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Artificial Intelligence in Financial Services: From Nice to Have to Must Have

AI is moving beyond experimentation to become a competitive differentiator in financial services — delivering a hyper-personalized customer experience, improving decision-making and boosting operational efficiency, our recent primary research reveals. Yet, many financial services companies will need to accelerate their efforts to infuse AI across the value chain while preparing for the next generation of evolutionary neural network technologies to keep pace with more forward-thinking players.

November 2019

Executive Summary

Visions of robots working alongside humans have been the stuff of futuristic speculation for years, but now AI-driven solutions are becoming a competitive requirement for banks and other financial services companies. AI is delivering real value — enhancing the customer experience, improving trading and portfolio management, assessing the creditworthiness of loan applicants, and detecting potential instances of fraud and misconduct, among many other applications. And organizations that embrace emerging AI technologies that can learn and adapt on their own without explicit programming can look forward to even greater benefits.

Yet, many financial services institutions (FIs) remain in an experimental phase and will need to accelerate actual AI deployment. They need to see AI as a business play, rather than a technology challenge. To do this, they require an overarching strategy that identifies concrete obstacles and opportunities where AI technologies can create business value. Equally important, FIs need to ensure they employ responsible, ethical AI applications that can be trusted by customers, employees and the public at large.

We recently surveyed executives in the U.S. and Europe, including 230 financial services executives, to understand how their organizations are approaching AI. (Read the full report, including its Methodology on pp. 22-23, at "Making AI Responsible — And Effective.") Three-quarters of these FI executives said that AI is extremely or very important to their organizations' success, a higher percentage than for any other industry in our survey.[1] However, only 61% of these executives said they knew about an AI project at their company, and only 29% of this group were aware of fully implemented projects. For most FIs, the majority of AI initiatives are pilot projects or in the proof-of-concept stage.

But in many ways, AI capabilities have already become essential for FIs to remain competitive. FIs also need to look over the horizon and invest in more advanced AI technologies that pivot around deep learning and will bring even greater benefits in the near future. In the near-term, our engagement experience suggests that FIs should quickly apply the potential of AI in the areas of predictive analytics, chatbots and decision support in customer contact centers.

- **Marrying AI technologies and predictive analytics has dramatically improved their scope and potential.** AI can rapidly analyze multiple combinations of variables that would be beyond the ability of human analysts. Natural language processing (NLP) allows these analyses to employ a wide variety of untraditional data sources such as media coverage, social media posts, customer reviews and government filings, among many others. AI-powered predictive analytics is now generating important benefits in many areas including financial advice, portfolio strategy and trading, collections, and risk management and compliance.

- **Many of the initial efforts in AI have been focused on chatbots and other conversational interfaces to enhance customer service by allowing customers to converse in their native language rather than being forced to select from predetermined menus.** When FI executives were asked which technologies were used in the AI projects at their companies, they most often cited virtual agents (72%) and natural language analysis (56%), both of which are employed in chatbots. Chatbots allow customers to easily accomplish a wide variety of tasks 24x7 including accessing account information, obtaining new products, and receiving advice on financial goal-setting and budgeting. In addition, the automation brought by chatbots is boosting efficiency and reducing operating costs, our respondents said.

- **AI is also supporting customer service representatives (CSRs) as they handle more complex calls.** Monitoring calls in real time, AI applications provide contact center employees with a list of questions tailored to each call and the best solution or product for the customer. By analyzing customer sentiment while the call is in progress, they also provide prompts to help the representative understand the emotional state of the caller and to respond with empathy.

To capture the benefits as AI restructures each element in the value chain, FIs will need to focus on the following:

- **Craft business-driven AI strategies.** Companies need to look across their organizations to identify opportunities to generate concrete business value from AI — not only in reduced costs but also in boosting revenues by delivering enhanced customer experiences and through improved decision-making in such areas as targeting prospects, designing portfolio strategies and evaluating potential trades. AI should be viewed from a business lens, rather than as a technology issue. We suggest having AI projects managed by cross-functional teams with business executives in the lead.
- **Enhance data management.** AI applications depend on access to timely and accurate data, which is a challenge for many FIs that have fragmented data architectures with multiple legacy systems. Companies need to identify which types of data are required for each AI project — whether originating from internal sources or from nontraditional (third-party) sources, such as social media posts — and ensure they can be captured in a timely fashion and in an appropriate format.
- **Adopt an experimental mindset.** AI projects need to be rolled out quickly, while at the same time be rigorously measured so failures are terminated promptly while successes are moved into production.
- **Create and maintain responsible AI applications.** To be successful, AI applications need to behave in ways that make customers and employees comfortable and not make decisions that are unethical or exhibit bias. Yet, only 45% of financial services executives surveyed reported that ethical considerations play a critical or significant role when their companies develop and employ AI applications. Companies need to work to ensure they are designing ethical AI applications and then monitor them to ensure they continue to act appropriately as they learn and evolve over time. Ethical considerations need to be at the center of AI strategy. (For more on this topic, read "Making AI Responsible and Effective.")

Utilizing AI in all shapes and forms is no longer optional for FIs. While many seem content to simply experiment, more forward-thinking companies have realized that AI has become a competitive necessity. Companies that have not fully committed to infusing responsible AI capabilities throughout their organizations — and are not making the investments required for the future — will need to accelerate their efforts or will find themselves slipping ever further behind more aggressive rivals.

This report offers recommendations on the near-term and mid-term investments in AI that will drive business returns in such areas as chatbots, decision support for customer contact centers, provision of financial advice, and investment and trading decisions. Our advice is bolstered with case illustrations that reflect our best thinking and experience on these issues as well as by the results of our recent AI survey.

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Despite optimism, AI remains on a slow boil

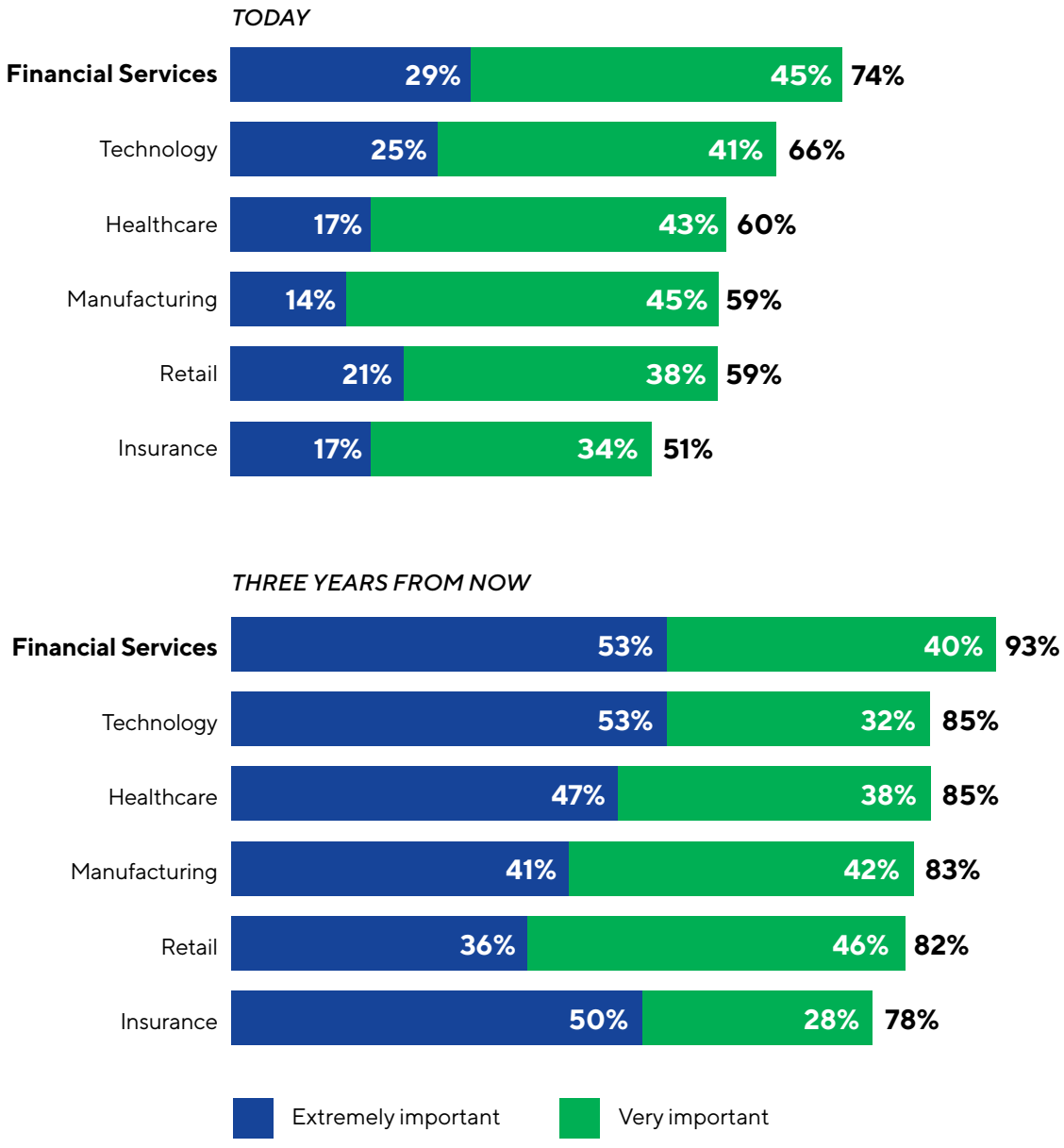
AI is at the top-of-mind for FIs. In our study, 74% of FI executives said AI was extremely or very important to the success of their companies today, while 53% predicted it would be extremely important three years from now (see Figure 1).

The enthusiasm for AI is especially great among executives who said their organizations are growing much faster than the average FI. Forty-eight percent of executives at faster-growing FIs said that AI was extremely important to their business success today, compared with 21% among executives at slower-growing FIs (see Figure 2, page 8).

FIs foresee benefits in a variety of areas. With AI holding the potential to automate many manual tasks, roughly three-quarters of executives expected that over the next three years their organizations will gain major or significant benefits from AI in increased efficiency/lower costs (see Figure 3, page 8). But cost reduction is not the only benefit expected. About three-quarters of executives also anticipated that their companies will gain major or significant benefits from AI over this period in increased revenues and in the ability to introduce new products/services or enter new businesses. About 40% of executives believed they would gain major benefits in each of these areas.

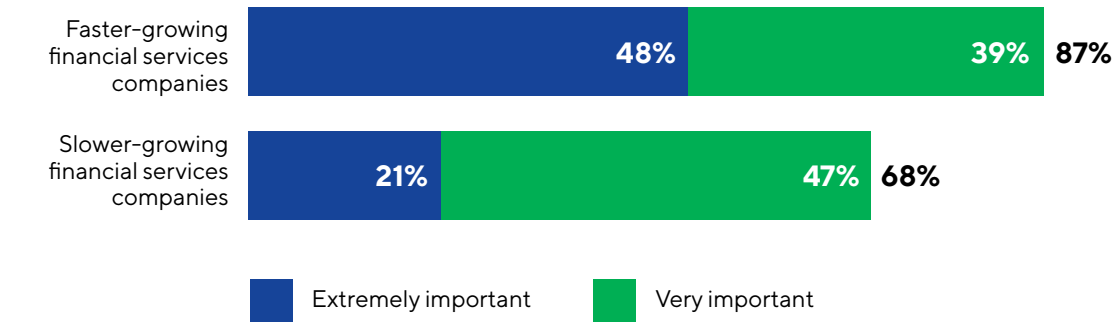
Yet, there is a large gap between executives' enthusiasm and the extent to which their organizations are actually implementing AI. While 61% of FI executives said they knew about an AI project at their companies, only 29% of these executives reported on a project that had been fully implemented. Instead, most companies are still at earlier stages of AI development: pilot project (46%), proof of concept (35%) and initial planning (24%) (see Figure 4, page 9). FIs are only at the beginning stages in understanding the full potential of AI to streamline and enhance every aspect of their organizations.

Importance of AI technologies to company success



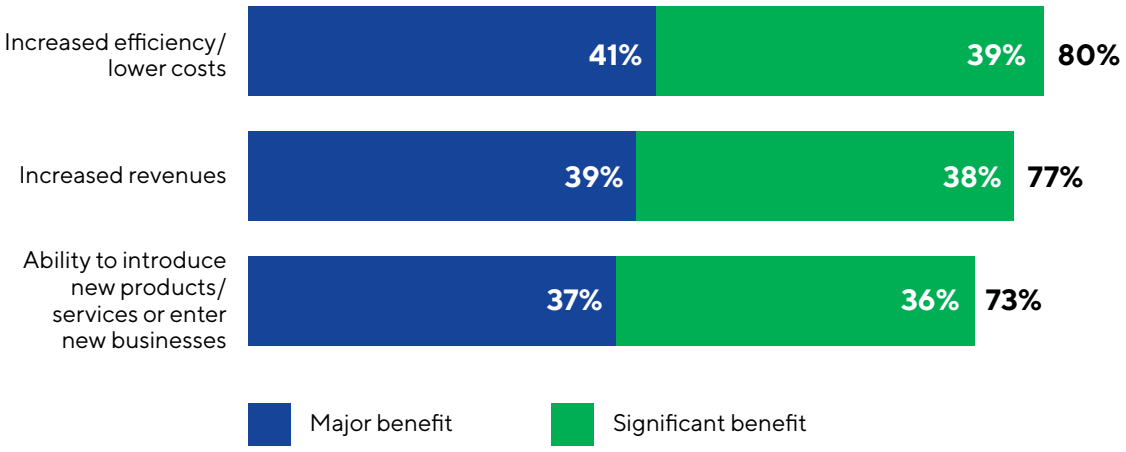
Response base: 975 executives in Europe and the U.S.
Source: Cognizant
Figure 1

Importance of AI to company success today



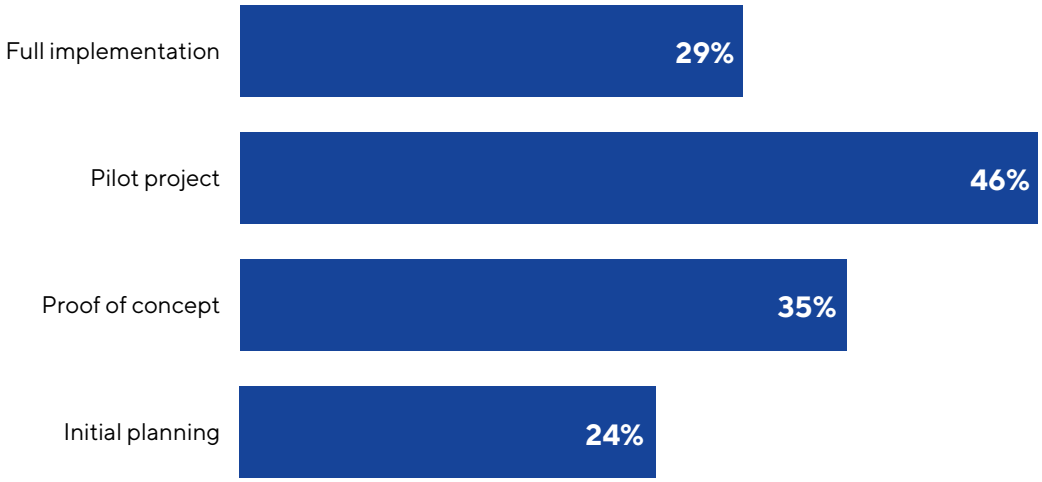
Response base: 230 financial services executives in Europe and the U.S.
Source: Cognizant
Figure 2

Expected benefits of AI to company over next three years



Response base: 230 financial services executives in Europe and the U.S.
Source: Cognizant
Figure 3

Current status of AI projects



Note: Percentages total to more than 100% since respondents reported on multiple projects.

Response base: 230 financial services executives in Europe and the U.S.
Source: Cognizant
Figure 4

Key areas for near-term investment

AI is rapidly restructuring every aspect of the FI value chain, with fundamental impacts on the customer experience, business strategy and operational processes. As they move forward with AI, FIs should focus on three competitive necessities: predictive analytics, chatbots and decision support in customer contact centers.

AI-powered predictive analytics

FIs have used predictive analytics for many years, by having human analysts apply statistical modeling and data mining to identify patterns and make predictions. Employing AI is now taking predictive analytics to the next level.

Existing AI technologies can identify and test every combination of variables, such as customer attributes and product features, which would be impossible for a team of human analysts. By employing NLP, analyses can include a wide variety of untraditional data sources, such as media coverage, social media posts, customer reviews and government filings, among others.

AI-powered predictive analytics is impacting the entire FI value chain. The following are several areas where these technologies are having an important effect.

Financial advice

Robo-advisors provide customers with automated, algorithm-driven financial planning services, typically at low cost. They can suggest an appropriate asset allocation based on a client's needs and risk tolerance, automatically rebalance a client's portfolio and prompt a human financial advisor to call at the appropriate time to offer assistance, if required. Fintechs, such as Betterment and Personal Capital,[2] as well as major FIs, such as Schwab, BlackRock and Fidelity,[3] are leading the robo-advice race.

The widespread adoption of robo-advisors is expected to change the competitive landscape, allowing FIs to expand into geographic markets and customer segments that were previously too expensive to serve. For example, FIs will gain an increased ability to serve mass affluent customers with low-cost AI-driven advisory services. But these tools will not be limited to the mass affluent market. Our survey of wealth management advisors in the U.S. found that 76% believe robo-advisor tools will grow in sophistication and adoption will move beyond the mass-affluent segment.[4] These tools are likely to soon become more relevant to high-net-worth investors, particularly younger generations.

Investment products & trading

Many FIs are already applying AI to the design of investment products and to trading decisions. These applications analyze and act on vast troves of information more accurately and quickly than any human trader. AI tools are being used to assess the significance of a wide variety of alternative sources that are relevant to the value of a stock. Among the major FIs investing in such applications are BlackRock, Fidelity and T. Rowe Price.[5] For example, BlackRock has created a so-called "quantamental fund" that applies machine learning (ML), NLP and sentiment analysis to alternative data sources such as satellite imagery, conference call transcripts, social media posts, Google search trends and online invoices. AI tools have allowed the unit to outperform traditional equity portfolio managers.[6]

UBS is piloting a recommendation algorithm in its corporate bond trading business to suggest trades to its asset management and hedge fund clients.[7] Currently these recommendations are passed to its salespeople, but if the pilot is successful, they will eventually be sent directly to clients.

Collections

Traditional methods of debt collection are labor-intensive and often succeed no more than 20% of the time.[8] Debt collection practices also prompt many of the consumer complaints lodged with regulators.[9] ML applications can target collection efforts toward delinquent borrowers where there is the greatest likelihood of success, as well as identifying the best communication channel, time of day and messages for each borrower. A 2018 survey of banks in Asia Pacific found that almost 70% said they would be using AI to improve collections and recovery by 2019.[10] For a U.S.-based credit card issuer, we used AI to identify the factors that best predict the success of collection efforts, identifying $10 million in annual savings.

Risk management & compliance

AI tools are being used to identify potential instances of inappropriate behavior that can open a bank to substantial regulatory fines as well as significant damage to its reputation. The fintech firm Digital Reasoning has received investments from major FIs such as BNP Paribas, Barclays and Goldman Sachs. Its technology, Synthesys, uses ML and NLP to analyze huge volumes of data in order to identify potential instances of market manipulation, unauthorized trading and insider trading.[11]

Chatbots enhance the customer experience

Much of AI's initial focus pivots around conversational interfaces to provide more responsive customer service, especially to millennial customers accustomed to researching and purchasing products either online or through their smart phones. Chatbots, which allow humans to converse in their native language with computers, are rapidly becoming a customer expectation.

In our survey, when FI executives were asked which technologies were being used in their AI projects, they most often said virtual agents (72%) and analysis of natural language (56%), both of which are central to chatbots. Executives at faster-growing FIs were even more likely than those at slower-growing FIs to cite AI projects that used analysis of natural language (78% vs. 43%).

Chatbots enhance the customer experience in a variety of ways. They provide immediate responses to queries and are available 24x7. Rather than requiring customers to click through preset menus, AI-powered chatbots understand customer questions in their own words. When coupled with NLP, customers can simply speak with the chatbot, rather than typing their questions.

Financial chatbots are now providing a variety of services such as opening new accounts, suggesting appropriate products, providing answers to account questions, offering assistance with financial goal-setting, and providing advice on future spending based on the customer's financial goals and historical spending patterns, to name a few.

In addition to enhancing the customer experience, chatbots also promise substantial cost savings as they reduce the volume of calls that need to be handled by CSRs. One study estimated that chatbots will bring cost savings of $7.3 billion to banks around the world by 2023.[12]

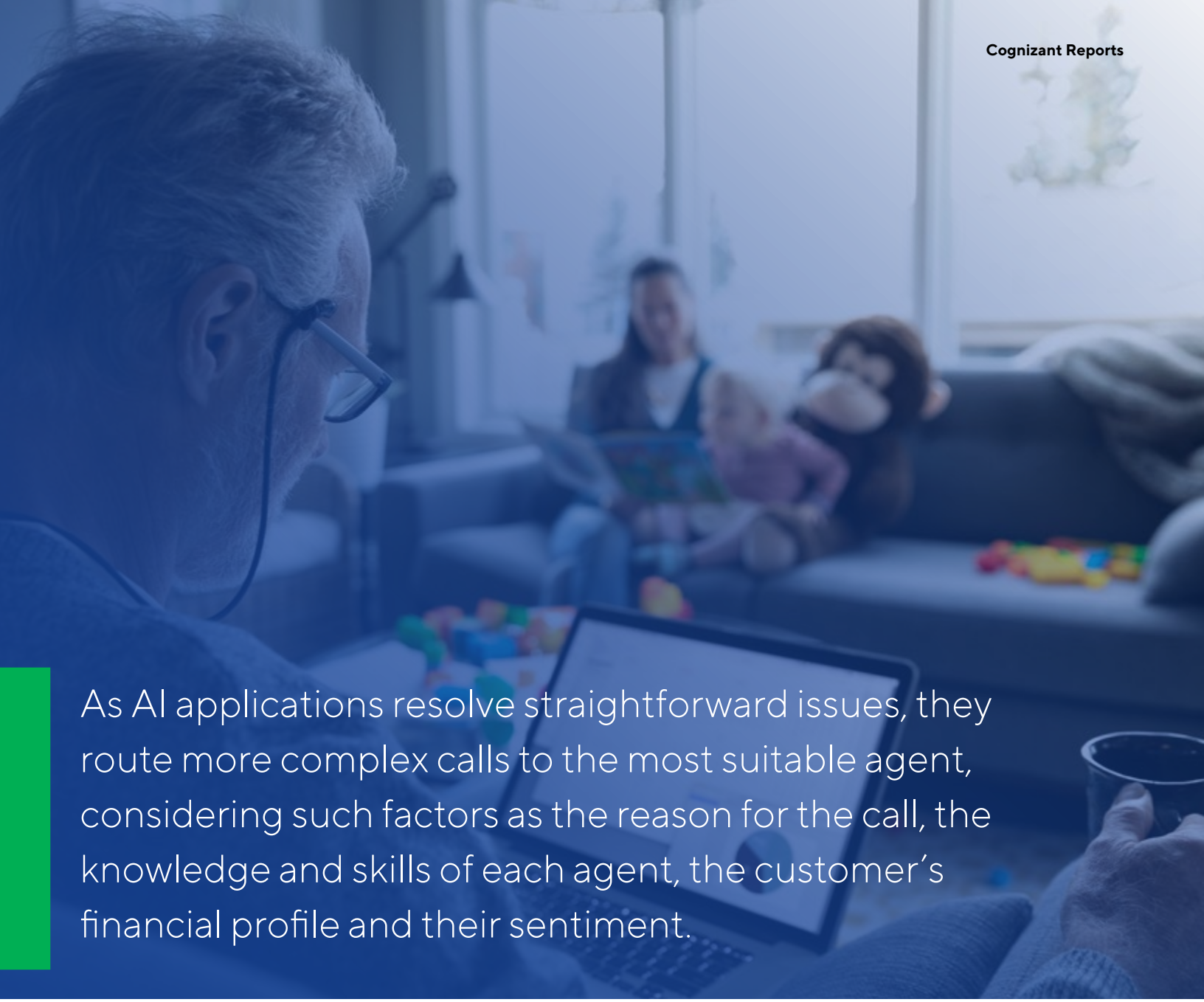
Many leading FIs are actively employing chatbots including Amy by HSBC Bank and Erica by Bank of America.[13] For example, Bank of America's Erica allows customers to perform a variety of functions including accessing account information, receiving notifications and scheduling meetings with the bank. It also provides assistance to customers in managing their finances including a view of weekly spending, changes in credit scores and bill reminders. When needed, difficult questions are routed to a bank employee. By May 2019, just one year after it was launched, Erica had been used by seven million customers and had handled more than 50 million client interactions.[14]

Decision support in customer contact centers

Although more customers are interacting with their FIs digitally, the customer contact center remains fundamental to the customer experience, which is now being transformed by AI. For a start, conversational AI is allowing many calls, such as requests for account or product information, to be handled automatically, without the need for a CSR.

However, the benefits of AI go far beyond simply reducing the workload. Instead, AI is enabling CSRs to more effectively address customer needs and deliver a positive customer experience.

As AI applications resolve straightforward issues, they route more complex calls to the most suitable agent, considering such factors as the reason for the call, the knowledge and skills of each agent, the customer's financial profile and their sentiment. AI solutions monitor each of these more complex calls in real time, providing the CSR with required information and coaching as the call progresses.



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One analysis found that in a typical six-minute call to a customer contact center, only one-quarter of that time consisted in the representative interacting with the customer, while the remaining three-quarters was taken up by the CSR's manual research.[15] During each call, AI now delivers such information to CSRs more quickly and accurately than before.

AI also provides the representative with a series of questions to help identify the customer's issue and then identify the best solution considering the customer's financial situation. These recommendations are automatically revised based on new data, so they continue to improve over time. During each call, CSRs receive a checklist of issues to address that is automatically updated as the call proceeds so they can see which tasks have been completed and which remain.

AI also provides the CSR with appropriate products to offer, based on the content of the call and the customer's financial situation. For example, if a caller mentions that she has recently purchased a home or moved to a new city, the agent will immediately receive suggested follow-up questions and products to offer based on the customer's answers.

By automating information searches, CSRs are able to focus more on their soft skills and the quality of the conversation. AI can help here as well. As the call is in progress, AI applications analyze diction, word choice and tone to gauge the sentiment of the caller, such as whether they are angry or frustrated, and provide prompts to help the representative respond with appropriate empathy.

Finally, FIs are using AI to improve quality control in customer contact centers. Agents typically create summaries after each call, but the quality and content of these can vary widely across different CSRs and also based on how busy the contact center is at the time. AI can automate this process, automatically creating after-call summaries that can condense all the key phrases used by the customer and agent.

AI also has the ability to analyze all the calls received monthly by the customer contact center, rather than just a small sample, to assess the reason for each call and assess whether the CSR was successful at resolving the issue. This automated analysis identifies the most common problems that prompt calls and the best solutions to employ for new calls.

We designed an AI solution that captured these benefits for the customer contact center of a leading global property and casualty insurer. The AI application allows the carrier to monitor all 8,000 calls each month, rather than just a handful, while slashing review time by as much as 40%. In addition, it provides CSRs with real-time personality profiling and conversation cues while the call is in progress — prompts that are expected to improve customer satisfaction.

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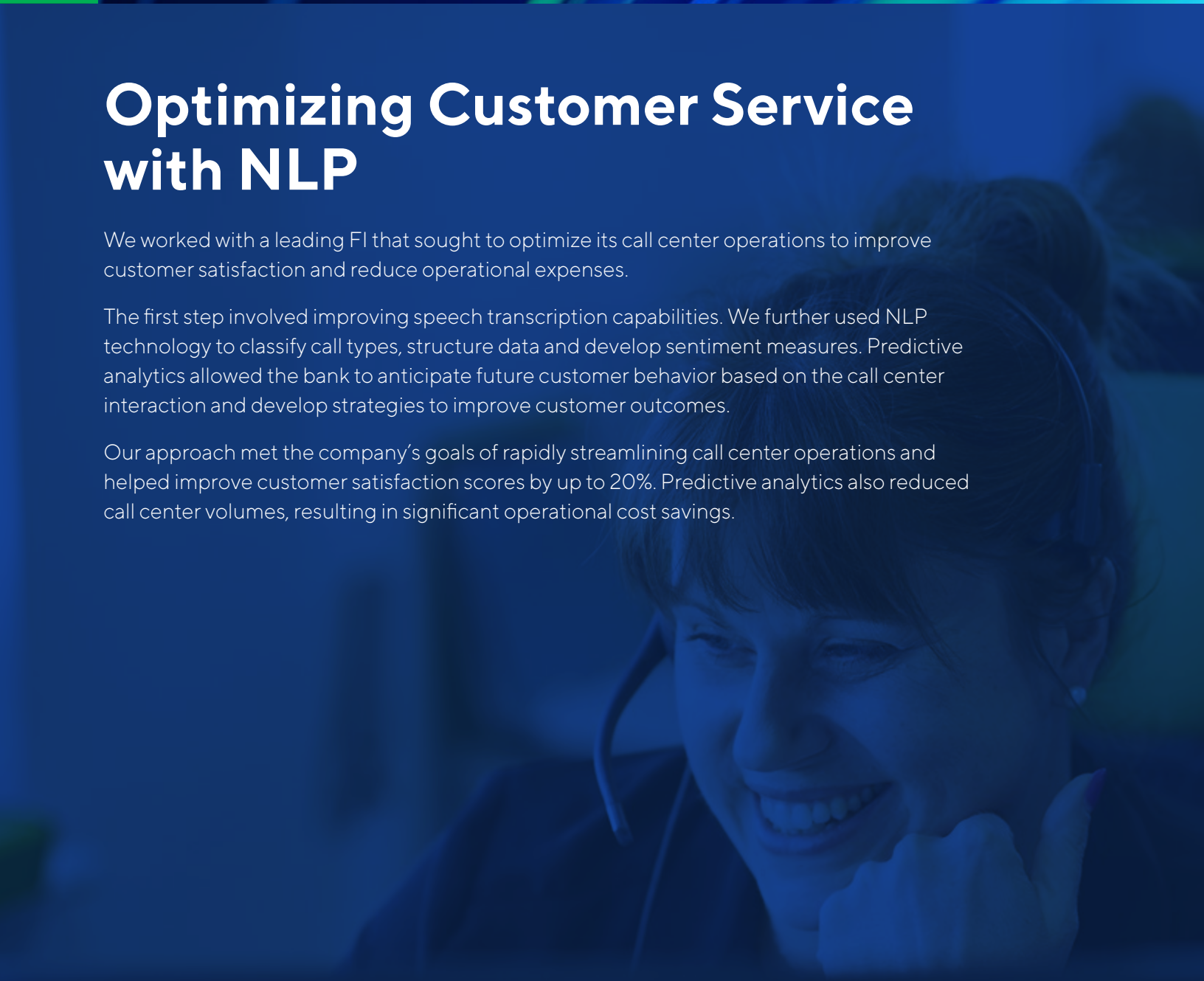
Quick Take

Optimizing Customer Service with NLP

We worked with a leading FI that sought to optimize its call center operations to improve customer satisfaction and reduce operational expenses.

The first step involved improving speech transcription capabilities. We further used NLP technology to classify call types, structure data and develop sentiment measures. Predictive analytics allowed the bank to anticipate future customer behavior based on the call center interaction and develop strategies to improve customer outcomes.

Our approach met the company's goals of rapidly streamlining call center operations and helped improve customer satisfaction scores by up to 20%. Predictive analytics also reduced call center volumes, resulting in significant operational cost savings.



Quick Take

ML Cuts Losses from Credit Card Fraud

Although the percentage of fraudulent credit card transactions is tiny, they have an outsized impact. Once a fraudulent transaction is processed, a bank has to commit substantial resources to a lengthy recovery process that is often unsuccessful. As they adopt procedures to identify fraudulent transactions, banks also need to minimize the number of legitimate transactions that are erroneously flagged as fraudulent and denied, as these negatively impact the customer experience.

Facing these challenges, a leading multinational FI asked us to develop a solution that would improve fraud prevention and reduce the reputational impact of false positives. Each month, fraudulent credit card transactions with a value of $75 million escaped detection and were processed, while the company successfully recovered about $45 million of this amount.

We built a new solution based on open-source technologies and using the latest ML algorithms. Transactions are run in real time against multiple offline neural network models, which are deployed based on performance metrics. This automated solution was able to handle 4,000 transactions per second and provide a fraud score 99.999 times out of 100. The solution reduced fraud-related losses by $60 million per year through capturing new fraud patterns, improved customer satisfaction by lowering the rate of legitimate transactions that were declined and reduced operating costs. The solution also provides the ability to rapidly deploy new fraud-detection models. The second phase of the project is now underway and is expected to capture substantial additional savings.

Getting ready for evolutionary AI

While FIs need to ensure they have the requisite AI capabilities today, they also must gain experience with the more powerful AI technologies that are emerging. A key feature of these new technologies is that they allow AI to automatically design itself without the need for explicit programming by humans. This is what we call evolutionary AI.

Designing AI applications is difficult and requires access to substantial talent, which executives in our survey said was a major challenge (see Figure 5). Even if sufficient talent were available, there are too many variables to consider, not to mention a business environment that is typically changing far too fast for human analysts to consider all the possible solutions to ongoing challenges and/or opportunities. Finally, human analysts bring their preconceptions and biases when selecting combinations of variables to analyze, often overlooking better solutions.

Emerging technologies that enable AI algorithms to design themselves are allowing organizations to transcend human limitations. The result is the ability to take full advantage of today's massive data sets to automatically generate complex models and identify novel decision-making strategies that would never have been identified by human data scientists.

These new AI technologies employ the principles of biological evolution to automatically design solutions that yield the best outcomes, with the ability to optimize several objectives at once, such as increased returns and reduced risk.[16] (To learn more, see our report, "Go Beyond Prediction with Evolutionary AI™.")

Evolutionary AI operates in an iterative way. First, it randomly generates a set of potential solutions to form an initial population and assigns a score to each solution based on how well it performs. In the second round, it retains those solutions that performed best, perhaps only 5% of the total, and recombines their components, "mutating" them to create a new population. This population is then tested and the process begins again.

Even if the best candidates did not perform particularly well in the first round, over multiple generations the appropriate components of the more successful solutions will become more prevalent in the population and eventually a solution will be discovered that yields the best outcomes.

Compared with human designs, in our work with clients we have found that evolutionary AI can be deployed far faster, avoids biases and preconceptions, and typically performs better. In addition, the chosen model will evolve and improve over time based on new data.

Evolutionary AI can be applied in a wide variety of areas at FIs. One example is in designing quantitative trading strategies to maximize returns while minimizing risk. By 2017, less than 10% of stock trades were

placed by fundamental discretionary traders, with the remaining trades based on algorithm or index-driven and pattern-based high-volume strategies.[17] Considering vast amounts of data on economic history, current performance, market indicators, aggregate financial statement data and policy options such as the actions of the U.S. Federal Reserve Bank, evolutionary AI can be used to discover interactions between all of them and take full advantage of that information in the market.

Loan underwriting provides another example. Rather than relying on human analysis, evolutionary AI solutions can quickly analyze all the combinations of relevant variables to create a model that more accurately assesses the risk of default by a potential borrower.

As AI applications increasingly design and test themselves, the pace of innovation and the accuracy of predictions will vastly improve. We believe that FIs will soon consider it to be irresponsible to make important business decisions without first consulting with an AI system.

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Designing an AI strategy

FIs, especially those still in the AI planning stages, need an overall game plan to spur more aggressive investments and help ensure their efforts are targeted to maximum effect — including both near-term investments and also those targeting more advanced evolutionary AI.

Our study indicates that there is a lack of clarity on how to proceed. When executives were asked to what extent a series of issues posed challenges to implementing AI, most items received roughly similar ratings (see Figure 5). This "all of the above" finding suggests that companies have not developed clear strategies for pursuing AI.

Implementing AI will bring fundamental changes to an FI, from its strategy to its operations, and requires the active support of an organization's leadership. This senior-level commitment is lacking at many FIs, with 45% of executives saying that securing senior management commitment was extremely or very challenging. Another indication of the lack of commitment to AI by many FIs is that 44% of executives cited securing adequate budget as an important challenge.

To craft an effective strategy, FIs should start with the business needs and opportunities that AI can address, rather than with its technical capabilities. To ensure a business focus, business executives, not IT experts, should lead cross-functional AI teams. Securing the involvement of the business may prove difficult at many FIs, with 44% of executives saying that securing buy-in by businesses was extremely or very challenging (see Figure 5).

Although each FI's situation is unique, the following guidelines should help.

- **Cast a wide net.** FIs should conduct a comprehensive examination of their business processes to identify where AI technologies can be applied, the potential benefits, the investment and time required to achieve them, and the technical and human capabilities required. There is no recipe for leveraging the potential of AI. Each business challenge requires different AI technologies, techniques and approaches. To ensure the underlying algorithms in AI technologies "understand" the business context in which they operate, cross-functional teams led by executives in lines of business and functional areas should be established to identify potential AI-enabled improvements to processes and products.
- **Go beyond insights.** FIs should first identify the most impactful decision loops in their organization and then move to supplement manual decision-making with data-driven, AI-powered decision augmentation. Such systems use historical decision/outcome data to generate decision strategies geared to optimize against multiple outcomes such as revenue, cost and risk, pairing their recommendations with the predicted outcomes.

- **Look for opportunities to leverage data**. Generating value from AI depends on access to timely and accurate data, which is a challenge for many FIs. Forty-five percent of FI executives considered access to accurate/time data to be extremely or very challenging for their companies in employing AI. In addition, companies will need to gain experience in leveraging a wider range of nontraditional data sources such as media coverage, social media posts and satellite imagery.

  While accurate data is required to make the most of AI, AI technologies like ML can themselves be employed to identify which types of data are most important for specific business outcomes. We have developed an AI-based framework called DataIQ, which performs an up-front assessment of various data sets to determine which attributes are relevant and will provide the intelligence needed to support a given purpose, such as reducing credit card fraud. (Learn more by reading about our Data Modernization Method.)

- **Enhance data management and governance.** While using AI effectively depends on timely access to quality data from a variety of internal and external sources, many FIs struggle with legacy systems and siloed data. FIs require investments to upgrade their data management capabilities – a responsive data architecture that can quickly deliver diverse types of data to AI applications; intelligent data management that can streamline and automate many manual processes; and advanced delivery methods, such as Agile, DevOps and DataOps, that dramatically shorten the time required to introduce new capabilities.

- **Prepare business processes for digitization.** Applying AI to a poorly designed, fragmented business process will lead to disappointing results. FIs should consider first optimizing processes through such approaches as system changes, standardization and consolidation. Many FIs will require stronger data governance to rationalize fragmented data architectures plagued by multiple legacy administrative systems and databases, for example, by using a business-process-as-a-service (BPaaS) solution.

Generating value from AI depends on access to timely and accurate data, which is a challenge for many FIs. Forty-five percent of FI executives considered access to accurate/time data to be extremely or very challenging for their companies in employing AI.

- **Acquire AI expertise.** Access to professionals skilled in rapidly evolving AI technologies will be essential. In our survey, 50% of insurance executives said that securing talent was extremely or very challenging for their organization's AI efforts, the highest-rated issue (see Figure 5). The war for AI talent has been intense, especially for those who couple AI skills with experience in the financial industry. The limited pool of qualified candidates has sent salaries skyrocketing, which has been a key motivation for major financial services companies to partner with fintech startups that bring AI expertise.
- **Encourage experimentation — and discipline.** There are no ready-made, turnkey AI solutions, and each FI will need to chart its own path forward. For this reason, managed experimentation will be key. FIs will need an increased tolerance for risk-taking and innovation, while balancing that with rigorous testing and measurement of ROI and tangible business value. It will be important to quickly identify and terminate failures, while moving successful AI pilot projects into full production.

Perhaps most important, an effective strategy requires a human-centric approach as employees and customers are increasingly interacting with AI. These applications need to be designed to understand human expectations and have the "emotional intelligence" to interact appropriately with the people around them.[18] To develop a human-centric approach, FIs should take advantage of the expertise of behavioral scientists (sociologists, anthropologists, etc.) to design and train AI to be accepted and valued by the organization. (For more on this topic, read "AI: Beyond Science Fiction to Business Fact.")

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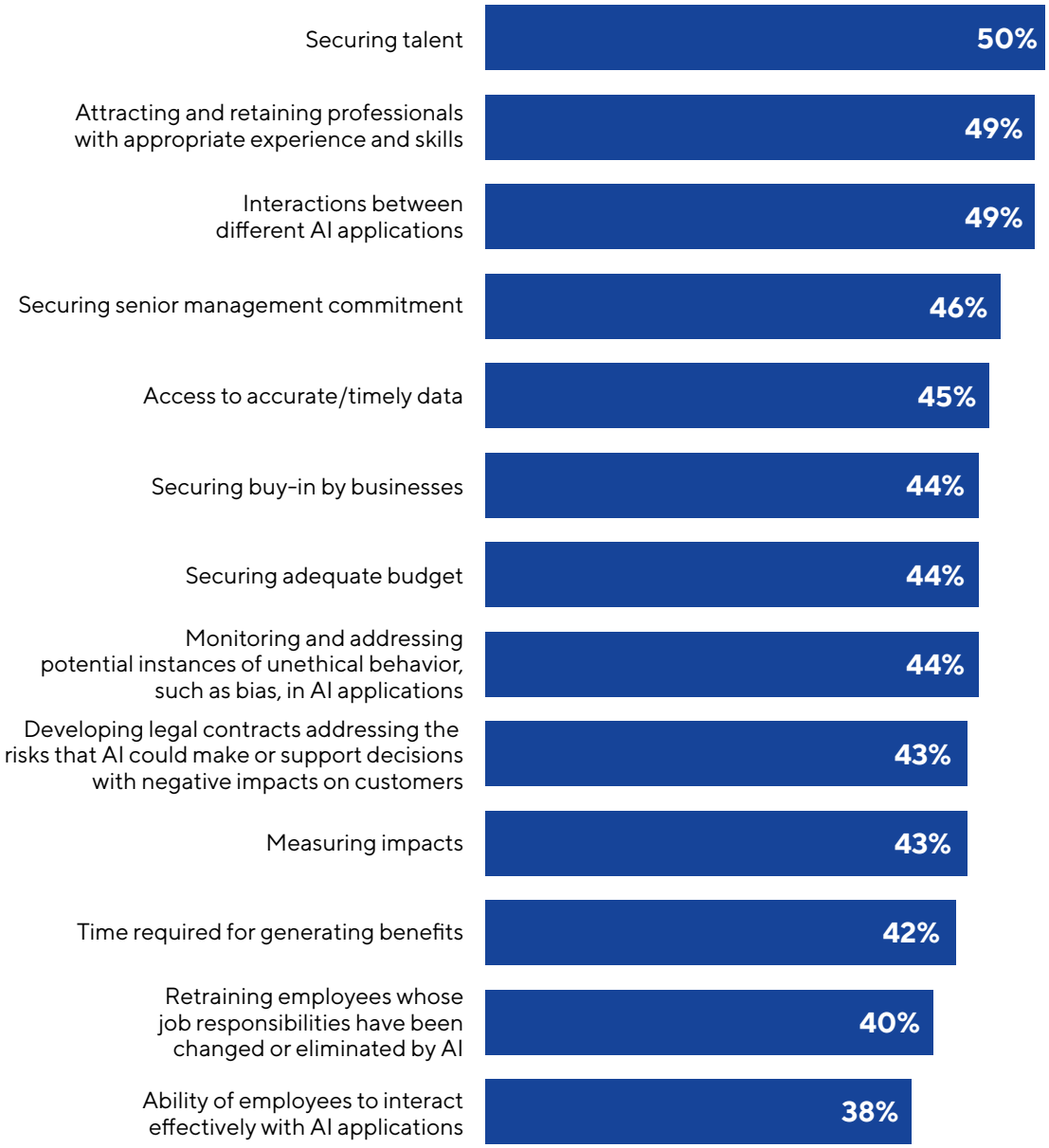
Challenges in employing AI

Percentage extremely or very challenging



Response base: 230 financial services executives in Europe and the U.S.
Source: Cognizant
Figure 5

Creating AI that you and your customers can trust

An integral part of taking a human-centric approach is ensuring that employees and customers trust AI applications to act responsibly and ethically. If instead they take actions that are unethical, such as exhibiting bias, they won't be accepted by employees and could undermine customer relationships. Equally important, an AI application that takes inappropriate actions could damage a company's reputation and brand with investors and the general public, and potentially subject it to regulatory penalties.

There is a growing recognition of the important role that ethics needs to play if the promise of AI is to be realized. For example, Google, Microsoft, Apple and other technology companies have created the Partnership on AI to explore AI best practices and conduct "open research and dialogue on the ethical, social, economic, and legal implications of AI."[19]

It is not simply a question of designing AI applications appropriately. AI applications also need to be monitored over time since they can develop biases that may be hidden in the data provided to them. An example of the problem is Microsoft's "Tay" chatbot. This AI application was intended to learn how to behave well by interacting with Twitter users – but ended up producing racist comments after a few hours of listening to online trolls and had to be shut down.[20] Similarly, FIs will need to ensure that AI applications don't pick up racial or gender biases that may be hidden in the credit or other financial data they employ. In addition, FIs should create a code of ethics that can be overlaid on top of these ML systems and, where possible, deploy ML systems that augment, not replace, human decision-making.

Providing transparency may be needed to comply with regulatory requirements such as the European Union's General Data Protection Regulation (GDPR), which applies to all companies wherever headquartered that have access to the personal data of EU citizens. GDPR gives consumers the right to require an explanation of any decisions taken by AI applications that affect them. This can be difficult with ML applications, which are not explicitly programmed and where it may not be clear why a decision was made. FIs will need to build in the ability to drill down into an AI decision to understand which factors triggered it.

Other jurisdictions are also implementing privacy regulations. For example, the California Consumer Privacy Act (CCPA), which takes effect on Jan. 1, 2020, requires additional privacy protections by all companies doing business in the state, including giving residents the right to opt out of data collection and the right to receive a record of their data that has been collected and sold.[21]

Many FIs have not yet recognized the important role of ethics in AI success. Only 45% of executives in our survey said that ethical considerations play a critical or significant role when their organizations develop and employ AI applications (see Figure 6). Similarly, only 53% of executives said their organizations have policies, methods and tools in place to identify and address potential instances of unethical behavior, such as bias, when they design AI applications, and the same percentage of executives said they have these in place to address ethical issues that may arise in the behavior of AI applications after they are launched.

Faster-growing companies have a greater appreciation of the role that ethics plays in generating business value from AI – 68% of executives at faster-growing FIs reported that ethical considerations play a critical or significant role when their organizations develop and implement AI, compared with 35% of executives at slower-growing concerns (see Figure 6).

Surprisingly, about three-quarters of FI executives believed their organizations were extremely or very effective in identifying and addressing instances of potential unethical behavior in the initial design of their AI applications (74%) and after they are launched (69%). This assessment appears to be overly optimistic given the fact that only about half the FIs reported having ethical policies and procedures in place for AI.

As AI is infused into more parts of the organization, and as these applications continue to evolve in business situations, having a solid ethical foundation will become more important as well as more complicated. Managing the ethical dimensions of AI cannot be an afterthought, but needs to be central to the process of designing and managing AI applications.

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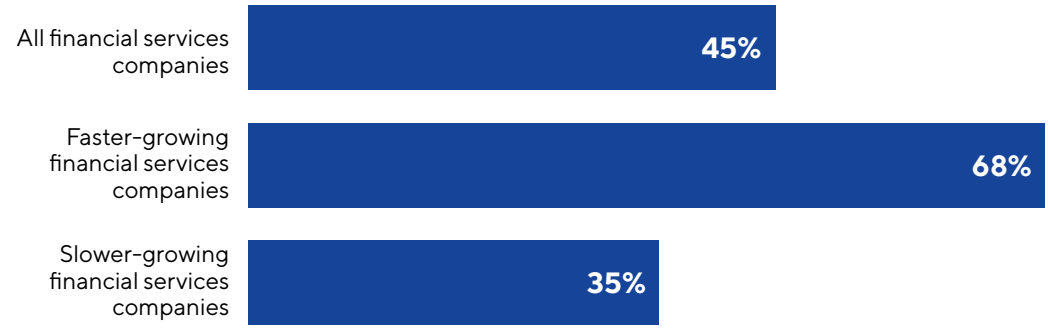
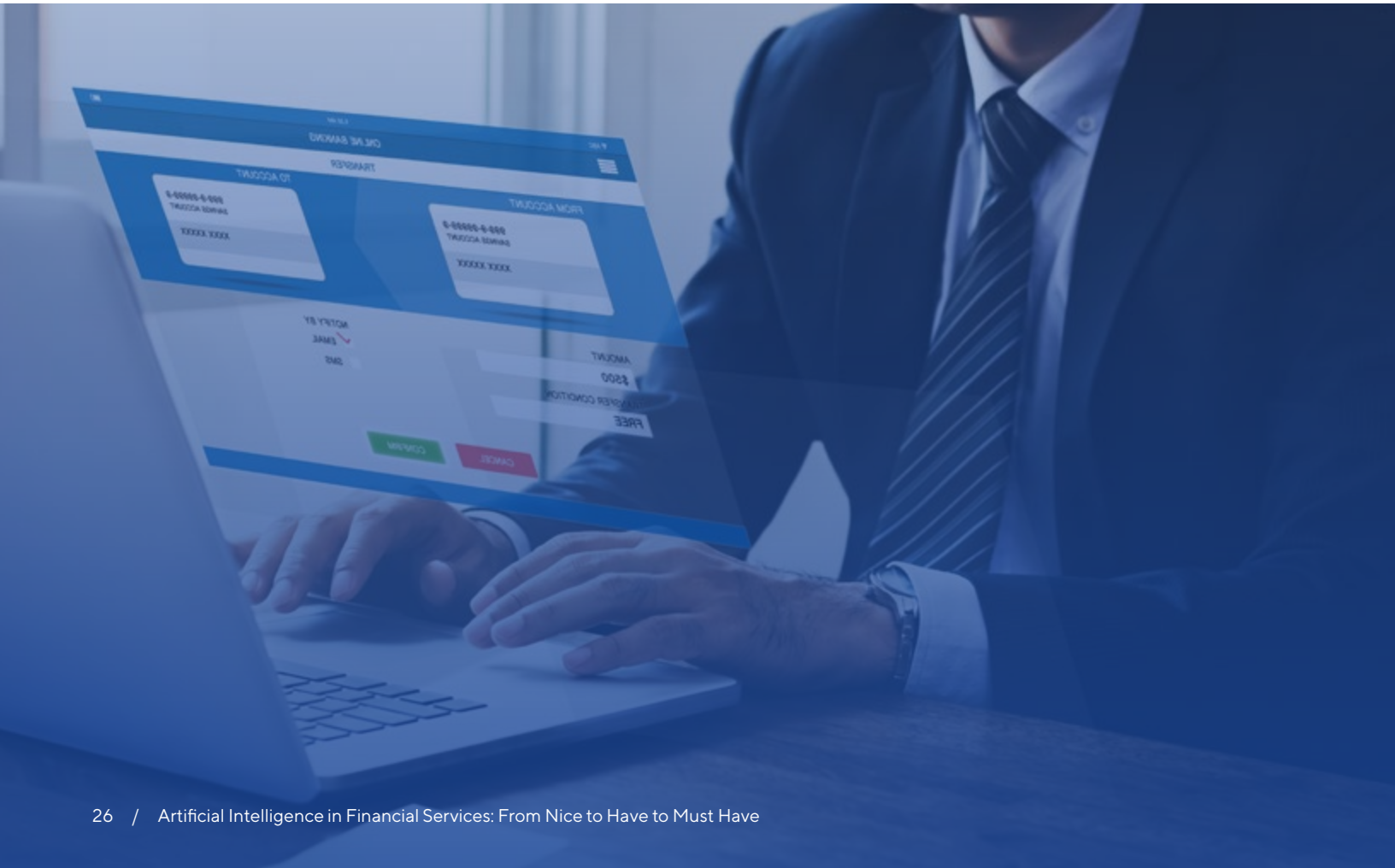
Extent that ethical considerations play a role when company develops and employs AI

Percentage critical or significant role



Response base: 230 financial services executives in Europe and the U.S.
Source: Cognizant
Figure 6



The way forward

AI is now delivering business value across FIs from customer experiences to investment strategy to back-office operations. Once a futuristic concept, it has now become a competitive differentiator.

Given this reality, FIs need to adopt overall AI strategies in order to fast-track deployment and prioritize their efforts. With their ability to learn and adapt from new data, the latest AI systems are fundamentally different from the traditional rules-based approaches of the past, which run the same logic continuously. These leading-edge AI applications revise their algorithms in light of new data to quickly generate a multiplicity of predictions, make a judgment on each of them and then recommend potential actions. Companies will need to carefully monitor and vet AI judgments and recommendations as these systems evolve over time.

Understanding the human dimension and designing responsible AI applications need to be essential elements of the strategy. Success will also require that FIs have professionals with AI expertise, and this will be challenging given the fierce competition for AI talent. FIs need to identify the skills and experience that are most important and offer competitive compensation packages, as well as considering partnering with fintech startups.

As AI applications increasingly assume tasks that had previously been carried out by humans, this will have broad impacts on employees and a focus on change management will be essential. Employees will increasingly be freed from repetitive tasks to concentrate on more complex responsibilities. FIs will need to provide retraining to allow employees to be redeployed to these more sophisticated activities that provide greater value to the organization and its customers.

In the new world that is rapidly emerging, it won't make sense to ask whether a task is handled by a human or by a machine. Robots will handle routine tasks, while flagging exceptional cases for review and resolution by employees. Employees will spend their time on complex decisions and sensitive interactions with customers, such as resolving complaints or providing sophisticated financial advice. However, they will do so aided by the recommendations and coaching of AI that can instantly analyze a customer's profile or assess their mood and provide coaching to a CSR during a call. In short, humans and AI robots will be working side by side, delivering more value in combination than either could on its own.

AI is rapidly transforming financial services as we know it. Those companies that move quickly to embed these technologies throughout their organizations today, while investing in the next generation of AI that is already available, will be positioned to prosper in the new world that is quickly emerging.

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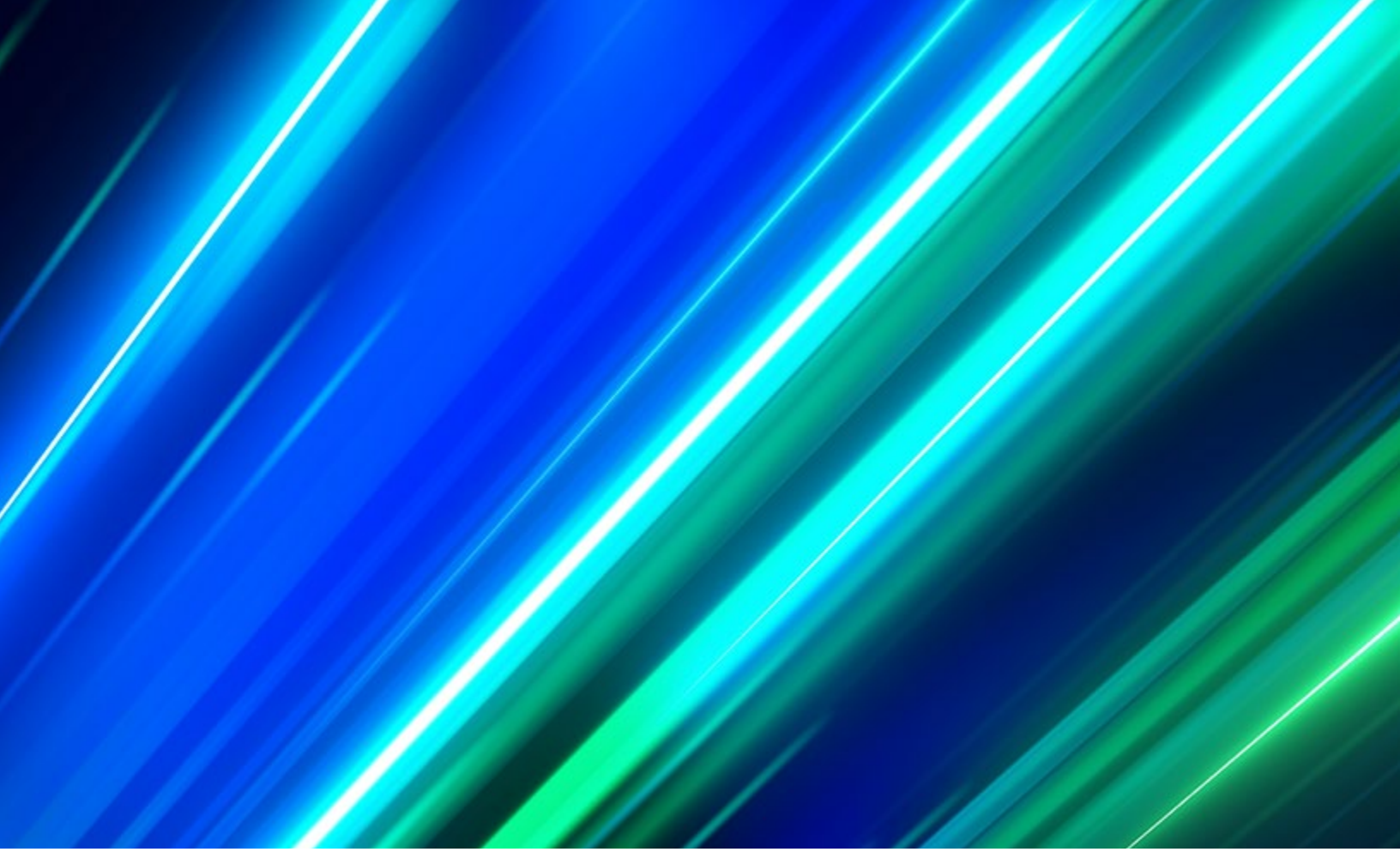

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