THE STATE OF OBSERVABILITY IN 2024: A PRACTITIONER PERSPECTIVE

A Survey of Observability Practitioners

dimensional research

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Introduction

In today's increasingly complex IT environments, observability has become critical to maintaining system performance, reliability, and scalability. As organizations continue to adopt cloud-native architectures and distributed systems, the demand for effective observability practices has surged. The frontline practitioners responsible for effectively using observability tools and processes have had to evolve their skills and experience to meet the needs of the modern environments they manage.

This research explores the firsthand experiences of front-line technology practitioners responsible for implementing and managing observability tools in enterprise production environments. We examine the practical challenges and evolving responsibilities of these professionals as they navigate the intricacies of observability and consider the practical impact of their work on business outcomes.

The following report, sponsored by Elastic, is based on an online survey of more than 500 practitioners in a DevOps, SRE, IT Operations, or Engineering role with hands-on observability experience. Respondents worked at companies with more than 500 employees in various industries. Certain questions were repeated from a similar survey conducted with observability decision makers earlier in 2024 to enable comparative analysis.

Key Findings

Observability practitioners face ongoing challenges

- 99% report barriers to implementing effective observability capabilities and expertise
- Top challenges reported are managing different requirements of different teams and lack of consistent best practices
- The top cause of major incidents in the past year was system updates or patches
- 80% are working to consolidate observability and monitoring tools, 68% say that effort is driven by management
- 97% face challenges with their consolidation efforts

Organizations with mature observability practices report better results

- 43% characterize their observability capabilities and expertise as "mature" or "expert," 43% are "in process," and 15% are "early stage"
- Organizations with more mature observability practices report better operational and business outcomes, including:
  - 78% of "mature/expert" can typically identify the root cause of issues, compared to only 35% of "early-stage" organizations
  - Only 24% of "mature/expert" frequently hear about issues from users, far fewer than the 34% of "early-stage" organizations that say the same
  - Only 37% of "mature/expert" report issues with a lack of collaboration, compared to 65% of "early-stage"

Artificial Intelligence (AI) and Machine Learning (ML) are facts of life for observability but will take time to achieve full value

- 72% are using AI or ML for observability use cases
- Correlation of logs, metrics, and traces for troubleshooting is the top AI use case
- 39% expect that AI/ML will deliver high value in the future, compared to only 13% who say they are getting high value today
- 98% say AI/ML needs to mature to deliver full value for observability use cases
- Lack of time or knowledge to experiment with AI/ML is the top issue for observability teams to see value

Practitioners look to leadership for championing OpenTelemetry (OTel) adoption

- 33% of practitioners have never heard of OpenTelemetry, far more than 17% of decision makers
- 56% report they feel their leadership does not understand the value of OpenTelemetry

Site Reliability Engineers (SREs) have a positive outlook on their role

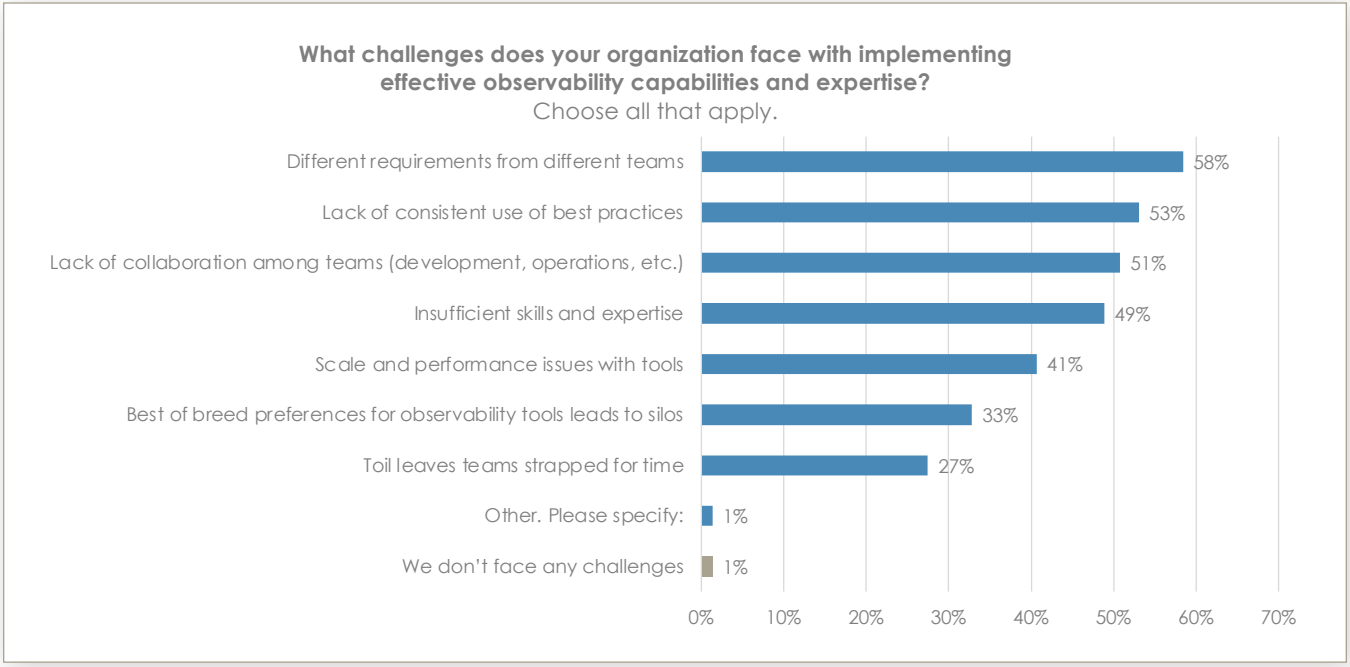
- 90% agree the SRE role is interesting, with opportunities to learn
- 95% would recommend an SRE career
- 88% of SREs agree cost control is an important part of their job

Detailed Findings: Observability practitioners face ongoing challenges

Observability practitioners report a range of challenges

The reality of complex modern system architectures, coupled with strict business requirements for availability and reliability, makes it unsurprising that observability teams sometimes struggle. Teams experiencing issues should know they are not alone, with almost all (99%) observability practitioners reporting that they are facing issues with implementing effective observability capabilities and expertise.

The most frequently reported issue is managing different requirements across diverse teams requiring support (58%). Other issues reported frequently included a lack of consistent use of best practices (53%), collaboration issues among different teams (51%), insufficient expertise (49%), scale and performance issues with tools (41%), tool and data silos caused by preferences for best of breed preferences (33%), and a level of toil that leaves teams strapped for time (27%). Many participants took the time to write in "other" challenges that they were facing, with cost being the most frequently mentioned issue. We also heard concerns about scoping observability requirements in advance, with one practitioner lamenting that they "only realized how much we needed a missing capability a year into our implementation."

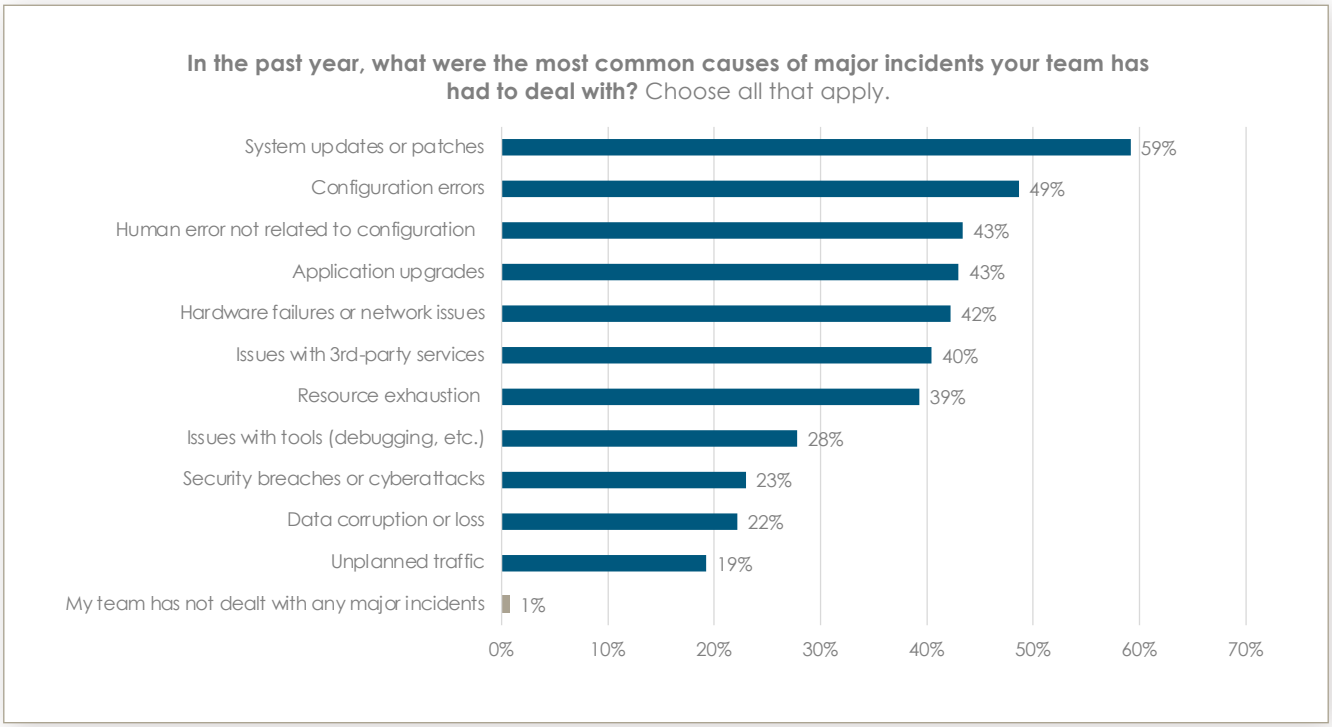


Observability decision makers were presented with the same question in an earlier study this year. Their answers were generally similar to the practitioners, showing an encouraging level of alignment among levels responsible for observability. The only area where practitioners were more likely to report issues was their concerns about the lack of consistent use of best practices. This indicates that management could help their teams by focusing more on standards.

The most frequent cause of major incidents is systems updates or patches

Despite the excellent work done by IT teams, the complexity of today's enterprise environments does mean that bad things still happen. In the past year, almost every individual in our study (99%) reported that their company had to deal with major incidents. By far, the top cause of significant incidents was system updates or patches (59%).

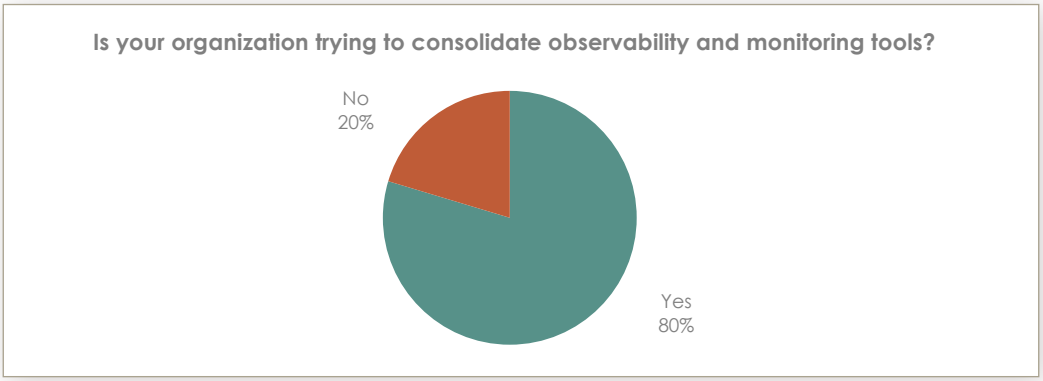
Interestingly, while security has been a key investment area for many enterprise IT teams in the past year, breaches and cyberattacks are not generally the cause of major incidents, with less than a quarter (23%) reporting that they were a cause in the past year.



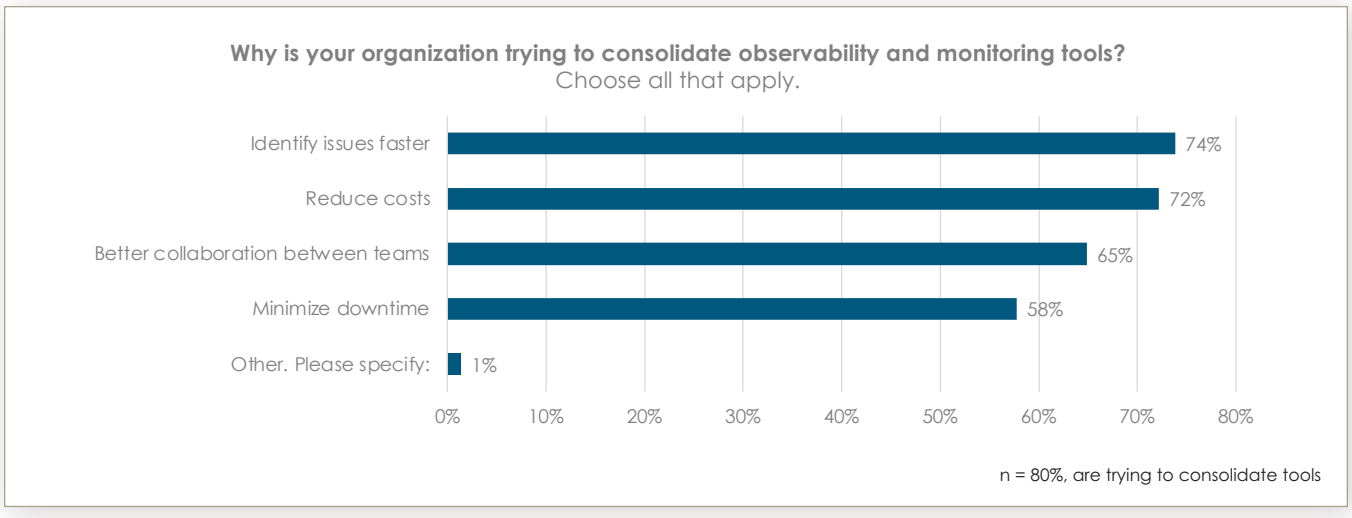
Consolidation is a consideration for observability practitioners

Competent IT organizations must invest in tools to manage specific aspects of their environments and solve evolving issues. The problem occurs when, over time, new tools are consistently added to the environment without ever retiring existing tools. This results in significant expenses for licenses, maintenance, and staff time. Ironically, diverse tools can result in overlapping capabilities while at the same time leaving data silos and gaps in certain functionality, as the various tools rarely offer entirely complementary capabilities. These gaps, combined with lingering best of breed preferences sometimes mean that the way forward is unclear.

Organizations face the challenge of picking and choosing the right tools to meet current needs while discontinuing the use of solutions that become unnecessary, a process known as consolidation. Efforts to consolidate observability and monitoring tools are common in most large enterprises, with 80% of observability practitioners reporting that their organizations are working to reduce their toolsets.



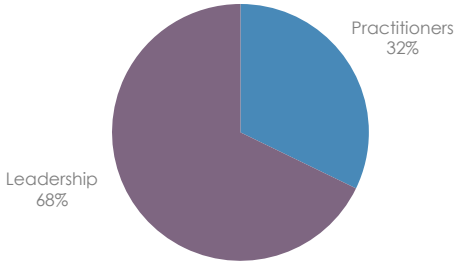
Initiatives to streamline toolsets are driven by a range of factors. Three-quarters (74%) of teams consolidating their observability tools are doing so to help identify issues faster, while almost the same number (72%) are motivated by cost reduction. Tool consolidation is also done to improve team collaboration (65%) and minimize downtime (58%). "Other" reasons given for consolidation centered around the impact on the day-to-day lives of practitioners, including easier onboarding and training for new employees, reduced duplicate efforts, and lower workloads.



Consolidation is a top-down initiative

An effective tool consolidation effort can improve practitioners' lives. There are fewer tools to learn, the work required to maintain systems is streamlined, and troubleshooting becomes much more efficient. However, it is not the frontline stakeholders who are driving consolidation efforts. Practitioners typically report that their leadership (68%) is most interested in consolidating tools.

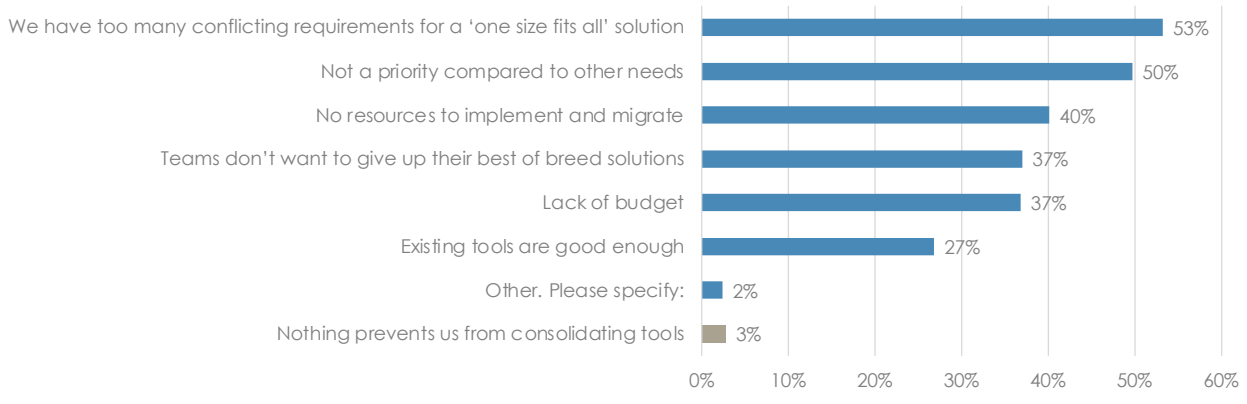
What level in your organization is MOST interested in consolidating observability and monitoring tools?
Choose the one answer that most closely applies.



Consolidation is hard

While the benefits of consolidation are easy to articulate, actually removing tools from an enterprise environment can be challenging. Most (97%) companies with a consolidation initiative face barriers. Conflicting requirements top the list of challenges (53%), followed by other issues taking priority (50%). Other barriers cited included a lack of resources (40%), teams being unwilling to give up their best-of-breed solutions (37%), and having a good enough solution with existing tools (27%). Ironically, even though cost reduction is typically a primary benefit of tool consolidation, the lack of budget to implement the consolidation remains a barrier for many (37%). "Other" issues with consolidation cited included specific technical factors such as the existing integration between tools (i.e., tools that feed dashboards) and the need to continue to support legacy environments. There are also people issues, including pushback against learning new tools, fear of change, and disjointed teams unwilling to come together to make hard decisions.

What prevents your team from consolidating observability and monitoring tools?
Choose all that apply.



n = 80%, are trying to consolidate tools

Most companies (86%) are dealing with these conflicting pressures. While leadership strongly desires to consolidate tools, it is tough to take action since each piece of the toolset was acquired for a specific need.

Detailed Findings: Organizations with mature observability practices report better results

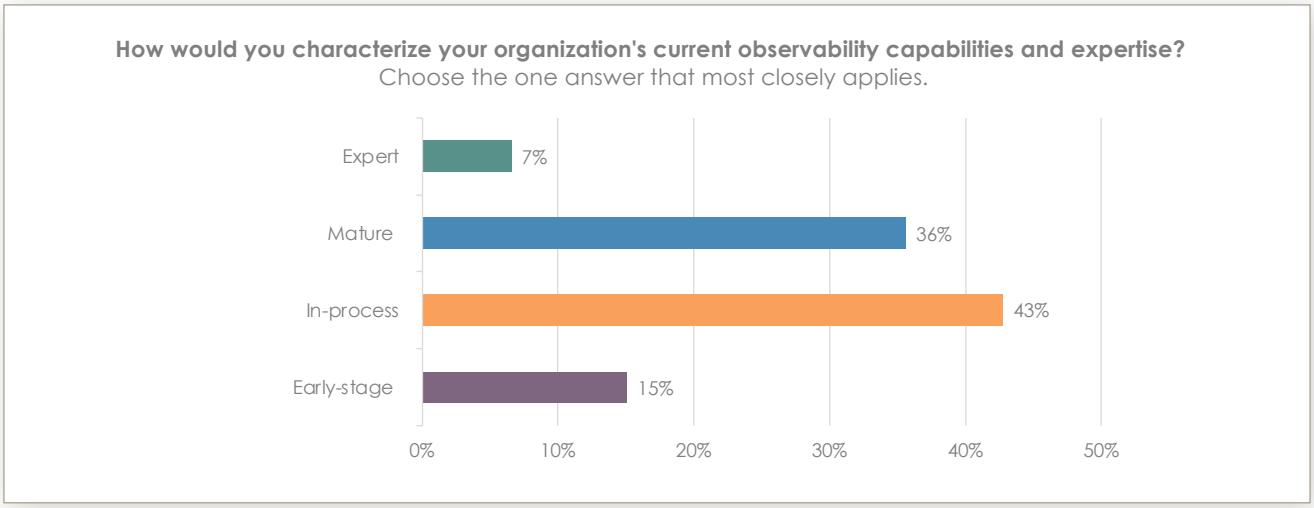
Observability is a work in process

Observability adoption is not merely about purchasing a new tool. While the toolset's capabilities are important, it is also critical to consider processes and culture that need to be transformed for observability to be successful. Existing monitoring investments must be incorporated into new observability strategies to ensure operational excellence and system reliability.

To explore the current maturity of observability in large enterprises, we defined the following stages of a typical adoption journey and asked participants to choose the description that most closely represented their organization's observability capabilities and expertise.

- **Early-stage**—Our primary source of intelligence is log data, which we are enriching and transforming to gain better insights. We want to expand visibility across additional signal types: metrics, tracing, and profiling.
- **In-process**—We are working on more effectively utilizing modern technologies for efficiency, scale, visibility, and root cause analysis and have fairly good visibility across our environment.
- **Mature**—We are leveraging AIOps and already have or are considering establishing a cross-functional center of excellence.
- **Expert**—We have implemented a strong observability practice based on comprehensive data collection and a modern artificial intelligence-based technology ecosystem that supports our business.

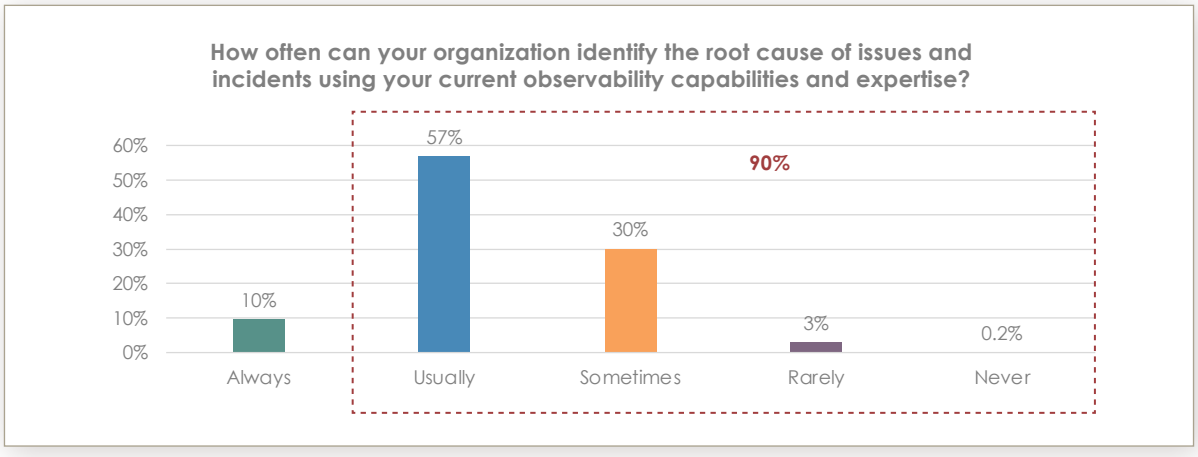
The data clearly demonstrates that significant progress has been made on observability, with only 15% reporting that they are still in the early adoption stage. However, there is still considerable work to be done. Only 7% of observability practitioners characterize their practice as "expert," while just over a third (36%) characterized their teams as matching the given definition of "mature." Most companies are in the middle of the adoption curve, portraying themselves as "in-process" (43%).



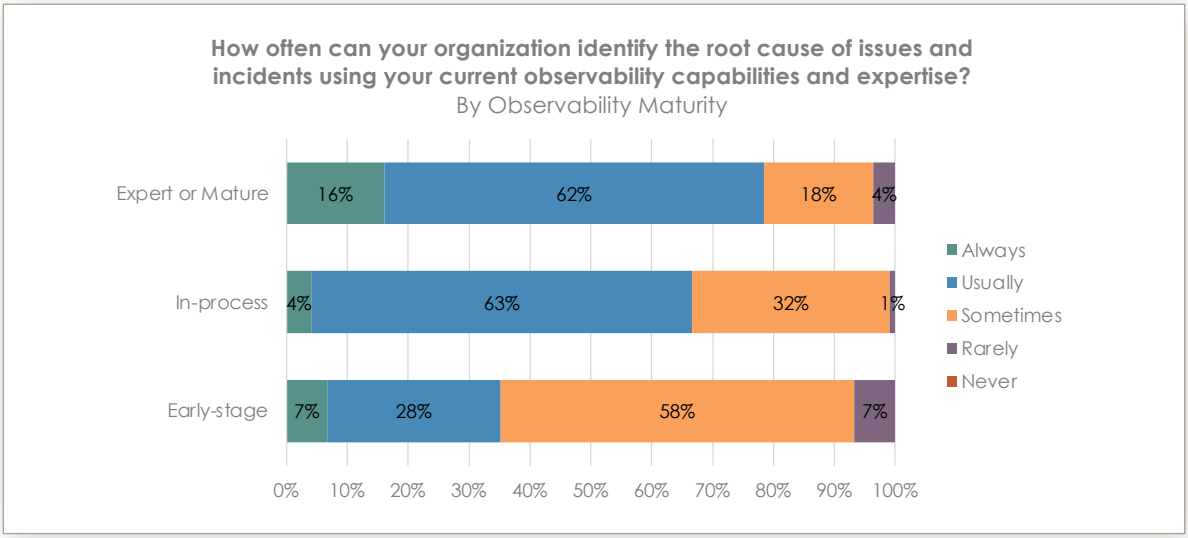
Observability maturity correlates strongly to better business outcomes

When we drill into the data, we see that more mature observability practices report better outcomes across various factors. While we want to be cautious about assuming that correlation is causation, the consistent and clear connection between maturity and business results across multiple outcomes strongly indicates that investments in observability practices are paying off handsomely.

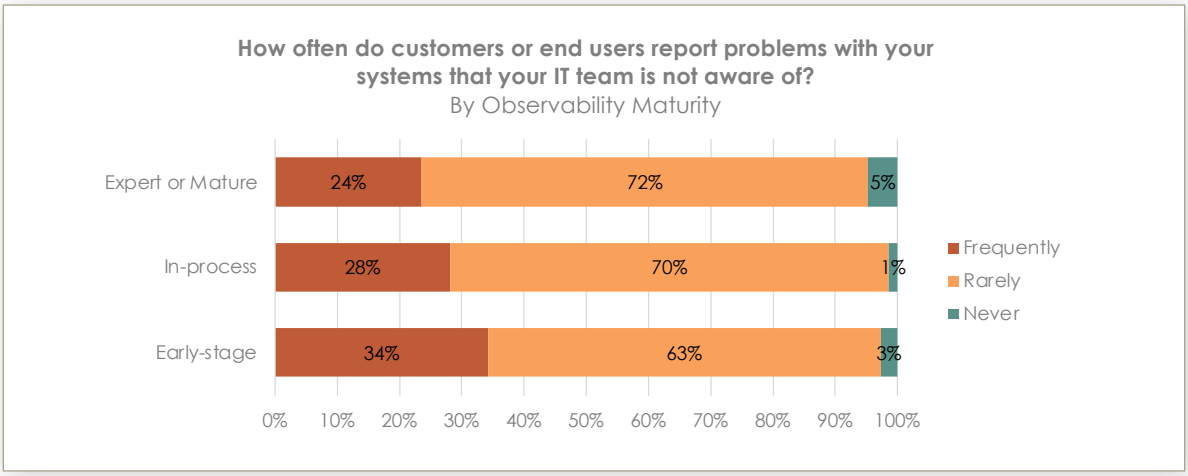
Identifying the root cause of an issue or incident is key to fixing a current problem and putting steps in place to prevent future repetition. However, IT teams continue to struggle with this, with 90% reporting that they can't always identify the source of the problems they are dealing with. This number includes a third (33%) who say identifying the root cause isn't the typical outcome of a problem-resolution process.



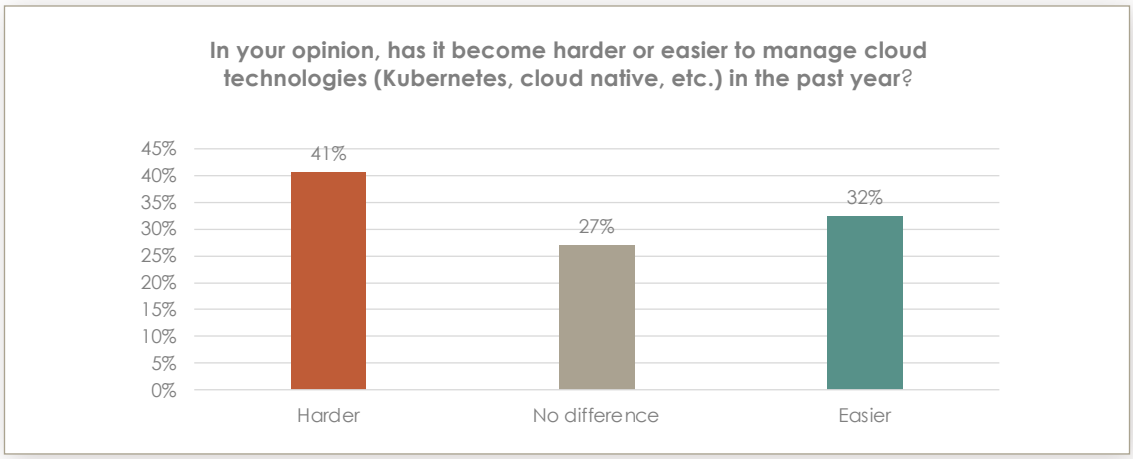
Identifying root causes is much stronger in organizations with more mature observability practices. Among early-stage companies, only 35% can usually or always identify the root cause. That number more than doubles to 78% among companies with expert or mature observability practices.



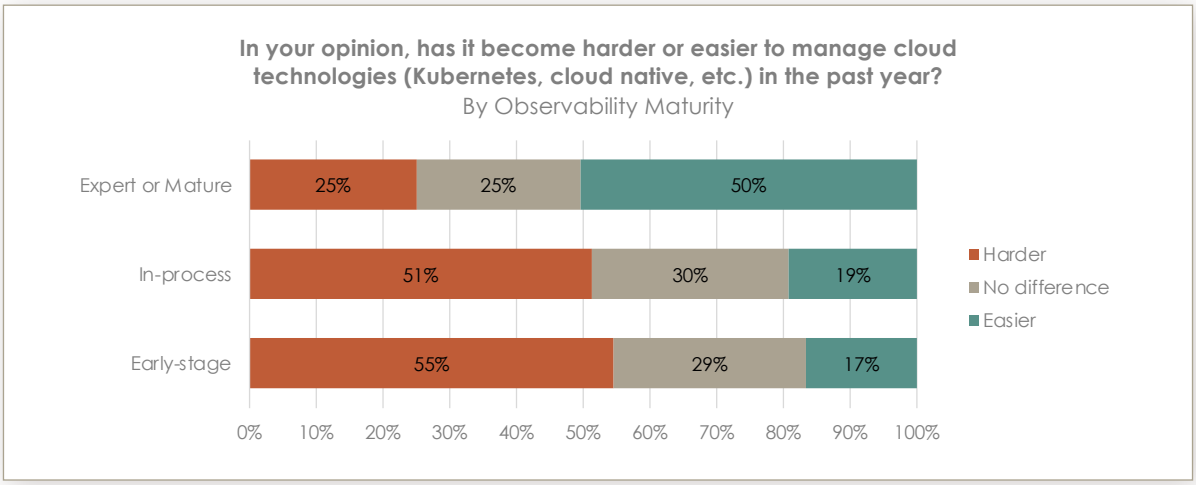
We see a similar pattern when we consider how often customers or end users report problems before IT is aware of an issue. This pattern is never ideal, and IT teams strive to be the first to know about user-impacting issues. Even expert and mature companies deal with this problem, with a quarter (24%) reporting that they frequently hear about problems from their users first, but this pattern is worse among early-stage companies (34%).



An interesting outcome among mature observability practices is their ability to easily absorb and respond to changing technology. We were curious to see how practitioners responded to cloud technology trends, so we asked them a simple question: Are things getting harder or easier for you? At first glance, the data was inconclusive. While many (41%) said things were getting harder, many (32%) felt things were getting easier.

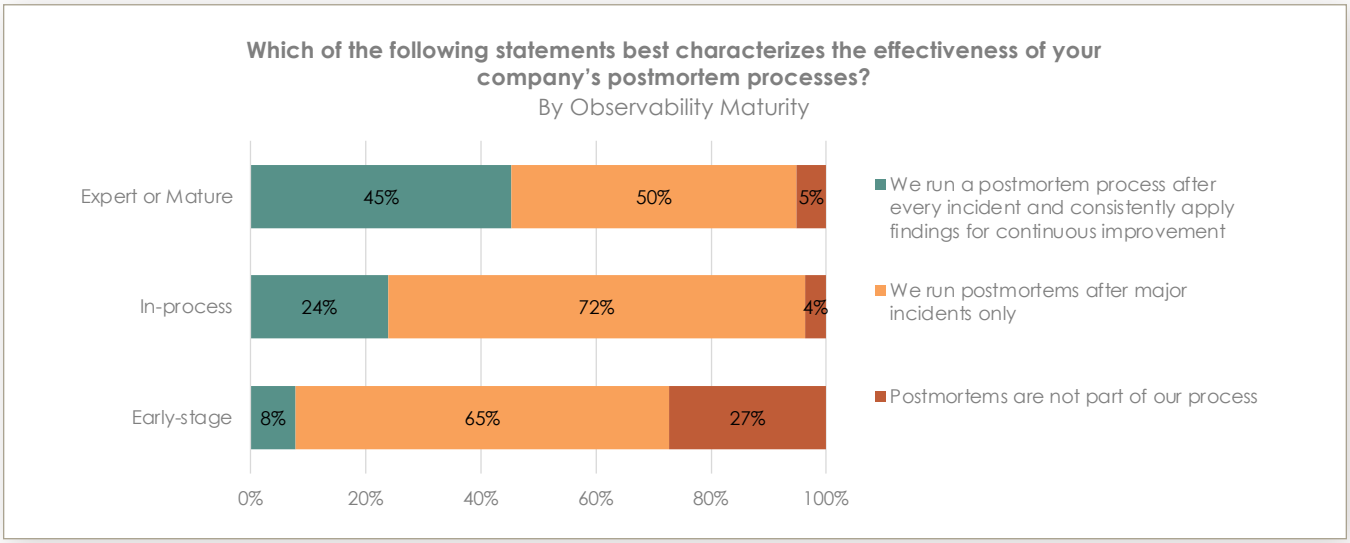


However, things became more apparent when we drilled down into observability maturity. Companies with expert or mature observability were far more likely to report that cloud technologies like cloud and Kubernetes had actually become easier to manage in the past year (50%) compared to either in-process (19%) or early-stage (17%) companies. Early-stage companies were more than twice as likely to feel that things had gotten harder (55%) than their counterparts with expert or mature practices (25%). Less sophisticated observability teams should consider the steps they need to take to ensure that they do not fall behind as cloud technologies continue to evolve.

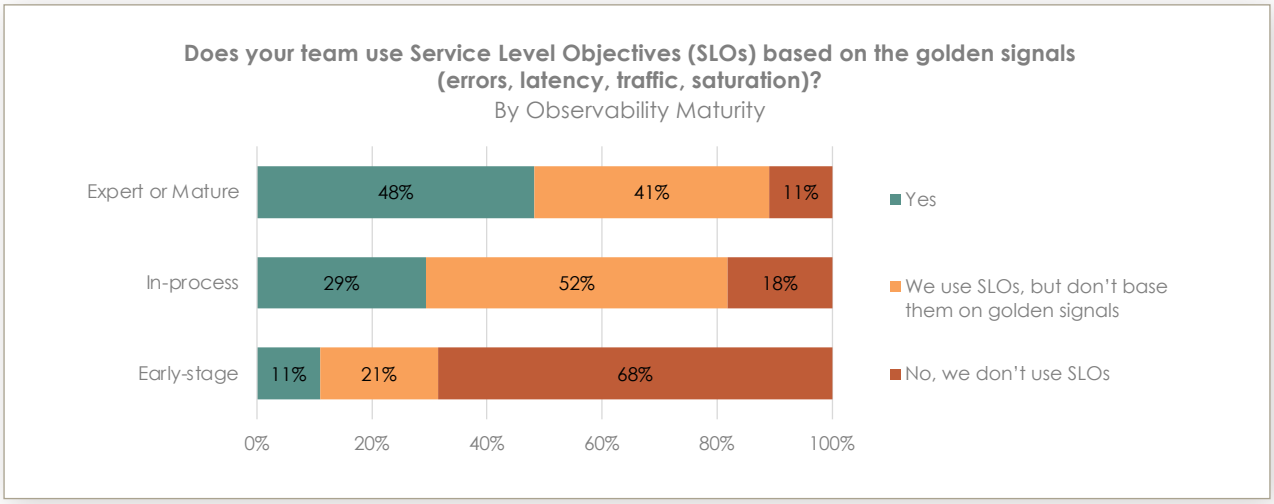


Mature observability practices embrace postmortems and service level objectives

Companies with mature observability practices have adopted a much higher level of postmortem processes and service level objectives (SLOs) in their environments. Only 8% of early-stage companies regularly run postmortems after incidents to improve continually. This number leaps to almost half (45%) among expert and mature companies, a dramatic difference in employing critical observability best practices for preventing future issues.



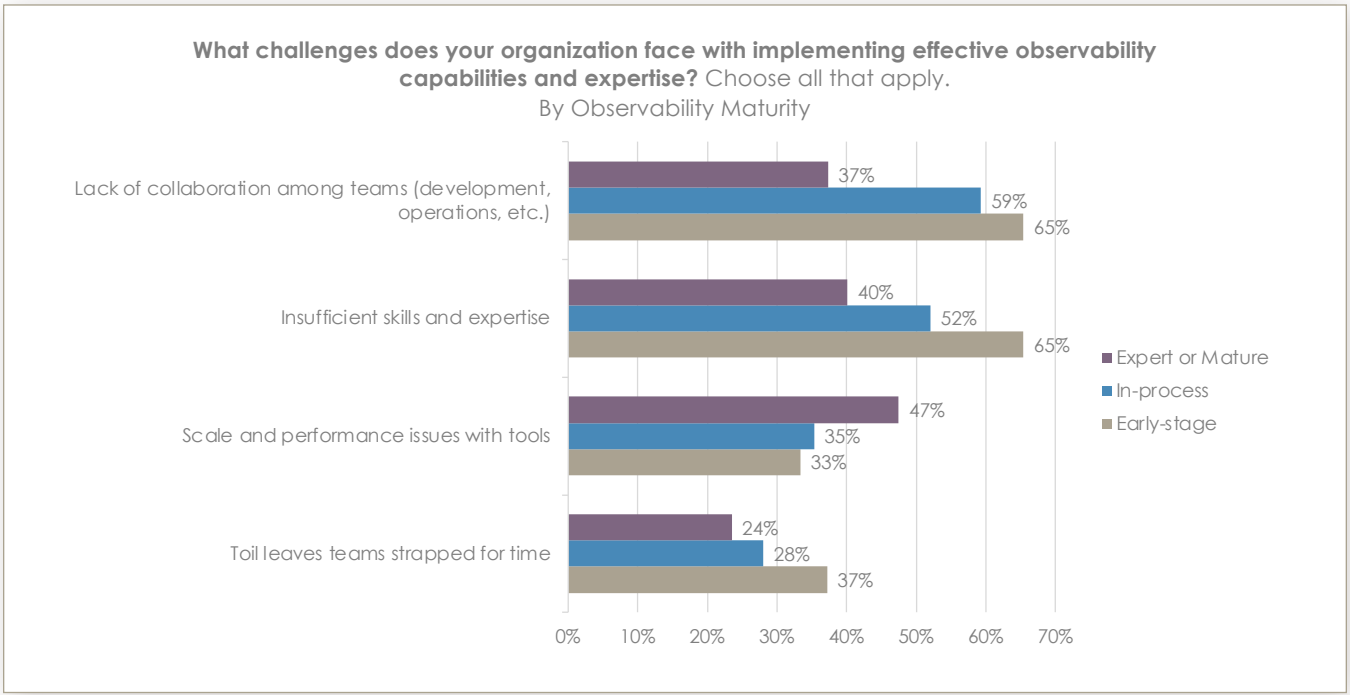
We see a similar pattern with the use of SLOs. Most early-stage companies do not use SLOs at all (68%). Expert and mature companies not only use SLOs (89%) but have also often adopted the rigor of basing their SLOs on golden signals (48%).



Teams face different challenges based on their level of maturity

Maturity only solves some problems observability practitioners face, and issues evolve. Specific problems are more common at different points in the observability adoption journey.

If we analyze the challenges reported by observability practitioners in more detail, we see that some issues are most common among early-stage companies. These issues include a lack of collaboration, insufficient skills, and a level of toil. The frequency of these problems consistently drops among companies with more experience and maturity. On the flip side, issues with tool scale and performance become more pronounced among expert and mature companies.

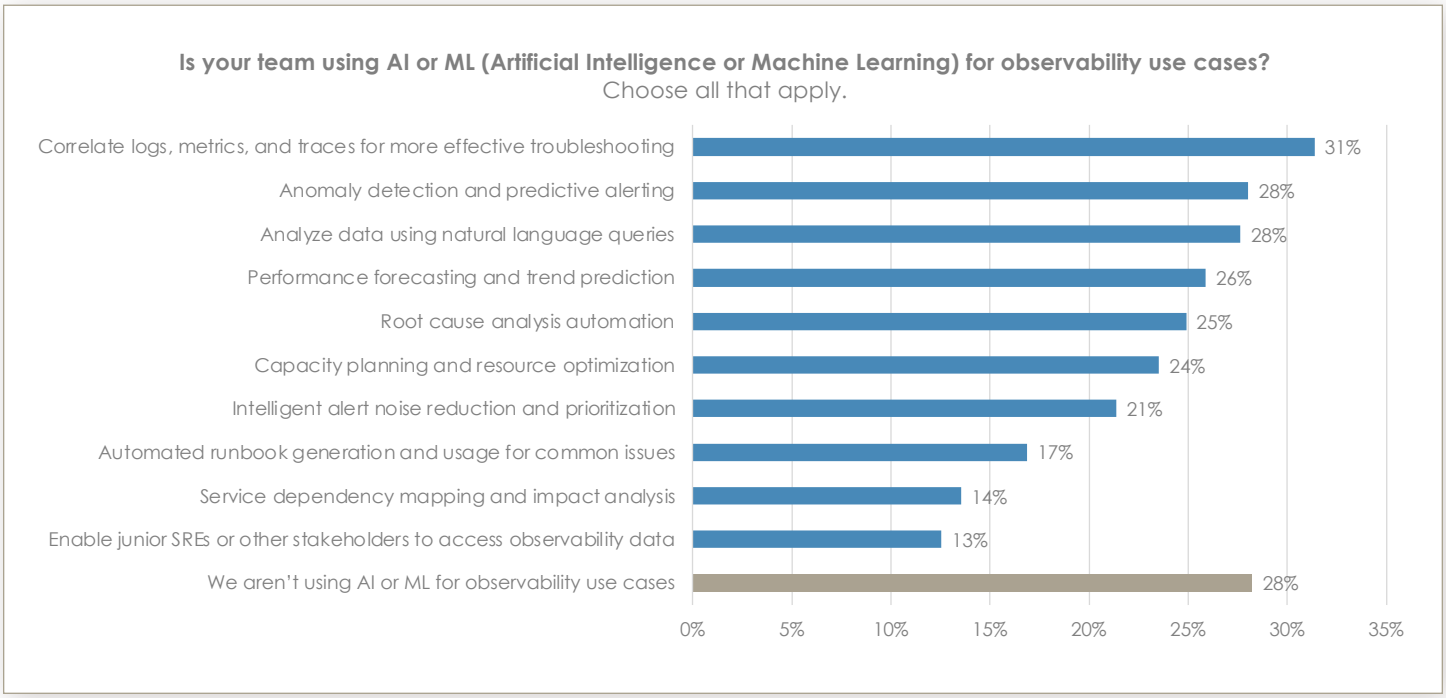


Detailed Findings: Artificial Intelligence and Machine Learning are facts of life for observability but will take time to achieve full value

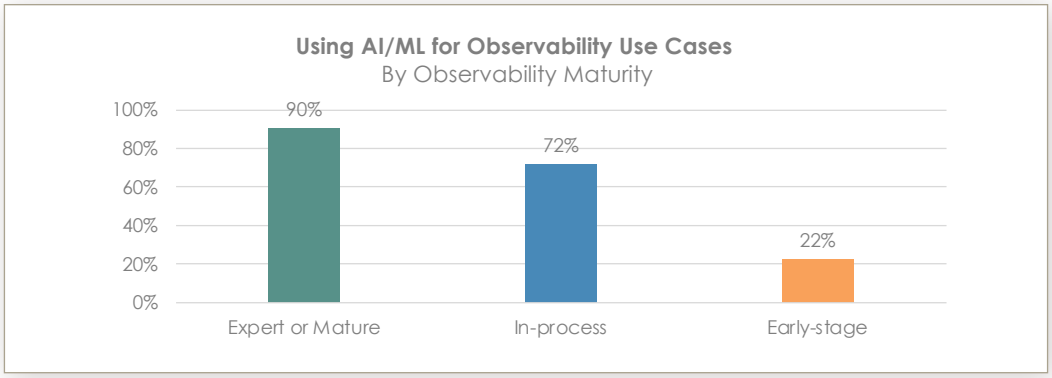
AI/ML is the norm for observability

Observability, which has been purpose-built to deal with high volumes of data and automation, would appear to be a natural fit for Artificial Intelligence (AI) and Machine Learning (ML) capabilities. Real-world practitioners confirm this expectation, with 72% reporting that their teams already use AI or ML for observability use cases.

The data indicates that observability teams are still learning the best place for AI and ML in their practice, as no single use case has emerged as a top application. Using AI/ML to correlate logs, metrics, and traces is the more frequent use case (31%), followed closely by anomaly detection and natural language queries to analyze data (both 28%).

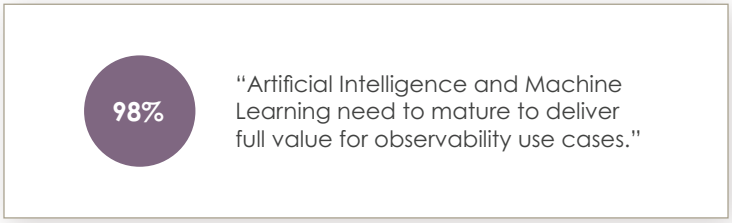


Artificial Intelligence and Machine Learning adoption for observability follows the overall observability adoption curve. AI/ML use is ubiquitous among companies with expert or mature observability practice (90%) and rare among early-stage companies (22%).

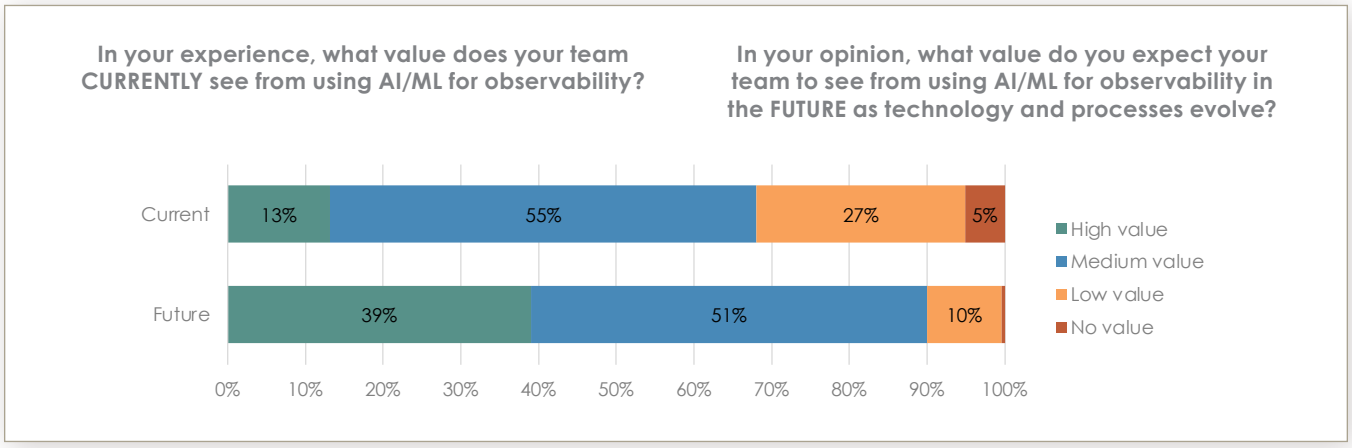


Practitioners believe AI/ML will deliver more value in the future

The current use of Artificial Intelligence and Machine Learning is just the tip of the iceberg. Practitioners almost completely agree (98%) that AI and ML must mature to deliver full value for observability use cases.

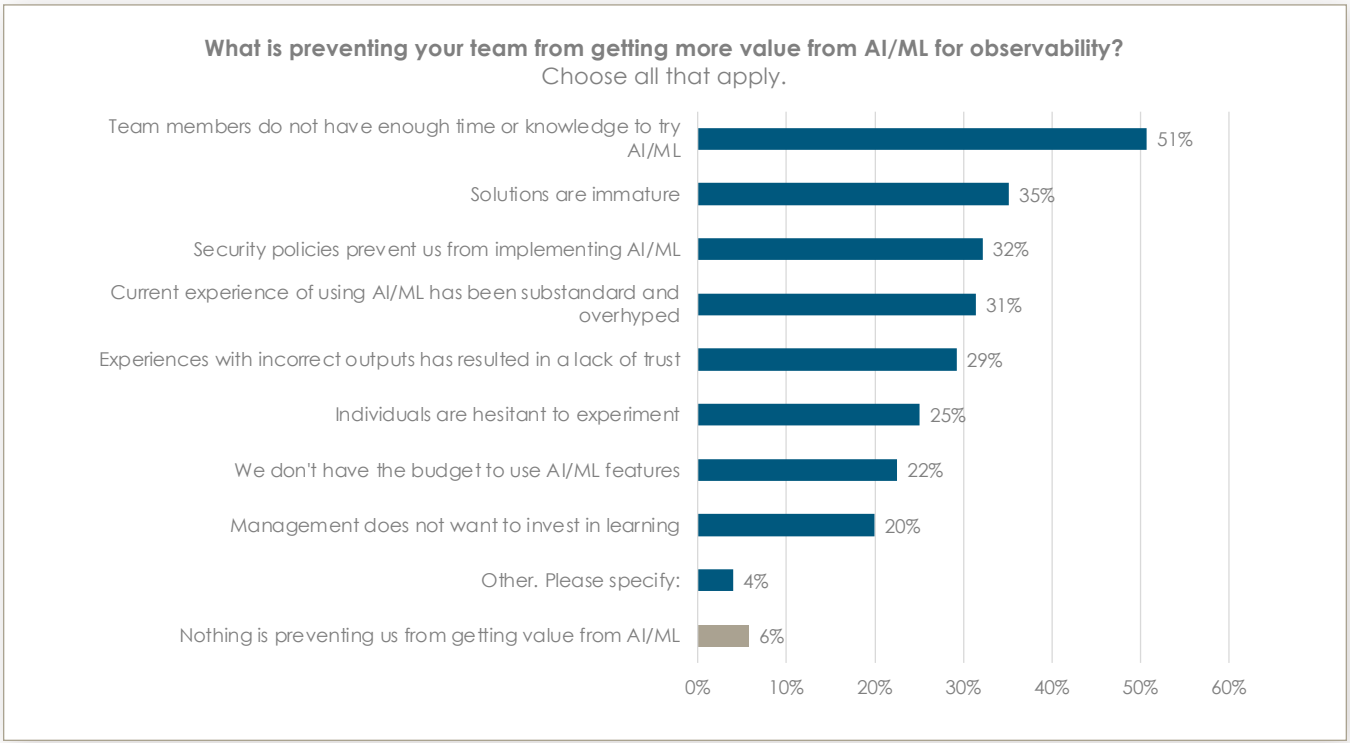


When asked to compare current and future values of AI/ML for observability, there is a clear shift in the expectations of future value compared to what is being achieved currently. Only 13% feel they are receiving high value from AI/ML today, while that number triples to 39% when you ask about expectations for future value.



Lack of time and knowledge is a crucial barrier to the full value of AI/ML

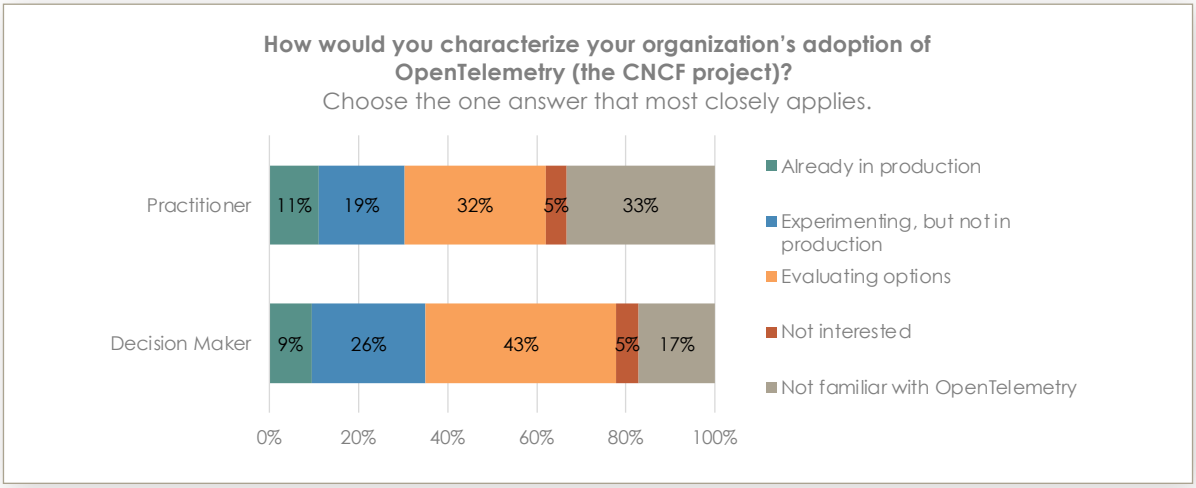
Most observability practitioners (94%) report barriers to using AI/ML. There is a clear top issue on that list: the lack of time and knowledge to gain expertise with the technology (51%). While there are a range of other concerns, the lack of time to learn is having the most impact on realizing the potential of this groundbreaking technology. Leaders who want to gain the full benefit from AI/ML need to ensure their teams have time to experiment and gain urgently needed skills. In contrast, practitioners interested in moving forward in their careers have a huge opportunity to contribute as skills are currently lacking.



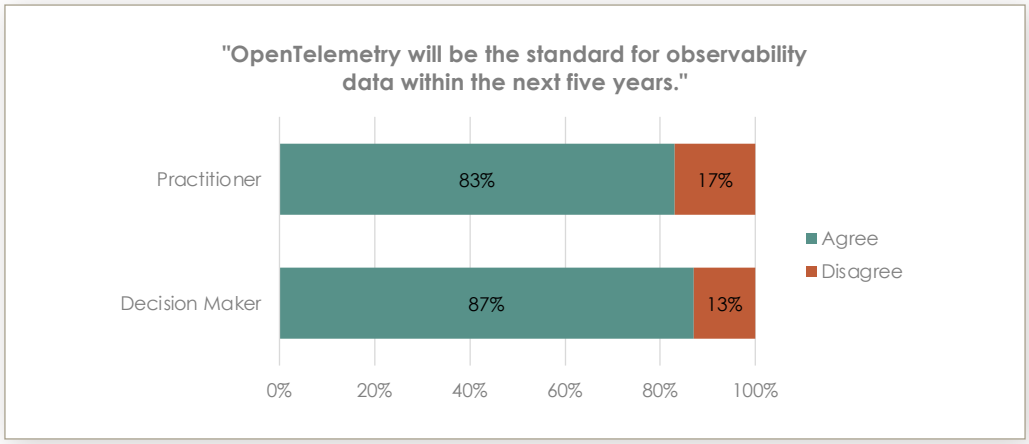
Detailed Findings: Practitioners look to leadership for championing OpenTelemetry (OTel) adoption

Practitioners are less familiar with OpenTelemetry than their leadership

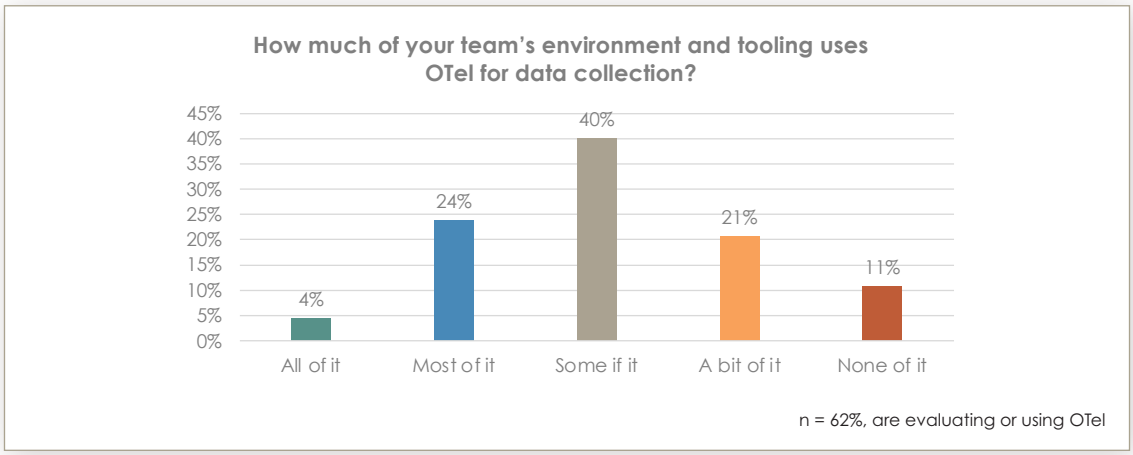
We asked observability decision makers and practitioners the same question about their organization's adoption of OpenTelemetry, the CNCF project affectionately known as OTel. Interestingly, practitioners were almost twice as likely to say they weren't familiar with OTel (33%) as decision makers (17%). Since both roles are from companies of similar sizes, industries, and regions, it is reasonable to conclude that OTel adoption is not being driven from the bottom up, but rather, management is very involved in its adoption.



We found a similar pattern when we asked practitioners and decision makers about the future of OpenTelemetry. Decision makers were more likely than practitioners to see OTel as becoming a standard within the next five years (87% vs. 83%).



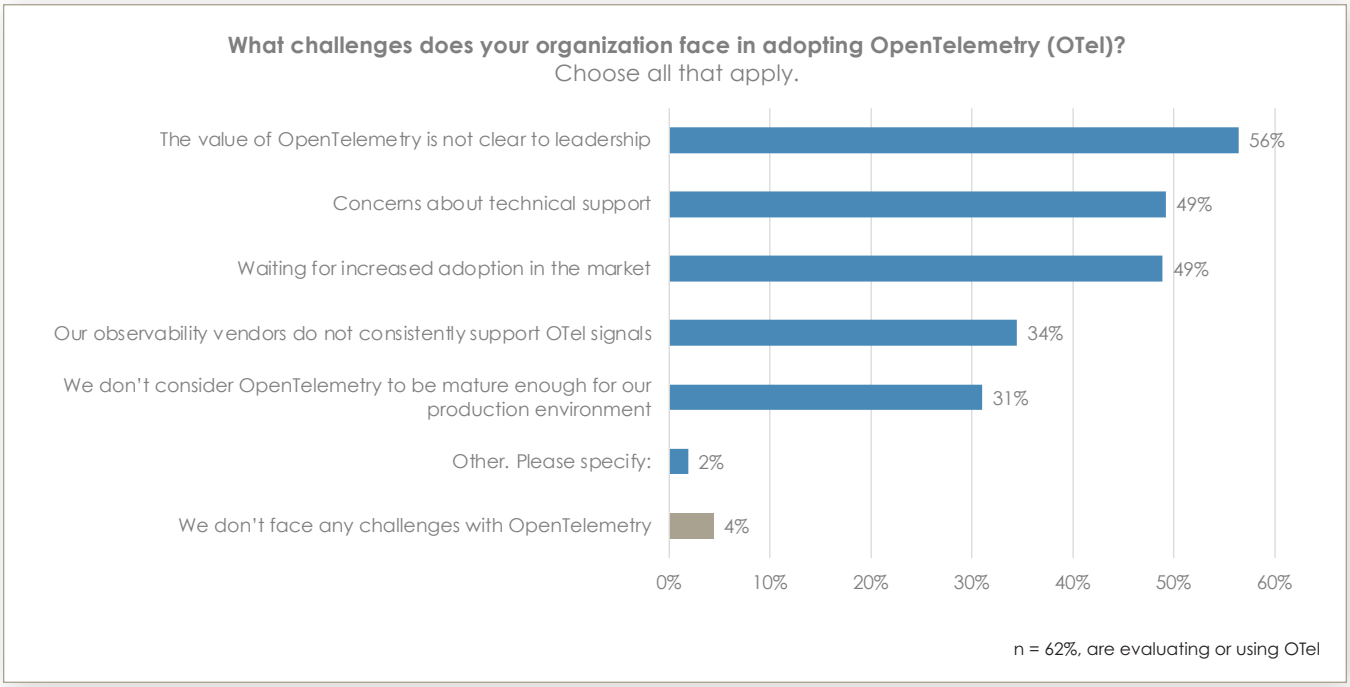
It should be emphasized that OTel adoption is still in the early stages. Even among the 62% of observability practitioners who report that their company uses OTel—in production, experimenting, or evaluation—only a few are already using OTel for data collection across all (4%) or most (24%) of their environments and tooling.



Leadership needs to provide better direction to practitioners

OTel adoption can be challenging. The vast majority of practitioners whose company has adopted or is evaluating OTel report that they have struggles (96%). Challenges include concerns about support (49%), feeling a need to wait for increased adoption (49%), lack of vendor support (34%), and insufficient OTel maturity (31%). Several participants took the time to write in "other" challenges, including issues integrating OTel with other tools, managing change management, and addressing security concerns.

However, by far, the top concern reported by practitioners was that the value of OpenTelemetry is not clear to their leadership (56%). This concern is particularly worrisome when we consider that management most often drives OTel adoption. It is also alarming when we consider that when we asked decision makers the same question about OTel challenges, they reported a much lower level of concern (49%) about leadership not understanding the value of OTel compared to practitioners (56%). These data points taken together indicate that while leaders are driving adoption, they aren't giving their teams the clarity they need to be effective with the day-to-day implementation.

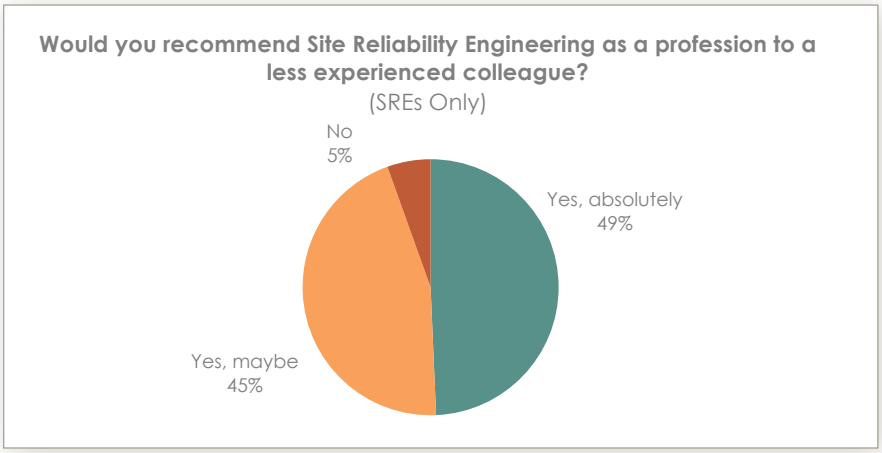


Detailed Findings: Site Reliability Engineers (SREs) have a positive outlook on their role

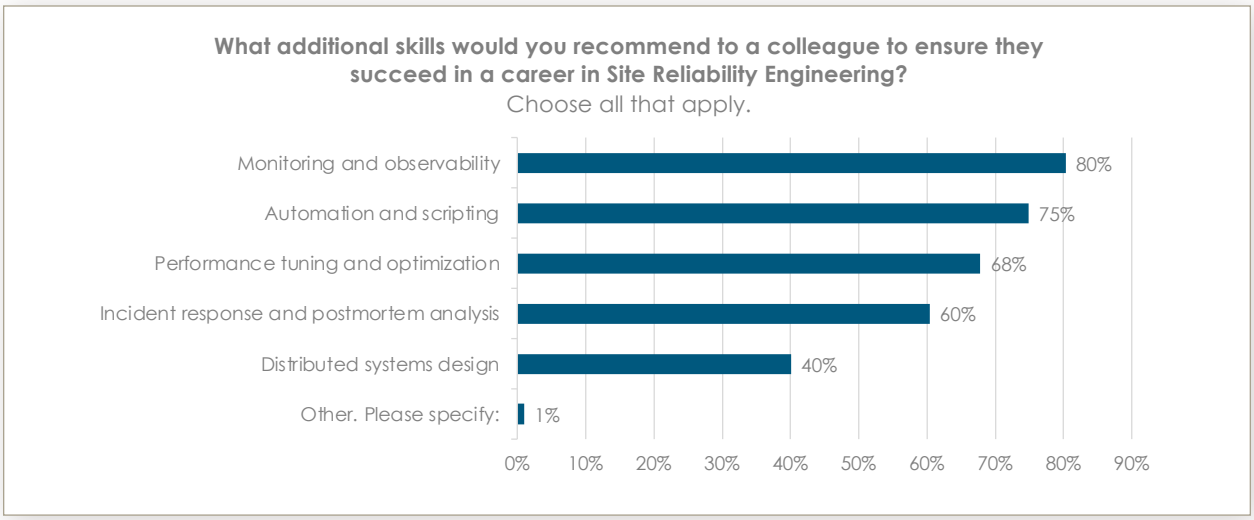
Site Reliability Engineers recommend the job

Site Reliability Engineering (SRE) was first introduced at Google about two decades ago. The approach merged traditional operations roles with software engineering, creating a new discipline designed to enhance the reliability, scalability, and efficiency of large-scale systems. While the practice has been around for years, it is relatively recent that the SRE role has become standard in large organizations. This research aimed to investigate what today's SREs think about their jobs.

The answer is very positive—SREs like the work. The vast majority (95%) of the SREs in our survey said they would recommend the professional to a colleague, with almost half (49%) giving an unqualified "absolutely" response to our question. In addition, most (90%) SREs agree that the job is interesting and includes opportunities to learn business and technology.



The range of abilities needed to succeed as an SRE was emphasized again when we asked about skills necessary for the career. Four in five (80%) cited monitoring and observability as a critical skill for the role. In comparison, well over half emphasized the need for automation and scripting expertise (75%), performance tuning and optimization (68%), and incident response and postmortem analysis (60%). The SREs in our study typically gave answers similar to those of their peers in DevOps, Engineering, and Infrastructure roles, with one exception: distributed system design. While only 40% overall recommended this skill, individuals in an SRE role were far more likely (62%) to cite distributed system design as recommended for a successful career.



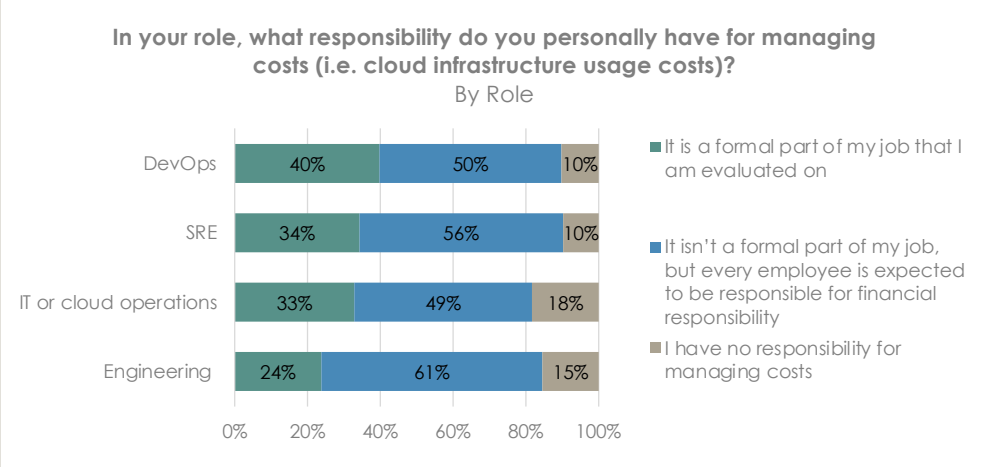
Several participants took the time to write in "other" skills, frequently mentioning soft skills such as communication and collaboration, emphasizing that since SREs work closely with various teams, it is critical to have good teamwork capabilities. Some SREs gave more humorous, sardonic advice such as "spend years learning how every piece of the stack works because putting it all together across domain knowledge is the real value add" and "learn Zen meditation."

SREs are expected to manage costs

In addition to hard technology skills and softer teamwork skills, business skills also matter to the successful SRE. Most (85%) observability practitioners say their role includes responsibility for cost management, such as examining cloud infrastructure usage costs to identify areas of savings. While just over half (51%) characterized this as a general responsibility, almost a third (31%) reported that cost management is a formal part of the job that they are evaluated on.

Among practitioners, DevOps and SREs were the most likely roles to report responsibility for cost management, while 88% of SREs agree that cost controls are an important part of their job.

We also saw practitioners highlight this responsibility in our first question about challenges, with several participants mentioning that the cost of observability was an issue facing their teams.

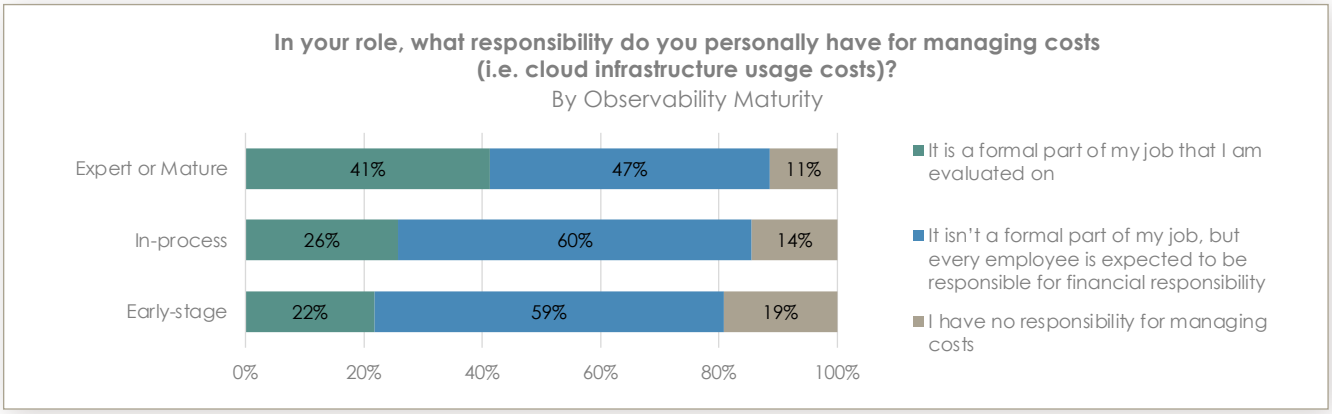


88%

of SREs agree:

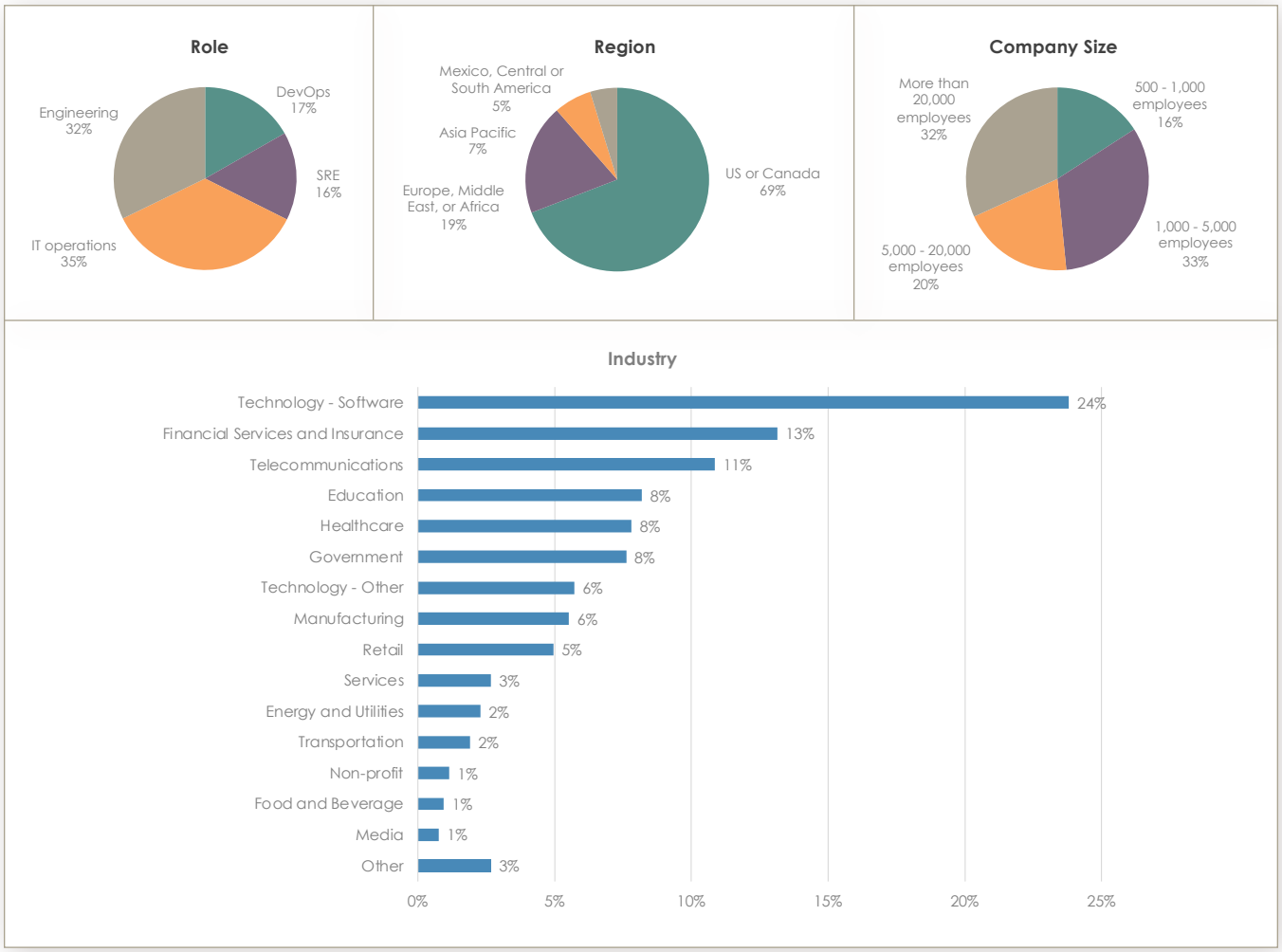
"Cost control is an important part of my job."

Cost management responsibility was another area where we saw a clear difference in attitudes and approaches with maturing observability practices. Among companies that reported "Expert" or "Mature" observability, 41% of practitioners said cost management was a formal part of their jobs. This number is nearly twice as many who reported the same at companies in "Early-stage" maturity (22%). Practitioners who have not yet taken responsibility for cost management may want to consider investing in AI/ML skills, as this requirement will be coming in the future as their organization matures.



Survey Methodology and Participant Demographics

A total of 525 qualified individuals completed an online survey in the fall of 2024. All participants were responsible for the hands-on use of observability solutions. Each worked in a DevOps, SRE, IT Operations, or Engineering role at a company with more than 500 employees. Participants represented a range of roles, regions, company sizes, and industries. Certain questions were repeated from a similar survey conducted with observability decision makers earlier in 2024 to enable comparative analysis. Options in graphs may not add up to exactly 100% because of rounding.



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