive your future

If you don't have a strong digital team, then the other pathways to digital leadership won't work. "Without the right people and skill sets," says Protiviti's Canaday, "it's impossible to really drive change. You can have a souped-up Ferrari, but if you don't know how to drive it, then it doesn't really do much for you."

One key step is conducting a formal digital skills assessment to determine whether your organization has the human resources to deliver on your digital strategy, starting by defining the core digital skills needed to support your strategy for the next five years. To do this, firms should start by defining the activities across the client lifecycle inclusive of business architecture, planning, testing, opportunity assessment, digital marketing, performance management, and the like. The assessment can help uncover hidden talent and obvious skills gaps. Investment providers should should revisit the skills matrix on a yearly basis as the digital landscape changes.

According to HSBC's Butler, hiring people with the requisite digital skills is not enough: these individuals also must understand the business and regulatory issues. "The last thing you want—and it's something that I've seen—is for a digital team to go off and spend months building wealth project themselves. They bring it to the business and it can never go live because it doesn't meet the regulations for that country."

Finding those skills in one individual is difficult, according to Butler. "When you find people like that, you want to hold onto them." Butler believes a team approach combining business and digital can be the best way to fill the gap. "My advice is to find people that specialize in different parts of the project, then create a cross-functional team," he says. "It's important to bring in the right people from the beginning so that they buy into the proposition. Bringing them in at the end and presenting a fully formed idea often fails."

8. Make your cybersecurity airtight

As British scholar Paul Williamson famously said: "Fighting terrorism is like being a goalkeeper. You can make a hundred brilliant saves but the only shot that people remember is the one that gets past you." Adam

Hamm, managing director at Protiviti, a former president of the National Association of Insurance Commissioners (NAIC) and chairman of the NAIC's cybersecurity task force, believes the same rule applies to cybersecurity. "Companies have to prepare themselves to be almost 100% perfect in cybersecurity, whereas the bad guys just have to hack into a company a very small number of times in order to be extremely successful in what they're doing," he says. To improve their odds, Hamm suggests that investment providers take four steps to keep their organizations safe from cyberattacks:

Step 1: "First and foremost, you need to understand as an organization the data— the PII (Personally Identifiable Information) and NPI (Nonpublic Personal Information)— that you absolutely, positively need to protect at all costs. The term that's used all the time is 'crown jewels.' Since you cannot protect everything, you need to focus on those things that you cannot afford to lose. In this era of data overload, it is a challenge to sort through all of the data to determine what truly are the crown jewels."

Step 2: "Once you've done that, you have to spend the blood, sweat, and tears to install a system that will, to the greatest extent possible, protect that data. It's going to be different for every company, because each one will have its own set of crown jewels."

Step 3: "Detection is just as important as protection. As a regulator, I saw time and time again that the bad guys were in the company's environment for hundreds of days before the company realized it. Almost every company has spent money on protection to try and keep the bad guys out. But a lot of them don't have the ability to differentiate among the hundreds of red flags that come in every day about threat vectors and potential intrusions. You need good detection that can find a breach in as close to real time as possible, so you can stop the bleeding. In fact, the best detection systems use AI and other technologies so they can also anticipate attacks."

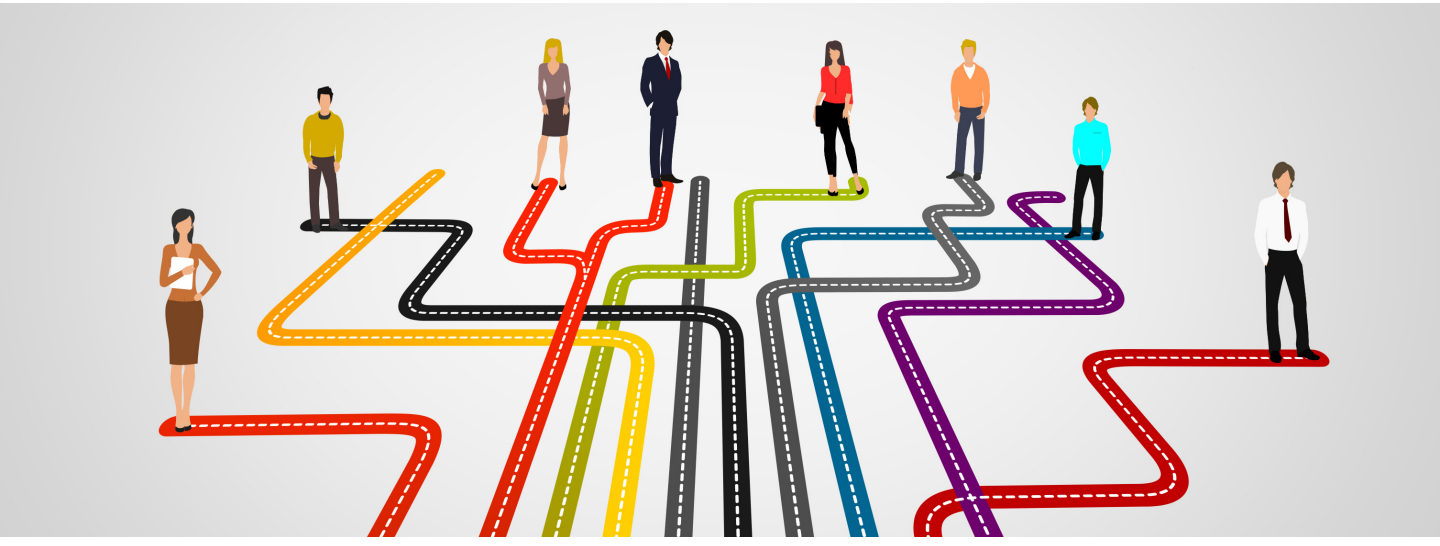
Step 4: "You have to have an integrated response and recovery plan ready to go before the breach ever happens, so when it does come, you're not scrambling around trying to figure out how to handle it and ensure that your customer base doesn't go running for the exits."

According to Bill Egerton, chief strategy officer of the Vauban Group, "you should only start thinking about technology after understanding your risk tolerances, know what you're trying to protect, and have made your people cyber aware. If you automate a corrupted process, you'll get a very efficient corrupted process."

Egerton believes that the best cybersecurity systems are holistic and draw on a combination of leading technologies, from data encryption, and real-time monitoring to blockchain and AI-enabled predictive analytics. He warns that technology is a valuable tool, but not a panacea. "It is all about stepping back. Data first. People second. Technology third."

"At the end of the day, digital transformation is not about technology. It is about business model innovation."

- Chirag Shah, VP and global head of fintech, Sapient Consulting



Seven hallmarks of digital leaders	Survey response
1. Create a digital vision and business case	
Identify future areas of growth from digital innovation and channels	97%
Ensure close coordination between digital and business teams	85%
Generate revenue and cost benefits from digital transformation	82%
Define leadership roles for driving and governing digital transformation	82%
Develop a digital strategic vision and value proposition	74%
2. Map out a clear path to digital transformation	
Execute a full digital transformation of your business	82%
Develop a properly staged road map to digital leadership	77%
Work with external experts to develop digital capabilities	77%
Amend strategic planning processes to allow mid-course correction	71%
3. Nurture a culture of innovation	
Provide digital technology and business training	94%
Instill an innovative culture across the enterprise	85%
Encourage cross-pollination of digital ideas throughout firm	79%
Build intrapreneurship by setting the right incentives and rewards	77%
4. Take customer centricity to the next level	
Analyze changing customer expectations across segments	91%
Put the customer at the center of digital innovation	88%
Align front, mid and back offices through technology	82%
Build a seamless, cross-channel customer experience	79%
5. Drive continuous product development	
Shorten time to market for fintech solutions and new products	85%
Adapt products to meet evolving customer digital needs	83%
Adjust and replace existing business models	82%
Use cloud as a platform to enable agile digital development	74%
6. Stay ahead of the technology curve	
Harness advanced analytics for multiple purposes	88%
Apply advanced cybersecurity to detect and anticipate risks	88%
Build a range of fintech capabilities, services, and tools	85%
Establish horizon scanning process to track technologies	82%
Maintain first-mover advantage in the use of latest technology	77%
Invest adequately in new technologies and agile platforms	77%
7. Build a digital team to drive your future	
Provide training on digital technology and business	79%
Create a dedicated digital leader and team	79%
Acquire, develop, and retain the right digital talent	79%

Figure 6.1: How prepared is your firm? To use the benchmarking tool, visit RoubiniThoughtLab.com/wealth2022.

Glossary

Application programming interface (API): A set of tools for building application software that clearly defines methods of communication between various components. APIs can serve as building blocks, making it easier to create applications and systems.

Artificial intelligence (AI): Computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, translation between languages, and the ability to learn from input and experiences.

Augmented reality: A technology that superimposes computer-generated sound, video, graphics, or GPS data on a user's view of the real world, providing a composite view.

Behavioral analytics: A type of data analytics focused on understanding consumer actions and behaviors, including data on a consumer's past activity and social media.

Big data/data mining: Collection and use of large, complex data sets, including both unstructured and structured data originating from a variety of sources, for modeling and analysis.

Biometrics-based identification: Technology to verify identity using the characteristics of a person's body, such as fingerprints, iris prints, and facial structure.

Blockchain: A digitized, decentralized, public ledger of transactions that allows market participants to keep track of them without central record keeping.

Chatbot: A computer program designed to simulate conversation with human users, usually online, often enabled with natural language programming, a type of AI.

Cloud computing: The practice of using a network of remote servers and applications, often hosted on the internet, to store, manage, and process data. In a public cloud service, a third party owns and runs these resources, making them available to all customers; in contrast, the main user wholly or partly owns and runs a private or hybrid cloud.

Contextual marketing: A marketing model using demographics, life events, behavioral analytics, online activity, location, and other metrics to personalize and target marketing messages and offers to consumers.

Deep learning: A sophisticated type of AI related to machine learning by networks capable of learning unsupervised from data that is unstructured or unlabeled.

Digital transformation: The integration of digital technology into all areas of a business, resulting in fundamental changes to how it operates and delivers value to customers.

Facial recognition: Facial recognition is a biometric method of identifying an individual by comparing live capture or digital image data with the stored record for that person.

Geospatial technology: Technology relating to the collection or processing of data that is associated with location. Sometimes used in marketing to relate messaging to the location of the consumer.

Internet of Things (IoT): The interconnection via the internet of computing devices embedded in everyday objects, enabling them to send and receive data.

Machine learning: An application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience and structured data without being explicitly programmed.

Micro targeting: A marketing strategy that uses consumer data and demographics to identify the interests of specific individuals or very small groups of like-minded individuals and influence their thoughts or actions.

Omnichannel: The integration of all physical channels (offline) such as in-person or phone, and digital channels (online) such as internet, mobile, and chat to offer a unified customer experience.

Open banking: A system that provides a user with a network of financial institutions' data through APIs, which enable third party developers to build apps and services around the financial institution.

Robotic process automation: The use of software with limited artificial intelligence (AI) and machine learning capabilities to handle high-volume, repeatable tasks previously handled by a person.

Virtual reality: Computer-generated simulation of a three-dimensional image or environment that the user can interact with in a seemingly real way through a headset or other electronic device.

Web collaboration tools: Software or systems to let two or more people work together in real-time over the internet. These might include video or web conferencing, or other tools to let two people share a computer desktop or see and work on documents simultaneously.

About Roubini ThoughtLab

Roubini ThoughtLab is a trend-setting thought leadership consultancy providing fresh management thinking and decision support to help business and government leaders cope with transformative change. By applying the latest analytical tools, predictive models, and expert opinion, we provide actionable insights into future megatrends and their impact on the world.

Our team of thought leadership experts and global economists specialize in creating 360° decision support that sits at the intersection of visionary thinking, analytical excellence, and engaging communication. An agile, collaborative enterprise, Roubini ThoughtLab draws on the diverse skills of its in-house team, global expert network, and alliance partners to fill any or all thought leadership needs—from surveys, interviews, and advisory boards, to analytical tools, indexes and econometric models, to white papers, social media, and infographics.

Roubini ThoughtLab is a joint venture with Econsult Solutions, a leading economic consultancy with links to academia. It was founded in 2015 by noted economist Dr. Nouriel Roubini and Lou Celi, a pioneer in thought leadership and digital publishing.

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1435 Walnut Street, 4th Floor
Philadelphia, PA 19102
RoubiniThoughtLab.com
215-717-2777

Contact us for further information about this study and other thought leadership programs:

Lou Celi, project director
917-459-4614 | lou@thoughtworks360.com

Barry Rutizer, client relationship manager
917-251-4190 | barry@thoughtworks360.com

Laura Burtner, project coordinator
215-687-2777 x194 | laura@thoughtworks360.com

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