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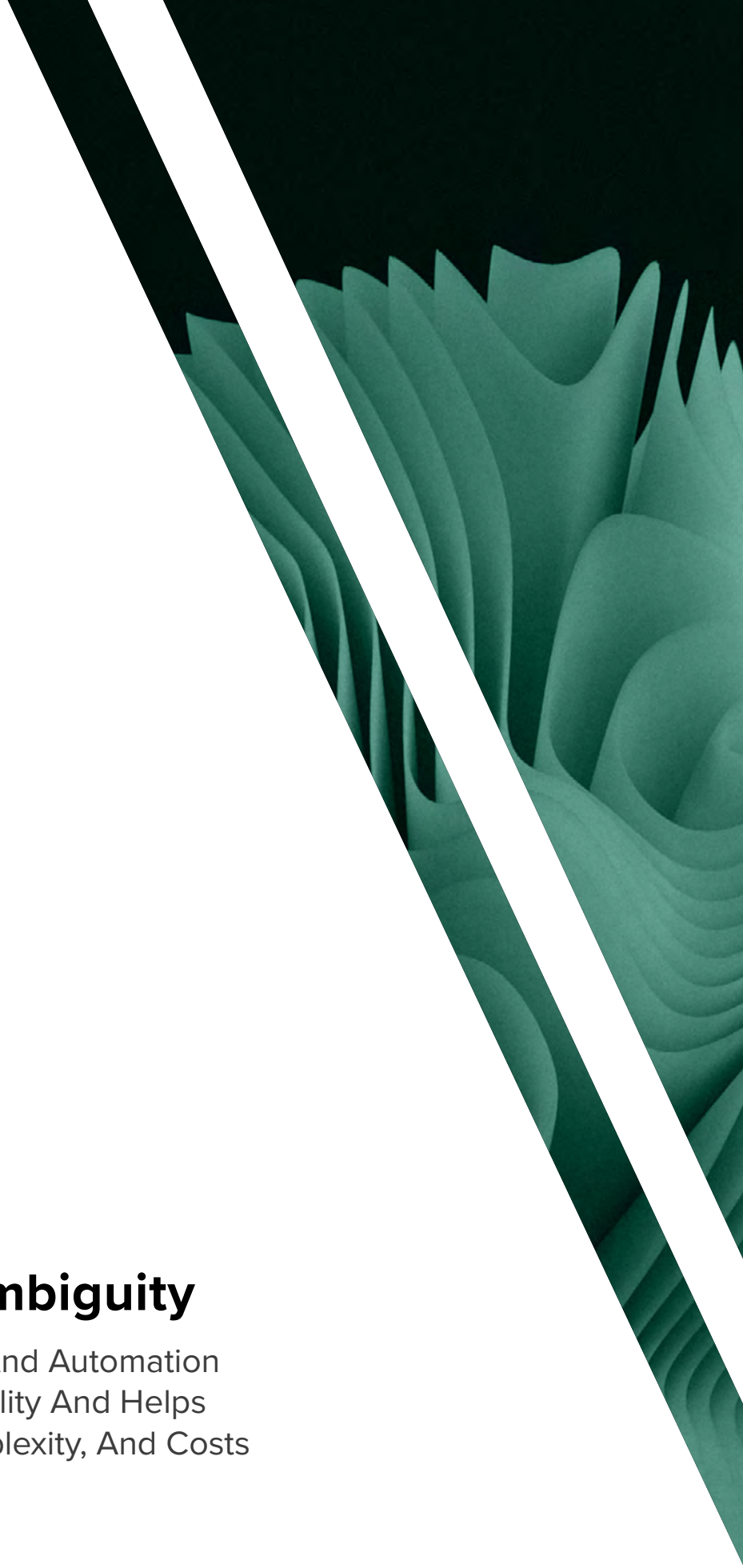

The End Of AI Ambiguity

Combining Explainable AI And Automation Enables Human Accountability And Helps Reduce Harmful Bias, Complexity, And Costs

A FORRESTER CONSULTING THOUGHT LEADERSHIP PAPER COMMISSIONED BY INRULE, JUNE 2022

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Project Team:
Sarah Brinks,
Senior Market Impact Consultant/Team Lead

John Lloyd,
Market Impact Consultant

Emily Stutzman,
Associate Market Impact Consultant

Contributing Research:
Forrester's Infrastructure & Operations research group

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Executive Summary

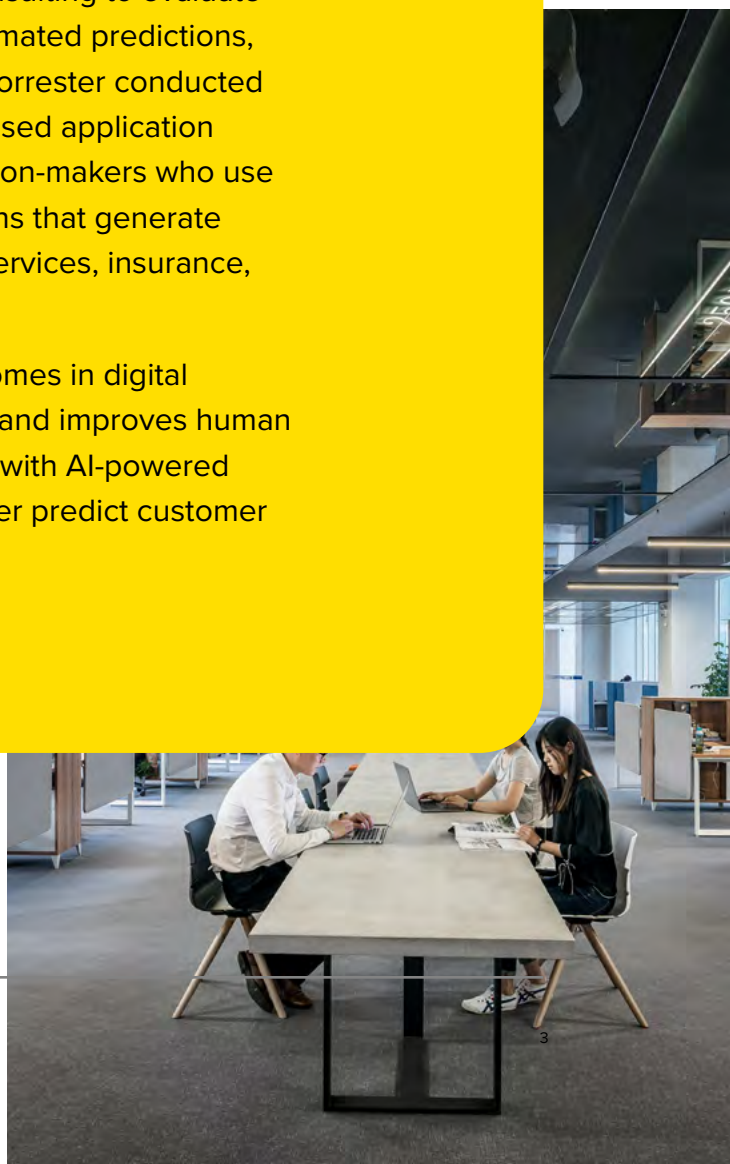
Nearly two-thirds (60%) of artificial intelligence (AI) and machine learning (ML) decision-makers see AI/ML applications as critical or very important to their digital decisioning success today. That is expected to increase to 95% in the next three years.

AI/ML is a key component in digital decisioning, but it is associated with risks like an inability to meet ethical business goals and high costs. By leveraging processes and methods that allow humans to comprehend and trust the results and outputs of AI explainability algorithms — referred to in this study as explainability — decision-makers can limit those risks and gain key benefits.

AI/ML decision-makers seek to improve their ability to explain models, remove potentially harmful bias, and create fairer models to reassure stakeholders.

In March 2022, InRule commissioned Forrester Consulting to evaluate the role of explainability in overcoming bias in automated predictions, processes, and decisioning. To explore this topic, Forrester conducted three interviews and an online survey of 326 US-based application development and delivery (AD&D) and AI/ML decision-makers who use business rules/decisioning platforms at organizations that generate $500 million or more in the industries of financial services, insurance, technology services, government, and healthcare.

We found that improving the ability to explain outcomes in digital decisioning results in better customer experiences and improves human decision-making. Leveraging human accountability with AI-powered process automation allows decision-makers to better predict customer needs and personalize solutions.



Definitions For This Study

Digital decisioning – Choices firms make to drive business actions and outcomes across all areas of the business, such as which prospects are eligible for specific products and services, how to price a specific product or service, or how to identify potential fraud.

Artificial intelligence (AI) – The theory and capabilities that strive to mimic human intelligence through experience and learning.

Machine learning (ML) – An application of AI that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

Key Findings

AI/ML is a key component in digital decisioning. Today, 60% of surveyed decision-makers consider AI/ML decisioning applications to be “very important” or “critical” to organizational competitiveness and success. That percentage rises to 95% over the next three years.

Keeping humans in the loop requires explainability. Combining the “best of both worlds” (reasoning and judgement with automation and scale) helps organizations more effectively mitigate challenges that stifle value and growth. Automating human governance and engaging a wider group of stakeholders improves decisions and model transparency. The latter will become increasingly important with right to explainability laws that are already spreading worldwide.

An inability to meet ethical business goals is a top risk. Respondents are especially concerned about harmful bias associated with models when there is no visibility. Leveraging explainability provides AI/ML decision-makers the ability to ensure fairer models that make the best decisions possible. There are additional concerns about security and lack of quality data.

Complexity and brittle tools are slowing progress. Unplanned expansions of scope and model drift are widespread and exacerbated on brittle and inflexible tools. Many decision-makers struggle with resulting problems, notably in system implementation, integration, scalability, maintenance, flexibility, security, usability, and cost containment.

AI Is Full Speed Ahead, But Ethical Risks Concern

For many organizations, better decisioning is the biggest pot of gold at the end of the AI/ML and big data rainbow. Increasingly, AI/ML has become a strategic requirement for both human and automated decision-making, processes, and predictions. Today, more enterprises are working to leverage AI/ML to improve the speed, quality, consistency, and fairness of decisioning. They seek a host of benefits: reduced human effort, improved prediction results, lower cost of development and maintenance, improved regulatory compliance, new revenue opportunities, and — eventually — replication of human learning and other cognitive functions. Despite this automation upside, our survey of 326 decision-makers revealed an arising sense of criticality shadowed by deep concerns.

- **AI/ML in digital decisioning is seen as crucial for organizational success.** Sixty percent of respondents consider AI/ML's strategic role in digital decision-making to be "very important" or "critical," and this number rises to an expected 95% during the next three-plus years (see Figure 1). Almost half of survey respondents (48%) said they have increased their use of such systems during the past two years, while 39% saw no change and 13% saw slight to significant decreases. Desire for better human and automated decisions are top drivers (see Figure 2). At present, however, only two in five leaders surveyed regularly leverage AI/ML for all or most decision-making. A nearly equal number describe their decisioning process as rules-based; the remainder employ AI/ML as support for the best action or complex computational logic that changes often. AI/ML decision-makers say AI/ML as part of digital decisioning is important to their company's success because:

  "The role of AI/ML makes it possible for us to access and analyze data in a more efficient way."
  — US-based, senior-most decision-maker from a government firm

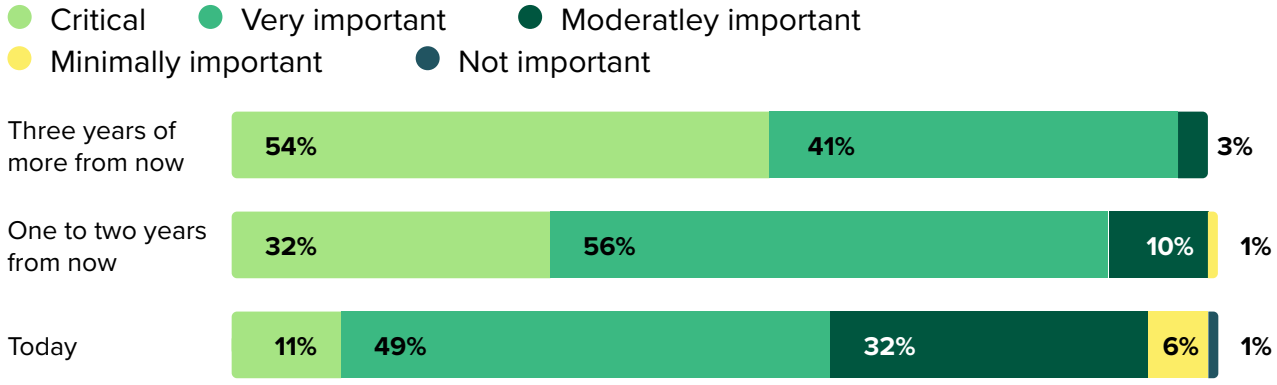
  "It can help us reduce bad decisions, find the direction for our business development, and reduce our losses."
  — US-based, senior-most IT decision-maker from an insurance firm

> "In the face of complex decision analysis, artificial analysis will have a large probability of error, and artificial intelligence can reduce decision errors as much as possible."
> — US-based manager in IT from a financial services firm

- **Ethical worries inhibit AI/ML in decisioning.** Sixty-six percent of AI/ML decision-makers reported concerns about an inability to meet their organization's ethical business goals. Other top risks cited include high costs (60%), bad business outcomes (47%), and failure to meet regulatory requirements (37%). Only slightly more than half (56%) are confident in their ability to mitigate these risks. Mitigating these risks is critical to building and maintaining trust with customers. Widespread worry about security and poor-quality data are also inhibiting implementation of AI in decisioning systems. A US-based senior IT decision-maker from a healthcare firm said: "The ethical use of AI requires a human; you may need to get a committee to review the algorithm. If there is any concern, take it to the doctors and nurses to help validate the outcomes."

Figure 1

"What is, or what do you expect to be, the strategic importance of using AI in digital decisioning to the success of your company?"



Base: 326 application development and delivery decision-makers with budget authority for new investments (e.g., enterprise architects, business process management titles, IT roles)
Note: Percentages may not total 100 because of rounding.
Source: A commissioned study conducted by Forrester Consulting on behalf of InRule, March 2022

“The first use case for AI/ML is customer journey mapping [and] understanding how people are utilizing your systems. What are the same pain points? What are the access points? Second is improving systems, processes, and apps. The third is anomaly detection.”

US-based VP in IT from a financial services/banking firm

Figure 2

Top use cases for utilizing AI in automated digital decisioning

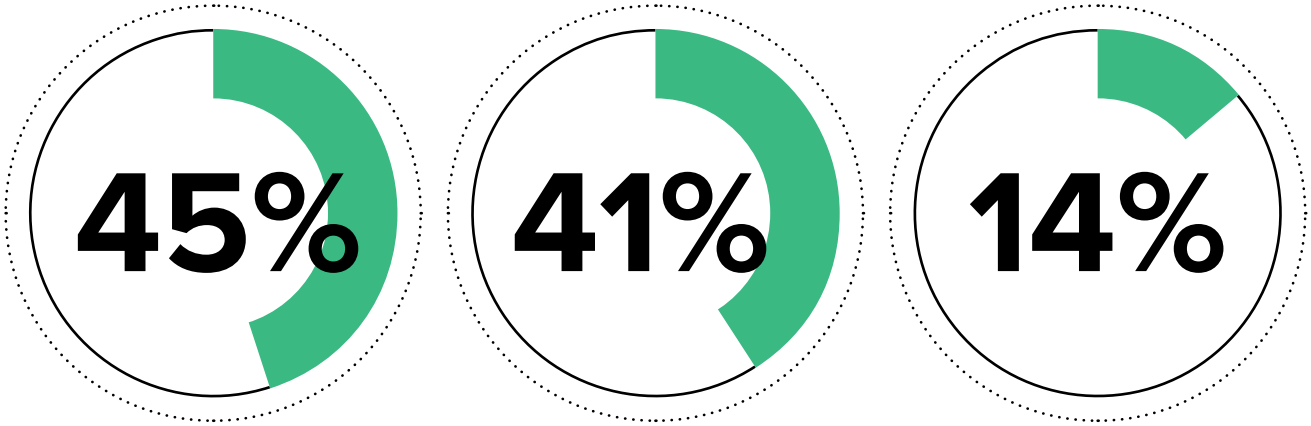
(Select up to five.)

Base: 326 application development and delivery decision-makers with budget authority for new investments (e.g., enterprise architects, business process management titles, IT roles)
Source: A commissioned study conducted by Forrester Consulting on behalf of InRule, March 2022

- **Decision-makers rely on a range of technologies for automating decisioning processes.** Solutions employing robotic process automation (RPA) and digital process automation (DPA) are common, but far from automatic: 70% of users cited difficulty maintaining complex decisions using DPA-only solutions. Forty-one percent of surveyed decision-makers said their organization currently uses a business process management system with an external decision engine (see Figure 3).

Figure 3

"Which of the following best matches how you are using technology in your decisioning processes?"



We use a business process management (or a robotic process automation) system to define both business processes and decisions within the process.

We use a business process management (or a robotic process automation) system with an external digital decisioning engine.

We use a digital decisioning engine that includes business processes.

Base: 326 application development and delivery decision-makers with budget authority for new investments (e.g., enterprise architects, business process management titles, IT roles)
Source: A commissioned study conducted by Forrester Consulting on behalf of InRule, March 2022

> "We have a software suite that we made ourselves in-house that automates a lot of our workflows. We have AI/ML models deployed in all sorts of places in the process, from manufacturing all the way to retail."
>
> **US-based VP in IT from a telecommunications firm**

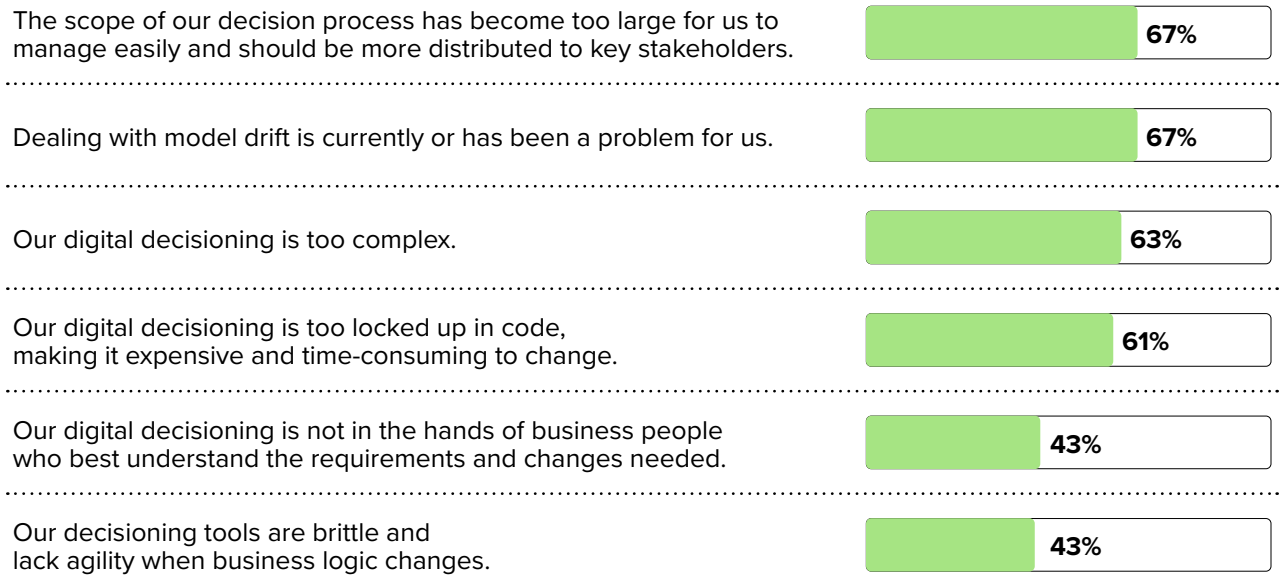
Overcome Complexity And Harmful Bias With Explainability

Successfully fusing AI/ML with decisioning and process systems requires several key elements: manageable scope and maintenance, transparent and easily explainable models, and accurate data from reliable sources, among others. Unfortunately, these conditions are rare in the survey respondents' organizations. We found broad challenges around AI/ML ethical risks compounded by decisioning systems that are costly and difficult to operate, scale, change, and use. The study discovered:

- **Digital decisioning progress is slowed by complexity and model sprawl.** Roughly two-thirds of respondents reported technological, organizational, and operational problems that impede agility and scalability, notably scope creep and model drift (see Figure 4). This environment leads to a host of risks and challenges, including data integration (55%), operationalizing production models (46%), getting good/clean data (45%), improving user-friendliness for better adoption (37%), ongoing support and maintenance (34%), and long development times (33%). A US-based VP in IT from a financial services/banking firm said: "The main roadblock is getting the right data. When we are trying to implement anything in an AI model, [we] need access to the right data and need to have good quality data. In most cases, we're relying on data from other systems, and we cannot ensure the quality of the data in all scenarios. So, a lot of effort goes into cleaning up of the data and ensuring it is ready for any kind of use."
- **Harmful bias is a top concern.** Respondents said they worry that harmful bias can lead to inaccurate decisions (58%), inconsistent decisions (46%), decreased operational efficiency (39%), and loss of business (32%). Decision-makers expressed concern about exacerbating or introducing such harmful bias though their decisioning systems and processes, potentially losing trust from customers. It's not an unfounded fear: More than three-fourths also said their organization has already experienced harmful bias in its digital decisioning initiatives.

Figure 4

"How much do you agree or disagree with the following statements?"
(Showing "strongly agree"/"agree")



Base: 326 application development and delivery decision-makers with budget authority for new investments (e.g., enterprise architects, business process management titles, IT roles)
Source: A commissioned study conducted by Forrester Consulting on behalf of InRule, March 2022

A US-based VP in IT from a telecommunications firm said: "AI will make mistakes. It's merely a question of how often and how badly. And then the question is: What's the damage? What is the cost of making those errors? There's a financial cost, [and] maybe there's a brand cost [and] reputational cost depending on how bad the mistake is."

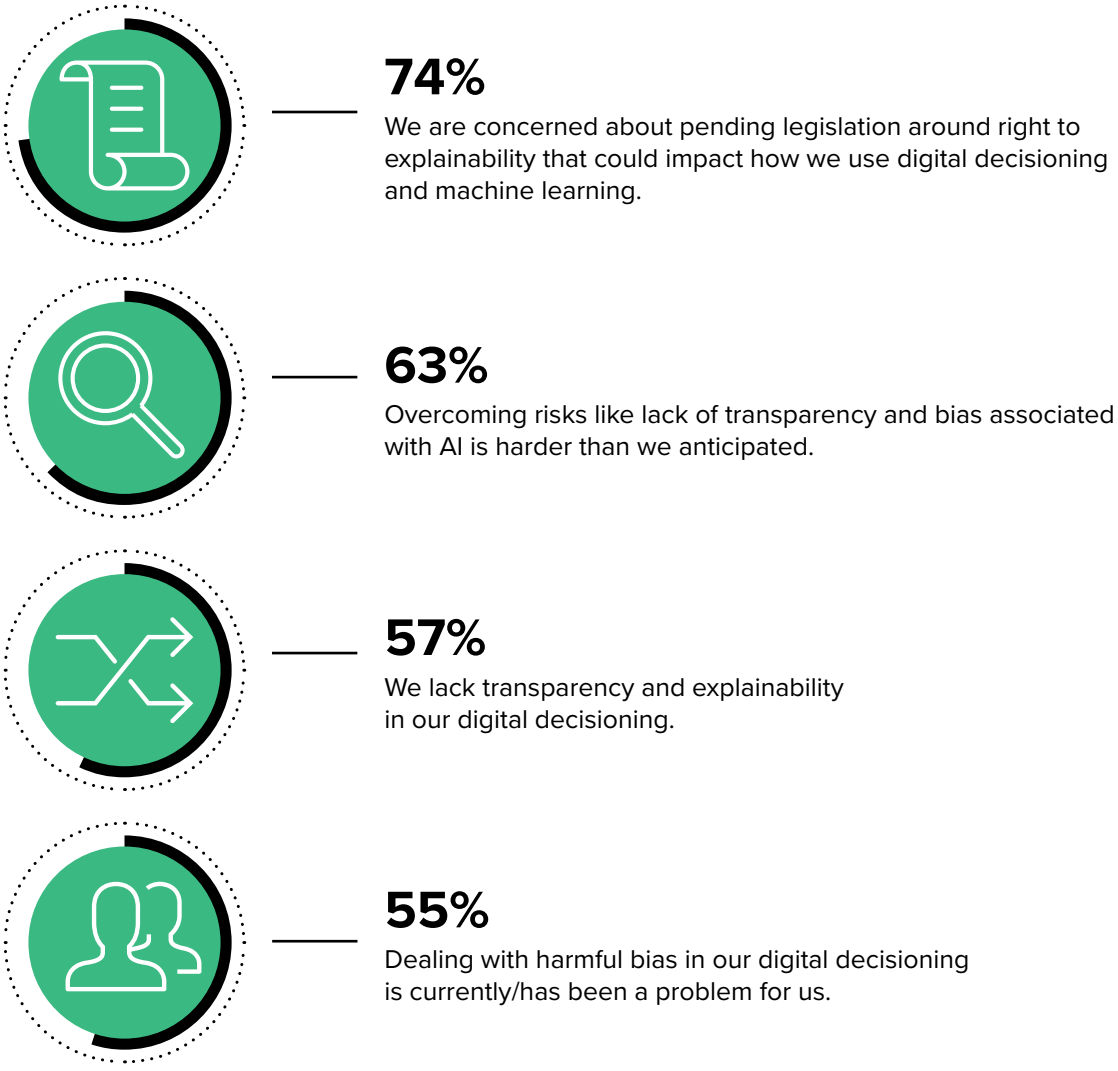
- **Lack of explainability and transparency is widespread.** Nearly 90% of decision-makers said it's "important" or "critical" to be able to explain the outcomes of automated decisioning and ML models. Three-fourths voiced concern about the impact of New York City's first-of-its-kind law requiring auditing of AI and algorithm-based tools used for recruiting, hiring or promotion.[1]

> "At every quality control point, there must be an exit gate where you can pause and assess. It should involve human decision-making and possibly even real infrastructure development that allows that AI decision-making process to be deployed in the first place."
>
> **US-based VP in IT from a telecommunications firm**

Yet at present, two-thirds said they have difficulty explaining their organization's decisioning models. The expected spread of right to explainability legislation provides enterprise leaders with a compelling reason to transform their concerns into action aimed at achieving greater transparency and understanding (see Figure 5).

Figure 5

"How much do you agree or disagree with the following statements?"
(Showing "strongly agree"/"agree")



Base: 326 application development and delivery decision-makers with budget authority for new investments (e.g., enterprise architects, business process management titles, IT roles)
Source: A commissioned study conducted by Forrester Consulting on behalf of InRule, March 2022

Benefits Hinge On Explainability And Automation With A Human Touch

Overcoming risks, challenges, and concerns requires that decision-makers reimagine and evolve their AI/ML-driven decisioning. By deploying platforms that deliver explainability, enterprises can reap the benefits of more robust platforms, increased human accountability, automated governance, wider stakeholder involvement, and greater transparency improving customer trust and experiences. We found:

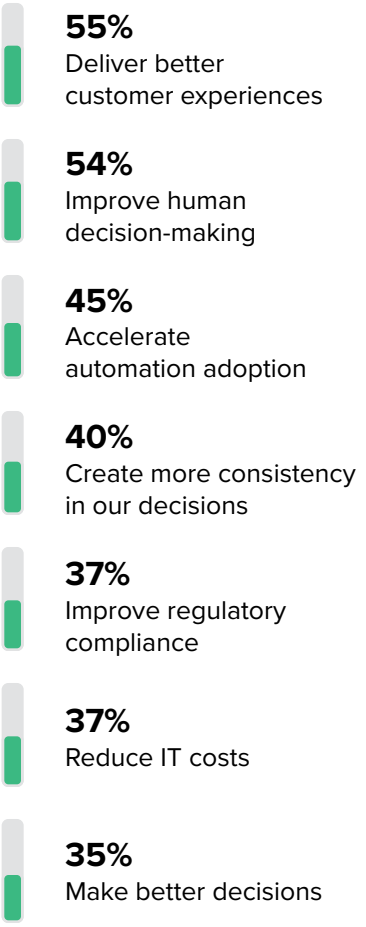
- **Better explainability means better customer experience and better decisions.** AI/ML leaders expect the ability to better explain outcomes of their digital decisioning would deliver a wide range of internal and market-facing benefits (see Figure 6).
- **AI/ML works best when humans are in the loop.** Nearly 70% of decision-makers agree involving humans in decisioning with AI/ML reduces risks associated with these technologies. Strategic inclusion of people in the process helps reduce common risks such as scope sprawl and false positives and false negatives. Three-quarters said that leveraging human accountability within AI/ML process automation leads to better predictability of customer needs and more personalized solutions (see Figure 7).

"In many cases in the critical business processes, we have seen that AI/ML is not eliminating the human involvement, but it reduces human involvement quite a bit and streamlines the process and makes it more efficient."

US-based VP in IT from a financial services/banking firm

Figure 6

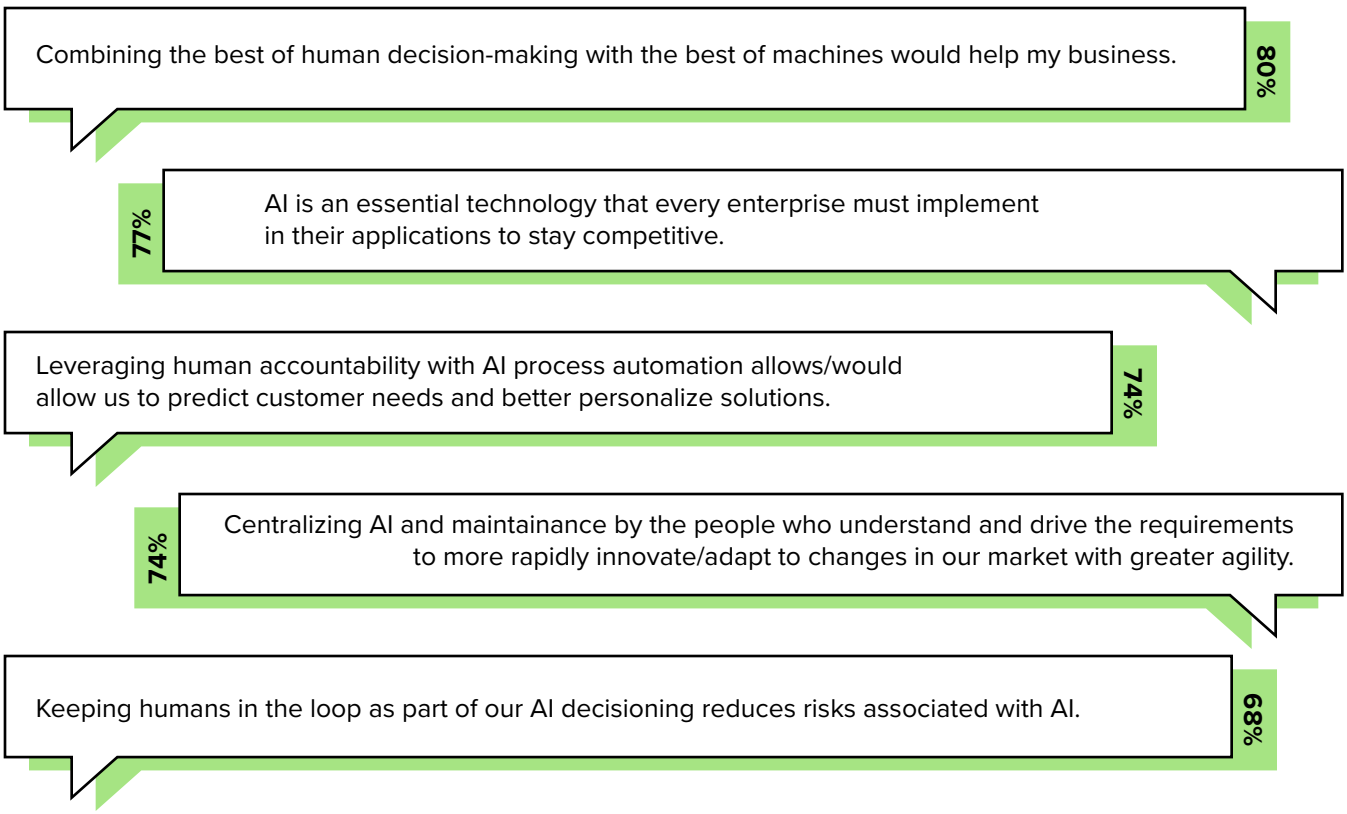
"What are the top expected benefits of improving your ability to explain outcomes in your digital decisioning?"



Base: 326 application development and delivery decision-makers with budget authority for new investments (e.g., enterprise architects, business process management titles, IT roles)
Note: Showing top 7.
Source: A commissioned study conducted by Forrester Consulting on behalf of InRule, March 2022

Figure 7

"How much do you agree or disagree with the following statements?"
(Showing "strongly agree"/"agree")



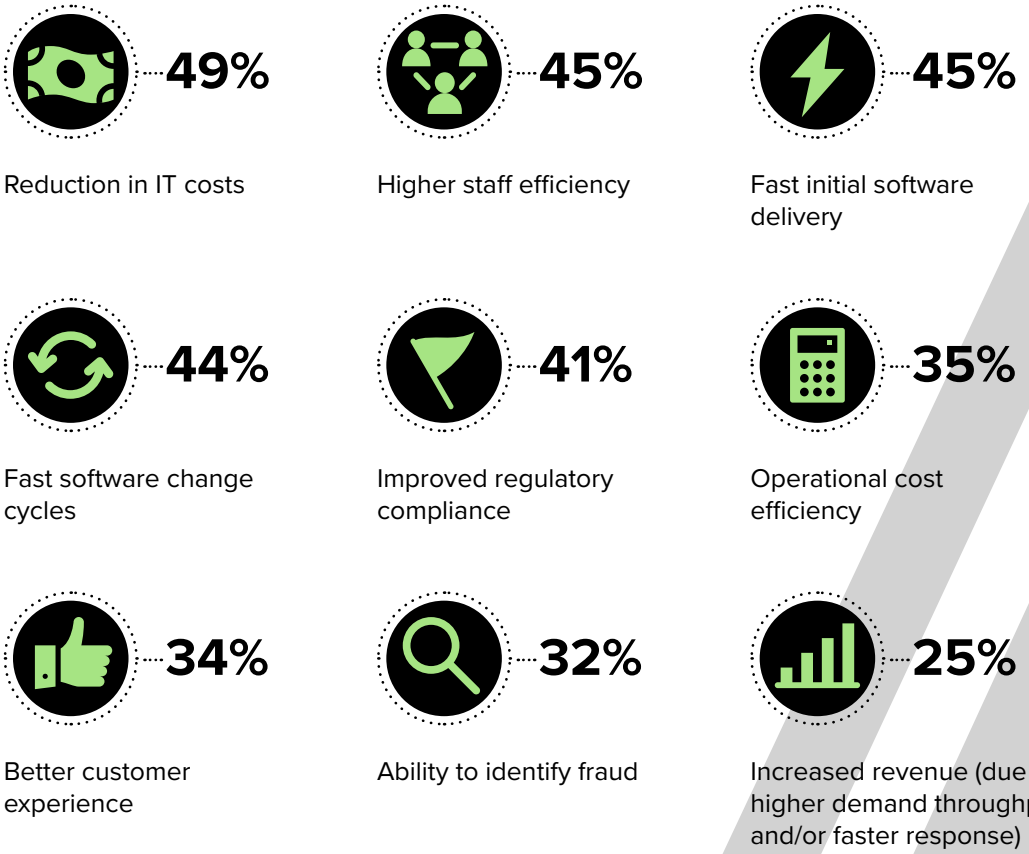
Base: 326 application development and delivery decision-makers with budget authority for new investments (e.g., enterprise architects, business process management titles, IT roles)
Source: A commissioned study conducted by Forrester Consulting on behalf of InRule, March 2022

- **Removing harmful bias boosts assurance that AI/ML will not contribute to regulatory and/or reputational risk.** Increased transparency and explainability also unlocks other benefits: assurance to stakeholders that AI/ML can be safely used (59%), reduced regulatory risk (51%), and fairer models (48%). Transparency and explainability create fairer models and can reassure customers and build more trust. A US-based VP in IT from a financial services/banking firm said: "Any decision-maker is going to ask you, 'What does the model tell me?' You must be very clear about what exactly your model is doing and how is it helping. Even while you're developing the model, that's the first thing that you look at."

- **Improving digital decisioning unlocks critical organizational benefits.** Reduced costs, improved efficiency, and faster software delivery top the list of benefits expected by AI/ML decision-makers (see Figure 8). A US-based VP in IT from a telecommunications firm said: "A top use case for AI/ML is predictive maintenance. Without explainability, the maintenance department may get that message and not act if the machine is still working [by] thinking: 'If I stop the production process right now, then I have lost production. I'm going to get blamed for that.' With explainability, you can get to the root of the cause and avoid problems."

Figure 8

"What do you expect to be the top benefits from improving your organization's digital decisioning?"



Base: 326 application development and delivery decision-makers with budget authority for new investments (e.g., enterprise architects, business process management titles, IT roles)
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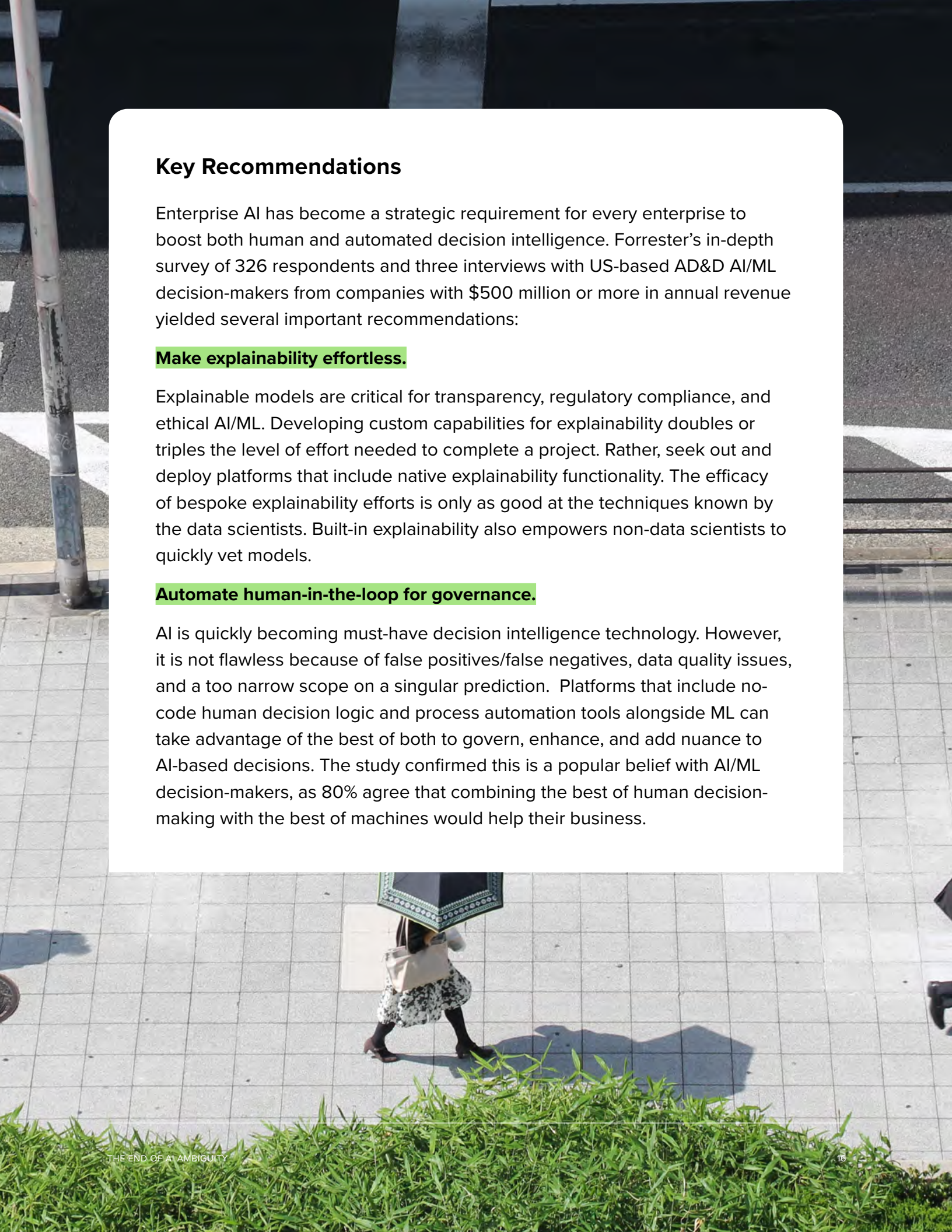


Key Recommendations

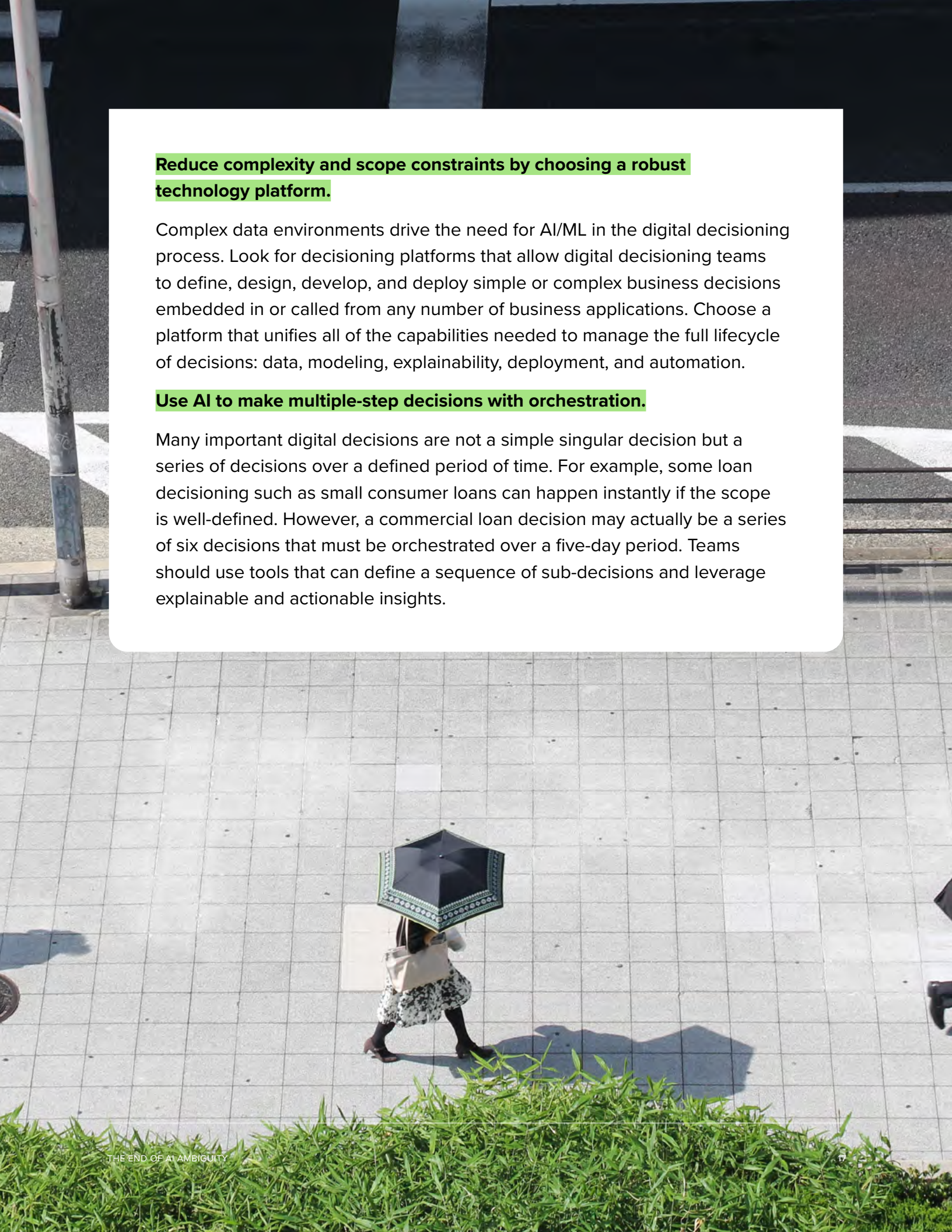
Enterprise AI has become a strategic requirement for every enterprise to boost both human and automated decision intelligence. Forrester's in-depth survey of 326 respondents and three interviews with US-based AD&D AI/ML decision-makers from companies with $500 million or more in annual revenue yielded several important recommendations:

Make explainability effortless.

Explainable models are critical for transparency, regulatory compliance, and ethical AI/ML. Developing custom capabilities for explainability doubles or triples the level of effort needed to complete a project. Rather, seek out and deploy platforms that include native explainability functionality. The efficacy of bespoke explainability efforts is only as good at the techniques known by the data scientists. Built-in explainability also empowers non-data scientists to quickly vet models.

Automate human-in-the-loop for governance.

AI is quickly becoming must-have decision intelligence technology. However, it is not flawless because of false positives/false negatives, data quality issues, and a too narrow scope on a singular prediction. Platforms that include no-code human decision logic and process automation tools alongside ML can take advantage of the best of both to govern, enhance, and add nuance to AI-based decisions. The study confirmed this is a popular belief with AI/ML decision-makers, as 80% agree that combining the best of human decision-making with the best of machines would help their business.



Reduce complexity and scope constraints by choosing a robust technology platform.

Complex data environments drive the need for AI/ML in the digital decisioning process. Look for decisioning platforms that allow digital decisioning teams to define, design, develop, and deploy simple or complex business decisions embedded in or called from any number of business applications. Choose a platform that unifies all of the capabilities needed to manage the full lifecycle of decisions: data, modeling, explainability, deployment, and automation.

Use AI to make multiple-step decisions with orchestration.

Many important digital decisions are not a simple singular decision but a series of decisions over a defined period of time. For example, some loan decisioning such as small consumer loans can happen instantly if the scope is well-defined. However, a commercial loan decision may actually be a series of six decisions that must be orchestrated over a five-day period. Teams should use tools that can define a sequence of sub-decisions and leverage explainable and actionable insights.

Appendix A: Methodology

In this study, Forrester conducted three qualitative interviews and an online survey of 326 US AD&D and AI/ML decision-makers from insurance, healthcare, financial services and/or banking, technology, and government organizations with $500 million or more in annual revenue to evaluate explainability and transparency in automation/overcoming bias in automated predictions, process, and decisioning. Survey participants included decision-makers in IT and line-of-business roles at companies using business rules/decisioning platforms. Questions provided to the participants asked about how they are using AI/ML for digital decisioning and the need for explainability. Respondents were offered a small incentive as a thank you for time spent on the survey. The study began in February 2022 and was completed in May 2022.

Appendix B: Demographics

COUNTRY	
US	**100%**

USE OF AI AND ML	
Operationalizing	**29%**
Between experimenting and operationalizing	**38%**
Experimenting	**33%**

ROLE	
Director in IT	**26%**
Manager in IT	**24%**
VP in IT	**20%**
Senior-most IT decision-maker in the firm	**15%**
Executive in line-of-business or function	**7%**
Manager in line-of-business or function	**6%**
Senior-most business leader	**2%**

ANNUAL REVENUE	
$500M to $999M	**35%**
$1B to $5B	**40%**
>$5B	**25%**

LEVEL OF RESPONSIBILITY	
Final decision-maker for process automation strategy	**28%**
Part of a team making decisions for process automation strategy	**35%**
Influence decisions for process automation strategy	**37%**

INDUSTRY	
Insurance	**28%**
Financial services and/or banking	**25%**
Healthcare	**22%**
Technology and/or technology services	**15%**
Government	**10%**

Appendix C: Supplemental Material

RELATED FORRESTER RESEARCH

"Introducing AI-Powered, Human-Controlled Digital Decisioning Platforms," Forrester Research, Inc., August 11, 2020

Appendix D: Endnotes

[1] Source: Roy Maurer, "New York City to Require Bias Audits of AI-Type HR Technology," SHRM, December 20, 2021 (https://www.shrm.org/resourcesandtools/hr-topics/technology/pages/new-york-city-require-bias-audits-ai-hr-technology.aspx).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