

A bridge over troubled water

What the gap between people and AI means for resilience in the supply chain

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Introduction

The adoption of AI to improve supply chain decision-making is still relatively low - just 12% of supply chain professionals say their organizations are leveraging AI today.¹ But it is expected to grow - and rapidly - with the market reaching \$10.1 billion by 2025.²

AI has long promised to have a transformative impact on business. The supply chain, with access to more data than ever before, and with key forecasting and planning decisions ripe for improvement, stands to benefit handsomely.

So what's been holding things back so far? To answer this question, Secondmind commissioned independent research to survey over 500 decision-makers in supply chain management.

We found that whilst 90% believe AI will help inform better decisions in the future, 82% experienced frustrations with current AI systems during

the COVID-19 pandemic. Organizational challenges and the longstanding issue of data quality were highlighted as key issues which led to expensive mistakes, less accuracy and slower decision-making during rapidly changing market conditions.

The message from planners and managers is clear: people need AI, and AI needs people. The ability to feed in their insights, teach AI when data is unreliable and modify forecasts based on their own judgement were all cited by planners and managers as desirable capabilities in AI systems.

Based on research conducted in August - September 2020, this report spoke to supply chain planners and managers who were already using AI to aid decision-making. It focuses on three areas: their current views of AI, the challenges they encountered during the COVID-19 pandemic and what capabilities they would like from AI systems.

1. The latest annual MHI Industry and Deloitte report showed that just 12% of supply chain professionals say their organizations are leveraging AI.

2. Research conducted by ReportLinker found that the use of artificial intelligence in the supply chain market is expected to reach \$10.1 bn by 2025 from \$730.6 mn in 2018, at a CAGR of 45.55%.

Four key themes emerged:

1. Belief in AI is growing but it's not all smooth sailing

AI might not yet be widely adopted in the supply chain, but planners and managers who use it are strong advocates for its ability to enhance their decision-making. Nearly all believe that AI will transform supply chains for the better in the next five years. However, the COVID-19 crisis exposed a number of limitations in AI-powered decision-making systems that caused impediments and increased frustration. For AI to effectively scale in the supply chain and for planners and managers to reap its full potential, this report indicates that the causes of these frustrations must be addressed.

2. Data & organizational readiness are preventing AI from realizing its potential

A lack of reliable data, the problems with historic data in times of change and the need to revert to human analysis were all blockers at a time when accuracy and speed were of the essence. The problem of sparse, incomplete or unreliable data has been a longstanding challenge in the supply chain and one which isn't going away anytime soon, suggesting that AI systems need to be able to work effectively and efficiently in such environments. Organizational readiness was also a challenge, with rigid processes, internal structures and a lack of understanding from leadership cited as key frustrations. To prepare for the wider adoption of AI in the supply chain, it is critical that businesses prioritize the structural changes required to facilitate the effective implementation and deployment of AI across the entire organization.

3. A longer road to resilience

As AI-powered systems struggled to cope with the disruption caused by the pandemic, significantly more time was spent by planners and managers manually analyzing and interpreting data, leaving them unable to respond to changing market conditions quickly enough. Instead of making invaluable contributions on key activities, such as scenario planning for future black swan events, risk assessments and more in-depth analysis using their experience, supply chain managers and planners were instead fire-fighting problems caused by system failures.

4. AI needs people, people need AI

The paradox revealed in this report is that whilst the majority of people seem to believe AI alone can be a silver bullet for supply chain decision-making, most planners and managers still want their domain expertise to be considered. Planners and managers favor AI systems that enable greater collaboration in decision-making, such as AI that learns from their experience. They would also like more context for recommendations, such as which circumstances impacted a forecast, or how confident the AI system is in its prediction, so they can make better, more informed decisions.

1. Belief in AI is strong, but it's not all smooth sailing

At a time where skepticism about the role and impact of AI persists, supply chain planners and managers using AI systems to aid decision-making appear to be enthusiastic advocates. Almost three quarters (74%) of supply chain managers indicate they would put their faith in AI-recommended decisions alone, and the vast majority say AI is integrated effectively and efficiently across supply chain planning and management. These early AI adopters indicate trust is building primarily because of its accuracy, speed and impartiality.

99.8%

of those using AI-powered software and tools said it helped them do their job more effectively.

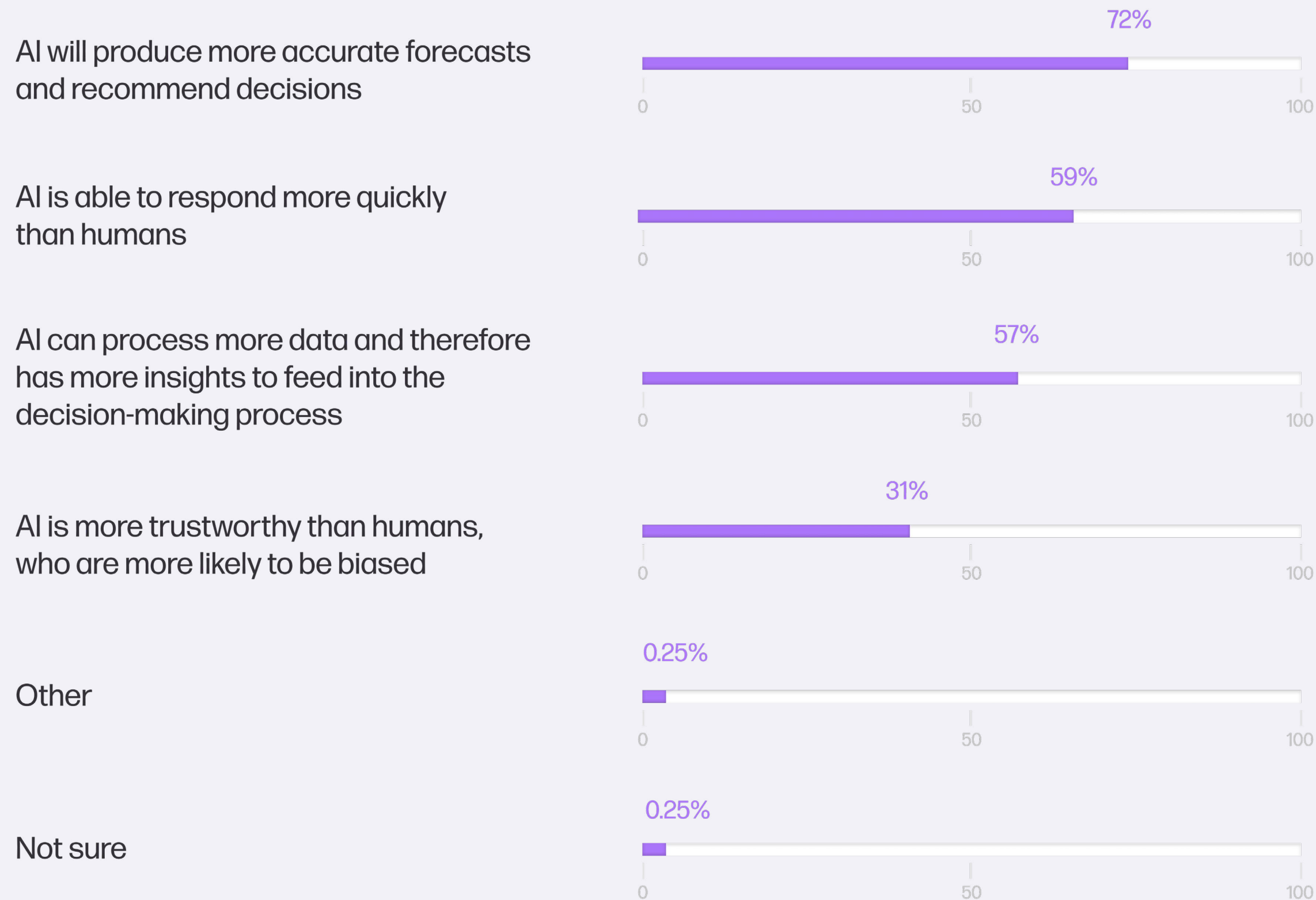
However, an interesting paradox emerges: when faced with the reality of a black swan event, such as the COVID-19 pandemic, 82% also admitted to having frustrations with AI-powered decision-making. It appears some cognitive dissonance is at play, and when evidence emerges of AI's limitations, most concede AI alone is not the answer.

74%

said they can make better decisions if forecasts and recommended decisions are produced using AI alone.



Why do you think AI alone is enough to help planners make better decisions?³



3. Responses of those who think AI alone will/would be enough to help supply chain planners and managers make better decisions.

90%

agree that by 2025 AI-powered tools and software will help them make better decisions,⁴

90%

believe that AI will transform supply chains for the better by 2025,⁵ but

82%

expressed frustrations with AI-powered decision-making during the pandemic.

4. These statistics have been calculated by combining those who answered 'Strongly agree' and 'Somewhat agree'.

5. These statistics have been calculated by combining those who answered 'Strongly agree' and 'Somewhat agree'.

2. The blockers preventing AI from realizing its potential

With so many supply chain planners and managers expressing frustration with AI-powered decision-making, we wanted to find out more about their top frustrations during the COVID-19 pandemic.

Two clear themes emerged from the response:

1. The problem of data

The way the COVID-19 crisis exposed the limitations of data was a recurring theme in responses. Many admitted they had to fall back on manually processing data. The reliability of data was questioned, with some specifically questioning how historic data could be a good basis for understanding what to do next in unprecedented times. The sheer amount of time spent manually sifting through and analyzing data slowed down decision-making at a time where speed and efficiency was critical in responding to rapidly changing market conditions.

2. Organizational challenges

Rigid processes and internal structures were cited as the top frustration because they prevented planners from quickly adapting to rapidly changing market conditions. Another top concern was the lack of understanding from the leadership team of what was needed by decision-makers on the ground to make faster, data-driven decisions.

“When the pandemic hit, we had to switch to using 2019 sales data in our baseline statistical model because the system just went crazy.”

Demand planner at FMCG company with 20K+ employees



What, if anything, have been your biggest frustrations around AI-powered decision-making due to the outbreak of the COVID-19 pandemic? (Select your top three.)

Rigid processes and internal structures preventing quick adaptation to rapidly changing market conditions	41%
Lack of reliable data to feed into AI systems	37%
Lack of understanding from the leadership team of what we need on the ground to make faster, data-driven decisions	34%
Having to spend significant time going through data manually	32%
Being unable to adjust AI-recommended forecasts with my own knowledge	23%
Results generated using only historic data are meaningless in times of unprecedented change	19%
There have been no frustrations around AI-powered decision making due to the outbreak of the COVID-19 pandemic	17%
I don't know	0.59%
Other	0.20%

3. A longer road to resilience

As market conditions changed rapidly during the pandemic, the ability to move quickly and accurately was more important than ever. Unfortunately, these blockers clearly impacted upon the ability of planners and managers to be decisive. Expensive forecasting mistakes and reduced accuracy were cited as key concerns, and a significant number felt these challenges led them to have less credibility and support from the wider business as a result.

96%

of respondents said these frustrations had an impact on their ability to make effective decisions during the pandemic.

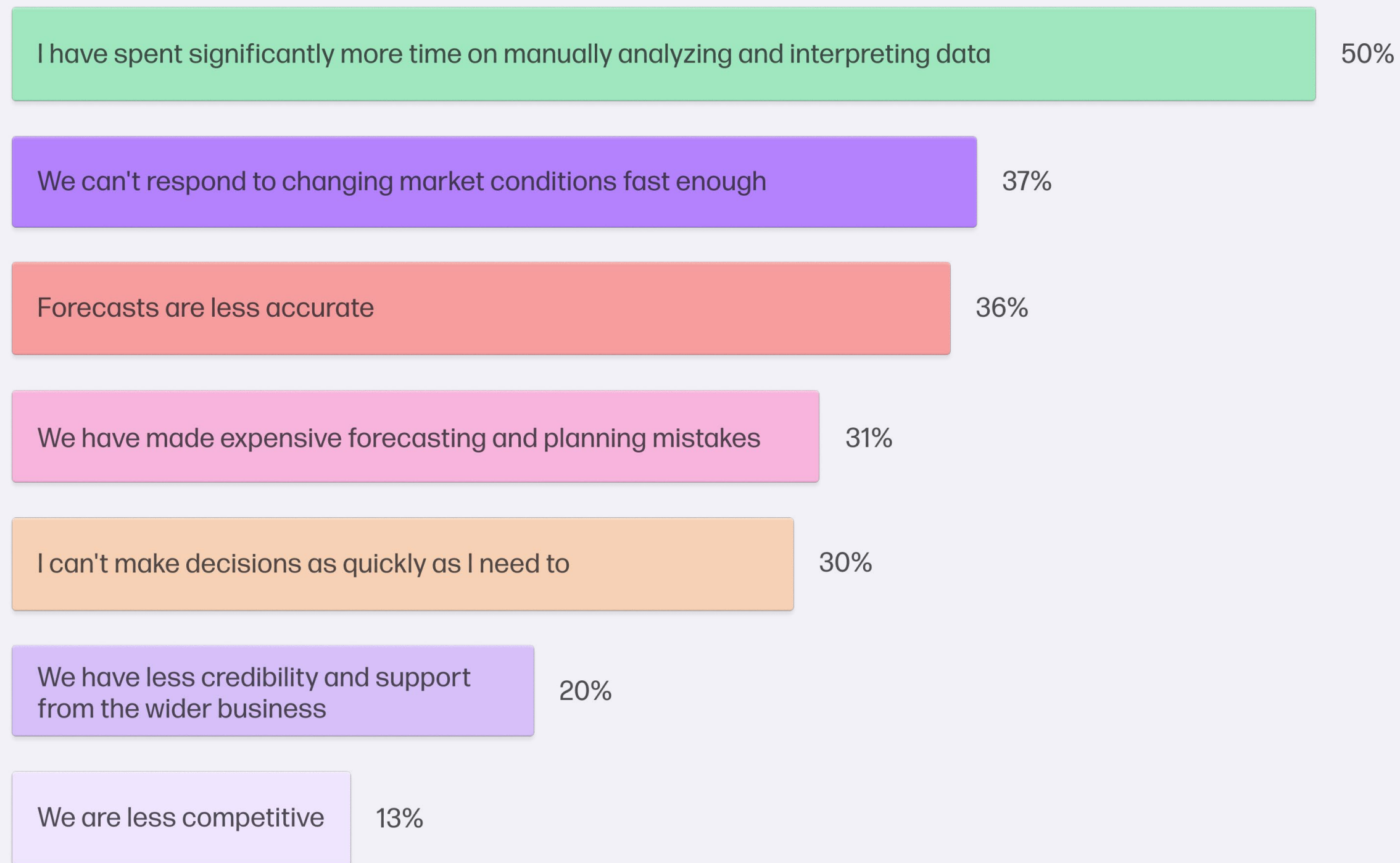
As AI-powered systems struggled to cope with the disruption caused by the pandemic, significantly more time was spent by planners and managers manually analyzing and interpreting data, leaving them unable to respond to changing market conditions quickly enough. They also spent significant time on tasks that could have been automated, meaning they were unable to perform tasks better suited to people, such as critical thinking, providing more in-depth analysis using their expertise, assessing risks in the supply chain, or more proactively planning for key events.

“The degree of resilience depends on the success in managing numerous trade-offs. Capacity constraints, inventory levels, expected demand and asset utilisation are all ripe for the application of new, practical AI techniques.”

Gaurav Bajaj, VP at Secondmind



Please state what impact this/these frustrations have had? (Tick all that apply.)⁶



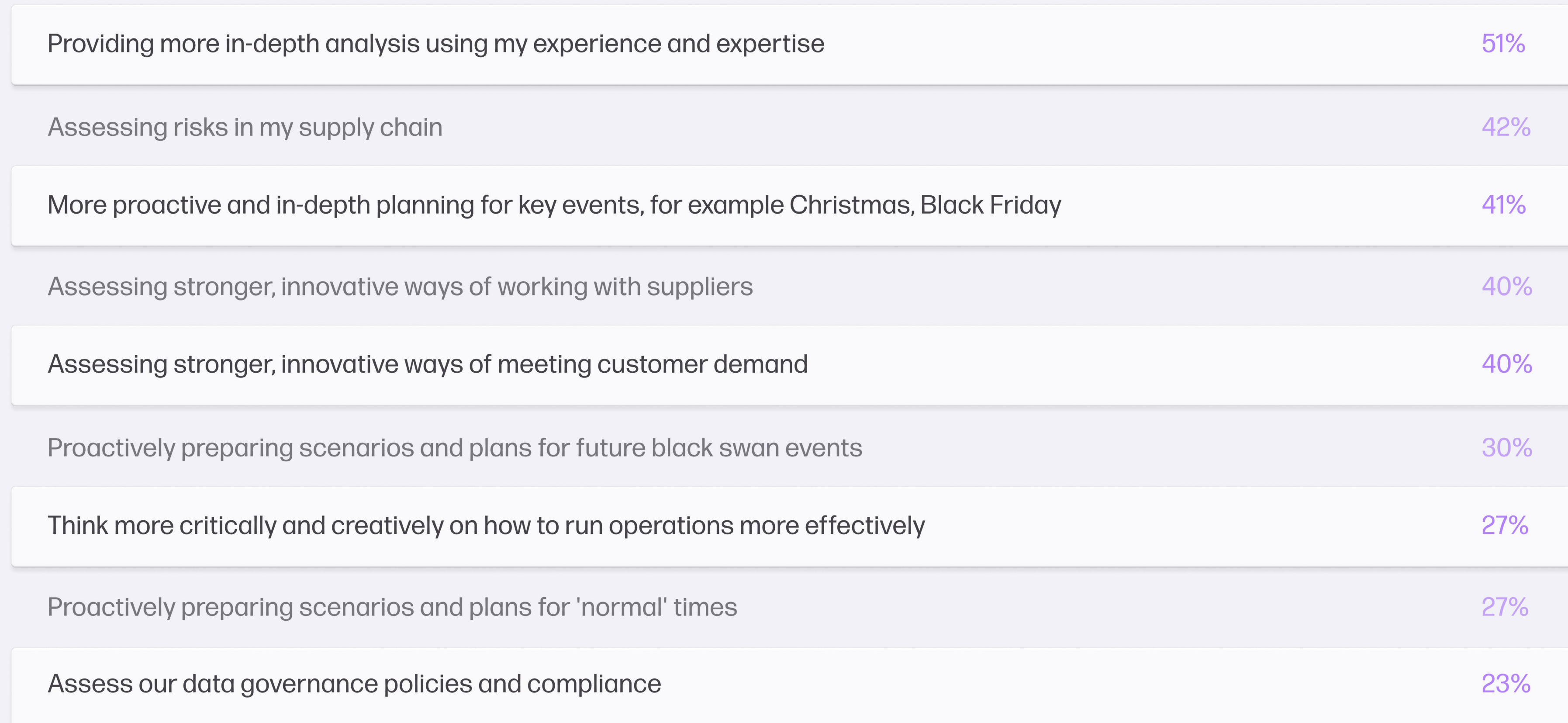
6. Respondents who have had frustrations around AI-powered decision-making due to the outbreak of the COVID-19 pandemic.

2.83 hours wasted daily

on manual tasks that could easily be automated, such as manually moving data between systems or exporting data for analysis using tools such as Excel.⁷

7. Result excludes those who selected 'I don't know' in response to the question 'How much of your time in an average day, if any at all, do you think you spend on manual tasks (e.g. spreadsheets, non-automated software) which could be completed more effectively and speedily if they were automated?'

What, if anything, would you do with the extra time if you had fewer manual tasks to complete?



“COVID-19 has accelerated and emphasized the need for companies to strengthen their supply chain capabilities by proactively introducing resilience strategies. These include strategies around improvement of their supply chain and logistics (demand, capacity) sensing capabilities, enabling supply chains to remain more dynamic and nimble. In parallel, companies would need to vastly improve their capabilities in supply chain network design and sourcing, capacity and inventory buffering, and also strengthened financial reserves and improved risk-transfer methods.

Emerging solutions like the one offered by Secondmind, fit perfectly into this imperfect supply chain data world, and are highly relevant for AI-powered forward sensing, and especially so for dynamic capacity and allocation planning when faced with tactical and operational disruptions and deviations.”

Marc Dragon, Managing Director of Reefknot Investments

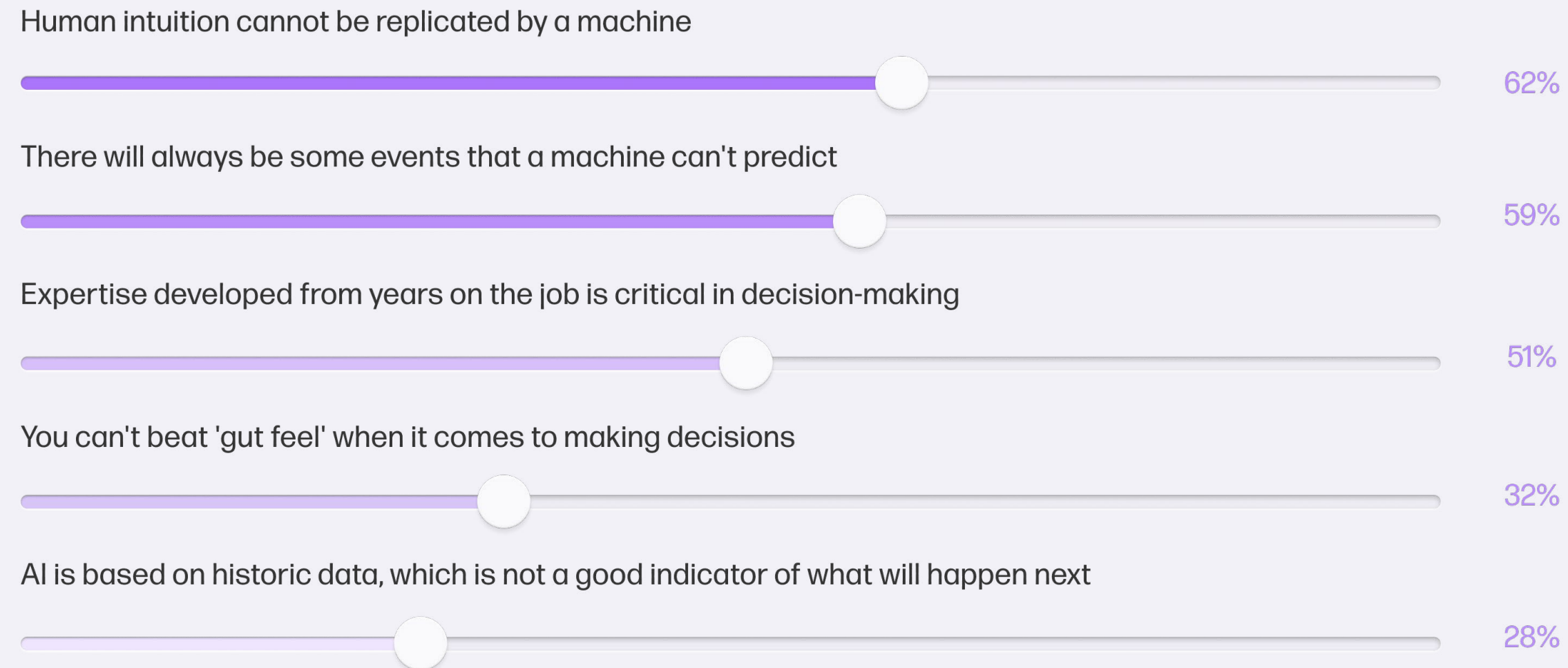
4. AI needs people, people need AI

When given the option to feed more of their own insights and expertise into the process, just a small proportion of planners and managers expressed a desire to still hand over decision-making entirely to AI. The results indicate people still need and want to be a core part of the decision-making process.

The reasons were varied: a third felt AI was no match for the gut instinct they had developed from years on the job, whilst others said people need to be able to step in and influence AI-generated decision recommendations, since some events will always be impossible for a machine to predict. The biggest challenge for businesses is to build a symbiotic relationship between people and AI to optimize decision-making and ensure they deploy a combination of the right skills and capabilities for each task.

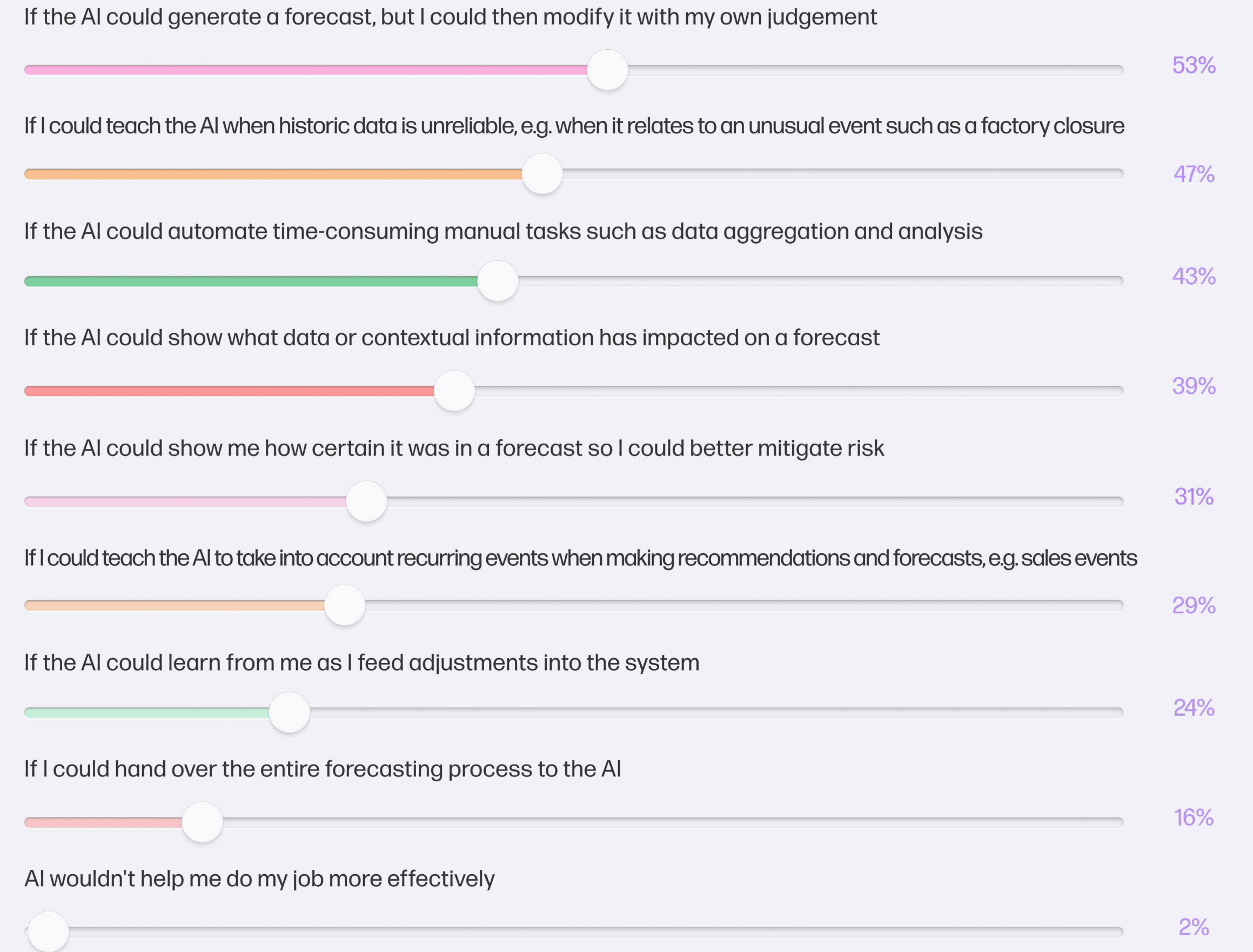


Why do you think AI alone is not enough to help planners make better decisions?⁸



8. Respondents who do not think AI alone will/would be enough to help supply chain planners and managers make better decisions.

How, if at all, do you think AI would help you to do your job more effectively?



“Increasingly, supply chain strategy must recognize that historical demand and supply patterns are limited in helping us to anticipate or predict the future. Today’s supply chains need to be more resilient, more flexible and more responsive to change than ever before. However, this is easier said than done. We’ve become comfortable with the supply chain practices and tools that have served us well in relatively stable times. Our approach to supply chain strategy and planning must now recognise that we are living in a different time. We need an organization with the skills to manage high levels of unpredictability and change, and new tools to enhance decision-making abilities in this new world we live in.”

Gordon Colborn, a former PwC and PRTM Partner who has led supply chain transformation programmes with some of the world’s leading companies

Conclusion

COVID-19 has been a wake-up call for the supply chain as it prepares to rapidly accelerate the implementation and deployment of AI in the coming years.

In exposing the shortcomings of current systems that are over-reliant on poor-quality data and existing infrastructures that are not yet adapted for AI, this report exposes the potential cost to organizations when AI systems are tested by disrupted and changing market conditions.

As supply chains move into increasingly uncertain times⁹ and the AI conversation shifts from one about optimization to one of resilience, human and AI teaming will become a critical capability in any effective AI system.

These insights serve as a timely reminder of the importance of human intuition and experience in the decision-making process. An over-reliance on data-driven insights to inform decisions will fail when data is sparse or incomplete, unless the AI systems are built to work in such environments. Likewise, an over-reliance on people to lead the decision-making process will result in wasted time and talent on tasks that could easily be automated, restricting businesses from reaping the benefits of their team's expertise on tasks that are better suited to humans.

Combining data-driven insights and AI capabilities with the judgement and insights of the people in possession of expert domain knowledge will optimize decision-making at all levels of an organization, and help build more resilient supply chains for the future.

9. "Risk, resilience, and rebalancing in global value chains" Report by McKinsey Global Institute, August 2020.

About the research

Secondmind commissioned a survey of 506 supply chain managers and planners in the UK, USA, Italy, Spain, Germany and France. All respondents were currently using AI to inform decision-making. It was conducted by the independent international market research consultancy Censuswide in August - September 2020.

Censuswide abides by and employs members of the Market Research Society which is based on the ESOMAR principles.

About Secondmind

Founded in 2016 with a mission to empower people in business to make better decisions, Secondmind - The Decisions Company is underpinned by years of award-winning, practical artificial intelligence (AI) and machine learning (ML) research, performed by a team of world-class researchers, data scientists and ML engineers. Secondmind closes the gap between people and AI, and supercharges decision-making with the Secondmind Decision Engine, an intuitive and insightful software platform that helps people in industries from supply chain to automotive predict, plan, influence outcomes, manage risk, and make complex decisions with ease and confidence. Secondmind is backed by leading venture funds including Amadeus Capital, Atlantic Bridge, and Cambridge Innovation Capital, among others.

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