

ESG Research Insights Paper

Analyzing the Outcomes Organizations Experience when Migrating Workloads to Cloud Infrastructure

Using a Data-driven Model to Show How Best Practices Optimize Cloud Results

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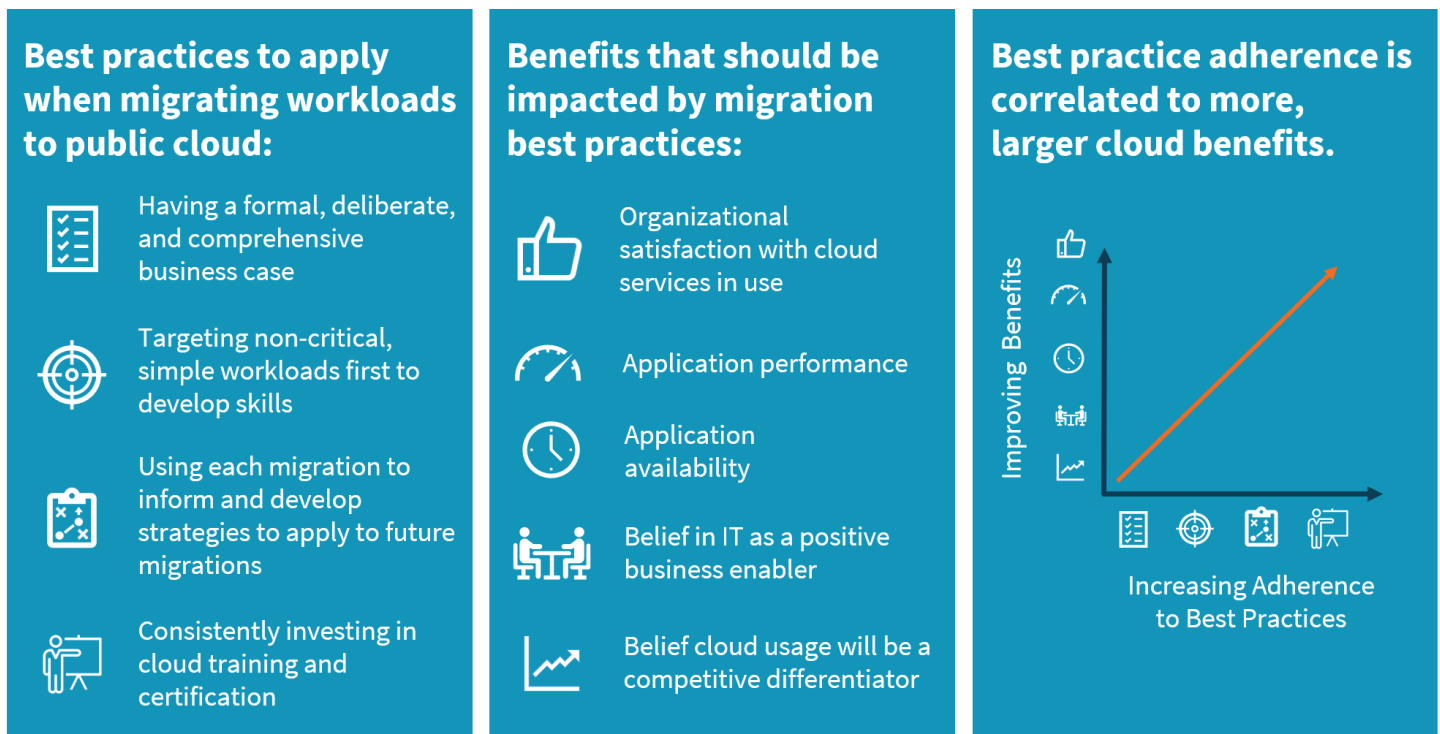
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Executive Summary

Cloud infrastructure utilization has passed the tipping point. ESG research shows that 58% of midmarket and enterprise-sized organizations rely on infrastructure-as-a-service today, 3.4x the incidence observed in 2015.¹ However, many organizations still operate large archaic IT environments where provisioning takes weeks, instead of minutes. These organizations need to modernize and migrate their workloads. If not properly managed, the process of migrating a large legacy application portfolio can cause problems. Moreover, organizations may experience a choice-overload when evaluating methodologies and processes to migrate and modernize their applications. However, done right, organizations can expect a multitude of benefits from moving their applications to cloud infrastructure: from improved uptime, to increased agility, to cost savings.

This report shows that how you migrate matters. Organizations that apply intelligent best practices to their cloud migrations achieve more success than their counterparts that do not. This point is validated by ESG’s research capturing the perspectives of 364 strategic IT decision makers. Figure 1 illustrates the core hypothesis tested by the research.

Figure 1. Hypothesized Link Between Cloud Migration Best Practices and Cloud-delivered Benefits



Source: Enterprise Strategy Group

The remainder of this report shows how Leaders outperform their peers, and the segmentation criteria ESG used to categorize organizations either as Leaders, Followers, or Laggards. Surveyed Leaders were:

- 2.6x more likely than Laggards to report that cloud migrations to date have definitively met expectations.
- 3.7x more likely than Laggards to be completely satisfied with cloud services in use.
- 2.5x more likely than Laggards to report that typical savings for migrated workloads exceeded 15%.
- 2.9x more likely than Laggards to report that they typically completely eliminated downtime for migrated workloads.

¹ Source: ESG Master Survey Results, [2019 Technology Spending Intentions Survey](#), March 2019.

- 2.8x more likely than Laggards to report that their use of the cloud has significantly improved their business's market position for the coming 3-5 years.
- 3.5x more likely than Laggards to report that their use of the cloud has significantly improved their leadership's view of the IT organization.

Defining Best Practices for Cloud Workload Migration

There are many different ways to migrate a workload to public cloud infrastructure. You can rehost your workload, essentially moving the workload as is, commonly referred to as "lift and shift." You can replatform your workload, which involves making some lightweight modifications to the workload to optimize how it will run in the cloud, often described as "lift, tinker, and shift." Or you can make more wholesale workload changes: refactoring a workload and completely rewriting it for the cloud, or retiring your workload and repurchasing a cloud-native alternative. Each of these methodologies has costs and benefits, and making the right choice depends on the workload you are moving.

But how can organizations make the right decisions about what workloads to migrate? Where should they get started? What best practices should they follow? And is there any proof to support that best practice adherence leads organizations to higher levels of cloud success? These are exactly the questions ESG set out to answer in this research study. To qualify to participate, respondents were required to be employed at an organization that had migrated at least one production workload to public cloud infrastructure. Moreover, these organizations all had annual revenues of \$250M+ per year. Finally, respondents must have been cloud practitioners, personally involved in the planning, implementation, and/or operations of infrastructure-as-a-service at their organizations. Please see Appendix I – Research Methodology and Respondent Demographics at the conclusion of this report for more information.

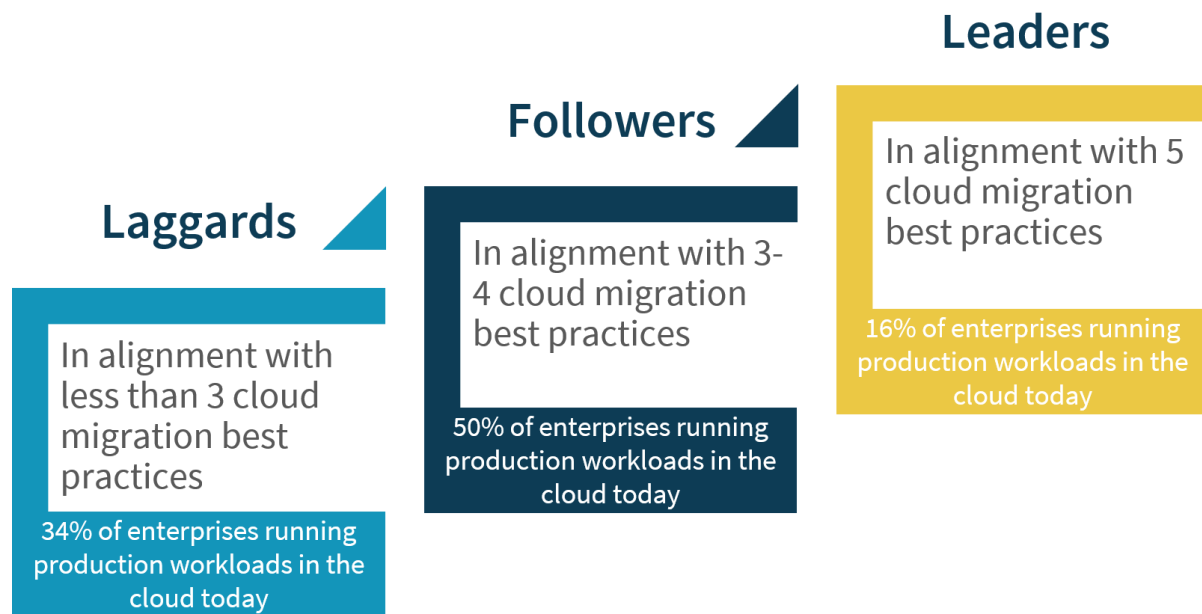
ESG used the survey data to establish a **Cloud Migration Maturity** framework. The framework measures how many of the following five best practices organizations closely follow when migrating workloads to the cloud:

1. **Develop a sound financial business case**—ESG tested organizations to see if, in the course of their migrations, they are conducting a sophisticated cost-benefit analysis that includes *both* quantifying the cost of running the workload(s) in question on-premises as well as the expected cost to run that workload(s) on cloud infrastructure.
2. **Analyze the environment and workload requirements**—In addition to making sure a migration makes financial sense, organizations should determine if the functionality requirements of the workload will be satisfactorily met by cloud infrastructure. Organizations must also understand interconnections between cloud-based and on-premises workloads to ensure that the migration does not impede user experience of applications in any way.
3. **Walk before you run**—The promise of the cloud makes it tempting to move many workloads to the cloud in one fell swoop, or to start with the highest value, most mission-critical workloads first. In reality, organizations should pace themselves, taking a methodical approach to moving their IT stack to the cloud. Starting with simple, non-mission-critical workloads will allow the IT organization to develop its cloud skills in a low-stakes atmosphere.
4. **Use each migration to enhance your cloud playbook**—Each cloud migration comes with lessons to be learned. Organizations that don't retain and apply these lessons to subsequent migrations risk losing both efficiency and efficacy from future migrations.
5. **Skill up your team to fill gaps**—Organizations should consistently invest in their cloud practitioners to give them the tools to move workloads more effectively. Training and certifications help staff better understand cloud services available for use and increase their ability to fit the right workload to the right cloud service. They also provide a

sense of career progression to the teams involved there by boosting the morale and making them internal champions of the cloud.

ESG then grouped organizations aligned with all five best practices into the "Leaders" segment, those that follow three or four best practices were placed in the "Followers" category, and finally those that adhere to less than three best practices were categorized as "Laggards." By comparing cloud outcomes achieved across these three groups, the framework allowed ESG to assess how important Cloud Migration Maturity is to overall cloud success. Appendix II – Criteria for Evaluating Organizations' Cloud Migration Maturity at the conclusion of this report for more information about the specific questions asked.

Figure 2. Benchmarking Cloud Migration Maturity



Source: Enterprise Strategy Group

The Current State of Cloud Migration Maturity

ESG's analysis found that very few organizations are in alignment with enough best practices to be considered Leaders. According to ESG's maturity framework, just 16% of organizations represented in the research achieve this designation. Half of the organizations represented fall into the Follower category. And about one-third (34%) were evaluated as Laggards (see Figure 2). The fact that more than twice as many organizations were scored as Laggards as were scored as Leaders shows how much room for improvement organizations have today in refining their cloud migration practices.

The Importance of Cloud Migration Maturity

Why does Cloud Migration Maturity matter? While all organizations in the survey reported a high degree of cloud success, ESG found that organizations earning a Leader designation reported the best results across all key performance indicators (KPIs) and characteristics indexed in the survey, including: cloud satisfaction, ability to complete cloud projects, and business benefits associated with cloud utilization like reduced costs, improved competitiveness, and offering better customer support.

Moreover, the upward trend observed across maturity levels was extremely consistent across the broad spectrum of KPIs included in the research. While the differences noted in KPIs are the greatest when comparing Laggard and Leader organizations, ESG observed that KPIs incrementally improved across each level in the spectrum.

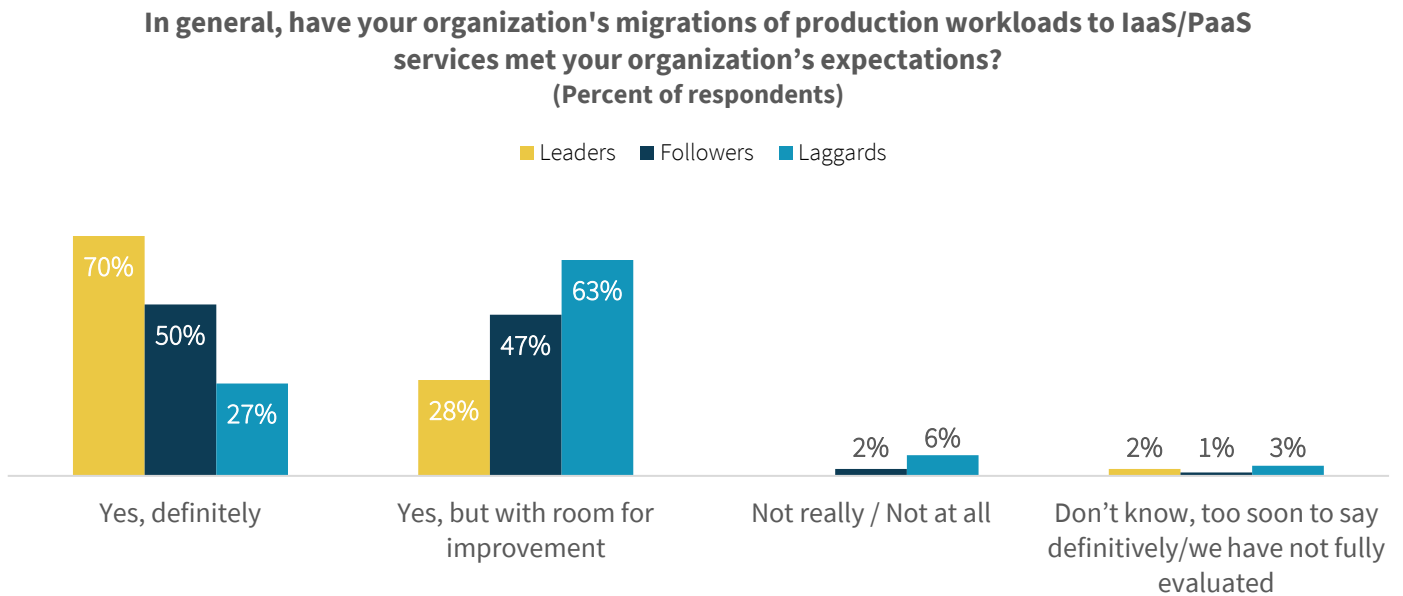
Cloud Migration Maturity = Fewer Surprises, Greater Satisfaction

When considering the data set as a whole, ESG found that organizations using cloud infrastructure for production workloads were generally satisfied with their experience. However, ESG did observe a definitive good-better-best pattern in the data across outcomes.

Leaders were 2.6x more likely than Laggards to report that migrations had definitively met expectations.

First, ESG observed that Cloud Migration Maturity was correlated to migrations meeting expectations. The cloud is a change agent. It represents a completely different way of operating IT. While different in many ways is better, offering greater flexibility, speed, and the ability to pay only for resources used, it is also *different*. IT no longer has direct access to infrastructure and apps run on servers miles away and in someone else’s data center. Change is hard and can be difficult to plan for, but organizations aligned with cloud best practices report fewer issues than those who are not. When ESG asked respondents if their organizations’ migrations of production workloads to cloud infrastructure had met their expectations, 70% working at Leader organizations responded with a resounding “yes.” Just 27% of Laggards reported the same level of met expectations (see Figure 3). Leaders were 2.6x more likely than Laggards to report that migrations had definitively met expectations.

Figure 3. Cloud Migration Maturity Leaders Know What to Expect from Cloud Migrations

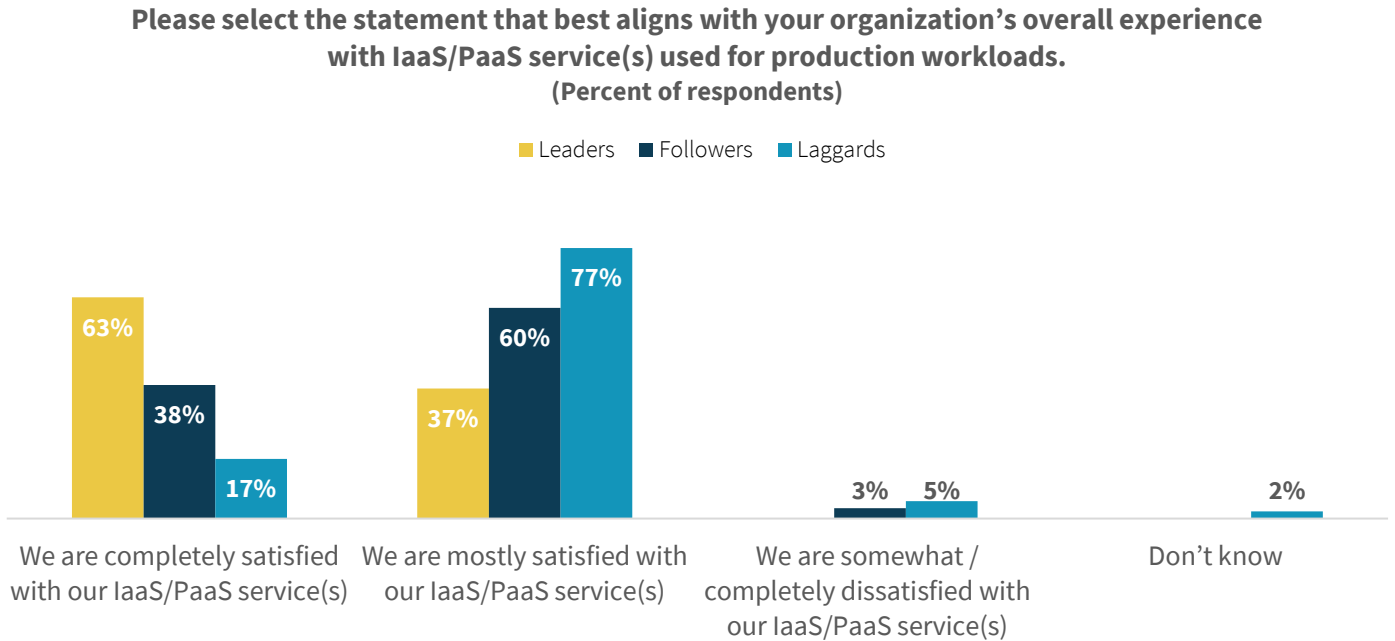


Source: Enterprise Strategy Group

In addition to meeting expectations, general cloud satisfaction also rose with maturity. In fact, 100% of Leader respondents reported that their organizations were completely or mostly satisfied with their cloud service experience to date. The majority of those (63%) fell into the completely satisfied category. In fact, Leaders were 3.7x more likely than Laggards to achieve complete satisfaction (see Figure 4).

It is worth noting that, even among Laggards, 94% of organizations are at least mostly satisfied with the cloud services in use. However, organizations looking to maximize organizational satisfaction with cloud migrations would be well served to take the steps prescribed by ESG’s maturity framework.

Figure 4. Cloud Migration Maturity Leaders Are Highly Satisfied with Their Cloud Experience



Source: Enterprise Strategy Group

More than Just Perception, Better Business Benefits Drive Satisfaction

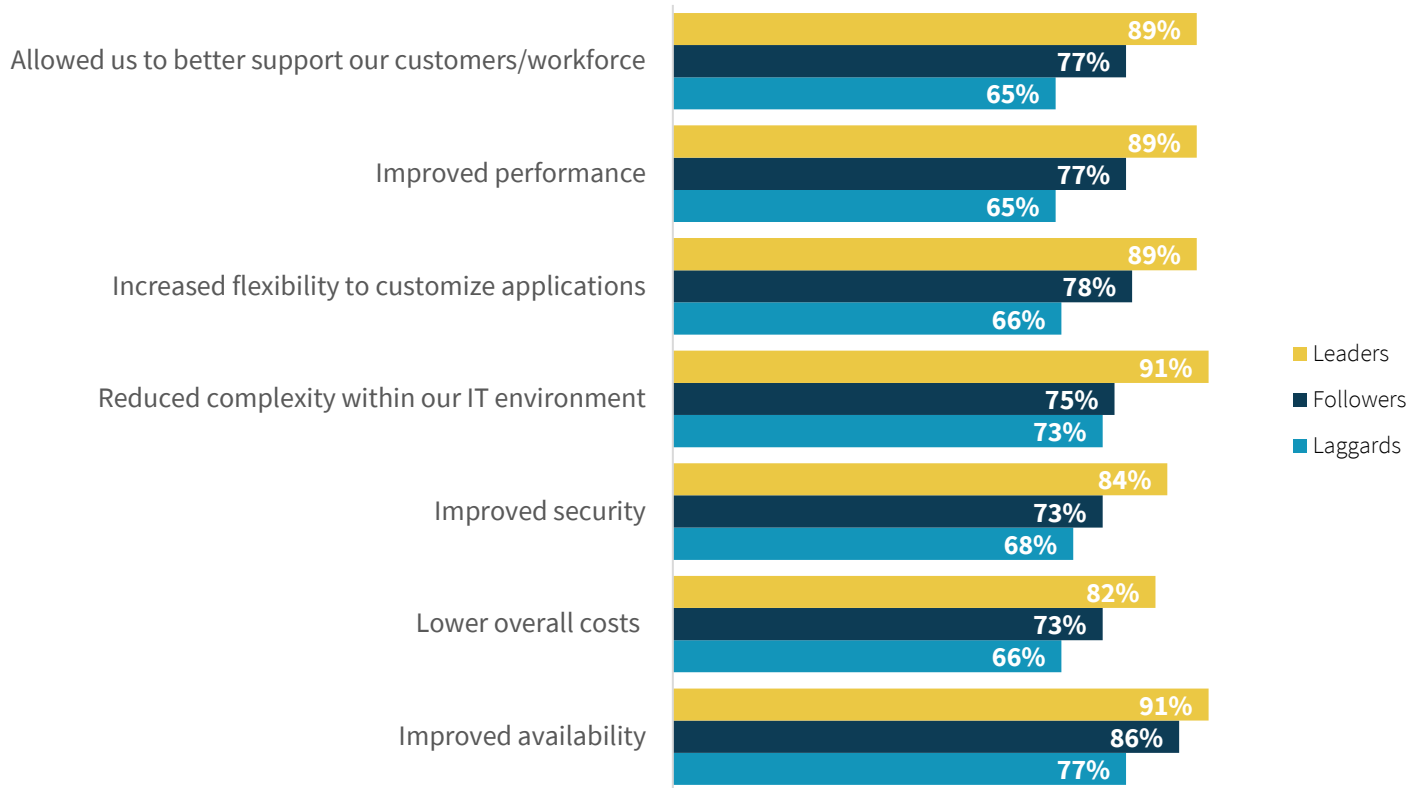
The data shows that Leader organizations are more apt to report that their cloud experiences matched their expectations. That alone could be a driver of higher satisfaction. However, ESG’s research went deeper than that. ESG questioned respondents about the success they have had enabling tangible business benefits by migrating workloads to public cloud infrastructure. Organizations in alignment with Cloud Migration Maturity best practices are having the most success using the cloud to drive business benefits.

Nine out of ten Leaders reported their organization had improved the ability to support end-users, improved workload performance, reduced IT complexity, improved workload flexibility, and increased availability by using cloud infrastructure.

About nine out of ten Leaders reported their organization had improved the ability to support end-users, improved workload performance, reduced IT complexity, improved workload flexibility, and increased availability. While the majority of Laggards also reported each of these benefits, the difference observed among the two groups was statistically significant (see Figure 5). On average, Leaders reported that using cloud infrastructure for production workloads had delivered 9.5 distinct benefits for their organizations. This compared favorably to the 7.5 benefits reported by Laggards, on average.

Figure 5. Cloud Migration Maturity Leaders Achieve More Cloud Benefits

**Has your organization achieved any of the following benefits as a result of using IaaS/PaaS services for production workloads?
(Percent of respondents selecting "Yes")**



Source: Enterprise Strategy Group

The Magnitude of Benefits Rises with Migration Maturity

ESG’s research discussed several benefit areas with additional depth. Beyond asking respondents if their organizations had achieved the benefit, for those that had, ESG quantified the size of the benefit. In all cases, as Cloud Migration Maturity rose, so did the size of the business benefit.

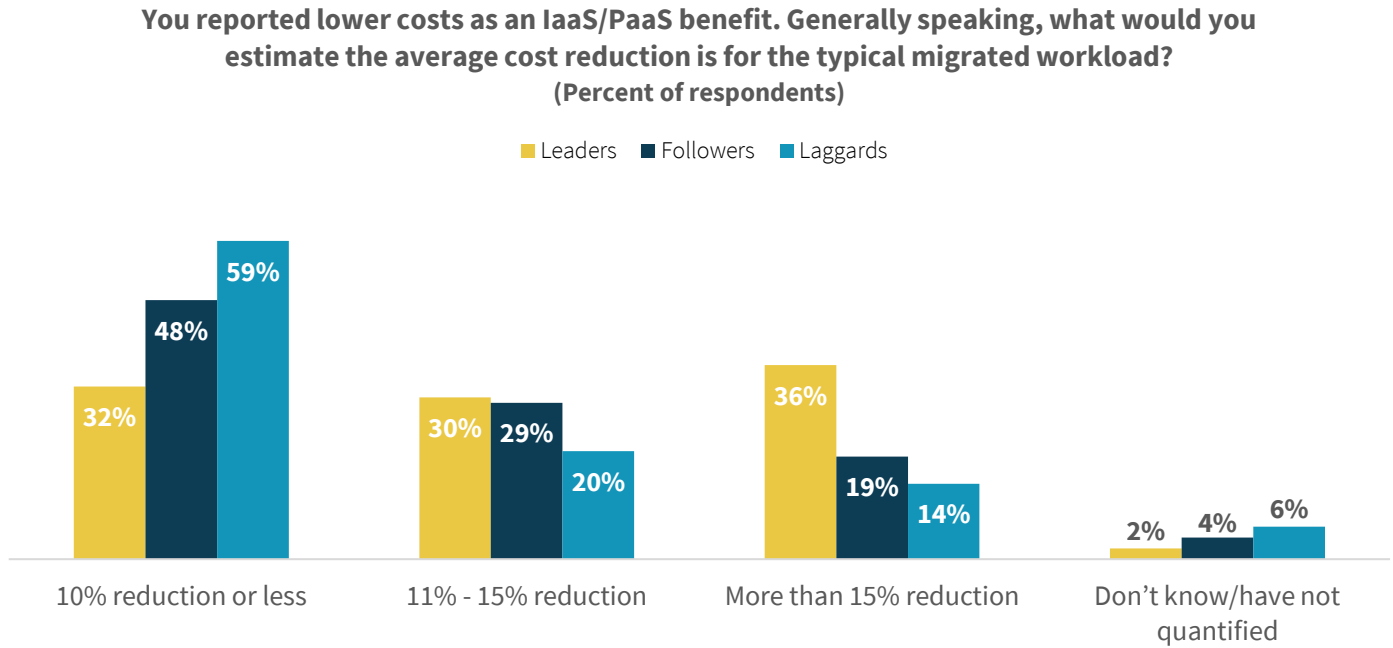
Reducing Cost with Cloud Infrastructure

Cloud utilization can positively impact an organization’s IT total cost of ownership (TCO). First, cloud consumption models allow organizations to only pay for what they need, spinning resources up or down on demand based on workload requirements. By contrast, rigid capital expenditure (CapEx) cost models often require organizations to oversize their equipment purchases so that the organization has room to “grow into” its infrastructure over a multi-year time horizon. Traditional IT purchasing also often is associated with a hefty operational expenditure (OpEx) in the form of vendor support and maintenance. Secondly, the cloud can lower IT TCO by lowering staff costs. The “care and feeding” of cloud-hosted infrastructure is the responsibility of the cloud service provider. The customer’s IT administrators can be redeployed to other initiatives.

In the aggregate, 72% of respondents reported that their organization had lowered overall IT costs via cloud infrastructure utilization. As a follow up, ESG asked these respondents to estimate the average cost savings for a cloud-migrated workload. The results once again highlight stark differences based on Cloud Migration Maturity. Leaders were 2.5x more

likely than their Laggard counterparts to report that typical savings exceeded 15% (36% versus 14%, see Figure 6). By contrast, about three-fifths of Laggards (59%) reported that cost savings usually totaled 10% or less.

Figure 6. Cloud Migration Maturity Leaders Maximize Workload Cost Reductions



Source: Enterprise Strategy Group

Maximizing Uptime with Cloud Infrastructure

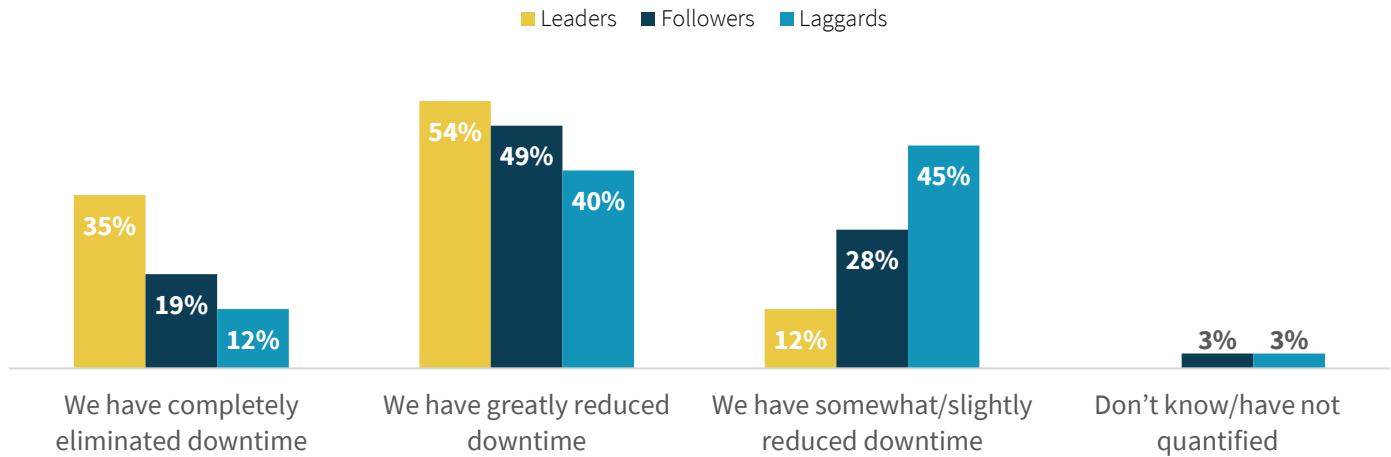
The mission statements of many IT organizations can be summed up as “no news is good news.” If an IT shop is doing its job, no one from the business notices because everything just works. However, achieving this level of operational stability is easier said than done. There are patches to apply, break-fix events to respond to, and helpdesk tickets to resolve, and each can lead to real or perceived downtime. However, cloud consumption moves much of this responsibility from the backs of an organization’s IT team and onto the shoulders of the cloud service provider. ESG’s research shows that this shift in responsibility is ultimately a positive for more organizations. More than four out of five respondents (84%) surveyed report that running workloads on cloud infrastructure has improved availability at their organization.

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Delving deeper, ESG asked these respondents to estimate the degree to which their organization reduced downtime for the average migrated workload. Leaders again are recognizing the biggest benefit. Leaders were 2.9x more likely than their Laggard counterparts to report that they typically completely eliminated downtime for migrated workloads (35% versus 12%, see Figure 7). By contrast, a plurality of Laggards (45%) reported reducing downtime only somewhat or slightly.

Figure 7. Cloud Migration Maturity Leaders Maximize Workload Availability

You reported improved availability as an IaaS/PaaS benefit. Generally speaking, by how much have you reduced downtime for the average migrated workload? (Percent of respondents)



Source: Enterprise Strategy Group

Increasing the Velocity of App Innovation with Cloud Infrastructure

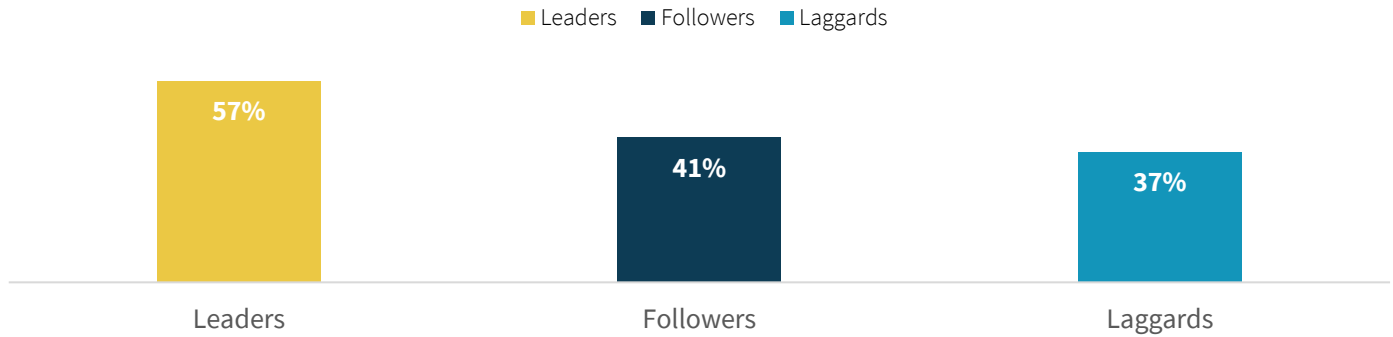
Cloud consumption allows organizations, in theory, to increase their agility. In a traditional IT operations model, standing up a new workload is a time-consuming proposition. Requirements must be defined, vendors must be evaluated, and infrastructure must be sized and integrated into the environment. Depending on the workload in question, a major deployment can take years to complete. For organizations placing a premium on innovation, this is problematic. One promise of the cloud is to replace this long workload deployment process with the swipe of a credit card. Indeed, 76% of respondents ESG surveyed stated that cloud infrastructure was helping them shrink application deployment times.

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To further quantify this benefit, and to understand how it varied with Cloud Migration Maturity, ESG asked respondents to estimate the proportion of all cloud workload deployments that had been completed on, behind, and ahead of schedule. On average, Leaders reported that 57% of their deployments had been completed ahead of schedule, an increase of 54% compared to Laggards (see Figure 8).

Figure 8. Cloud Migration Maturity Leaders Complete Cloud Deployments Ahead of Schedule

You reported improved time to application deployment as an IaaS/PaaS benefit. Generally speaking, what percentage of your organization's cloud workload deployments are completed ahead of schedule? (Mean percentage reported)



Source: Enterprise Strategy Group

Business Benefits Give Organizations a Competitive Edge, Raise IT's Standing in the Organization

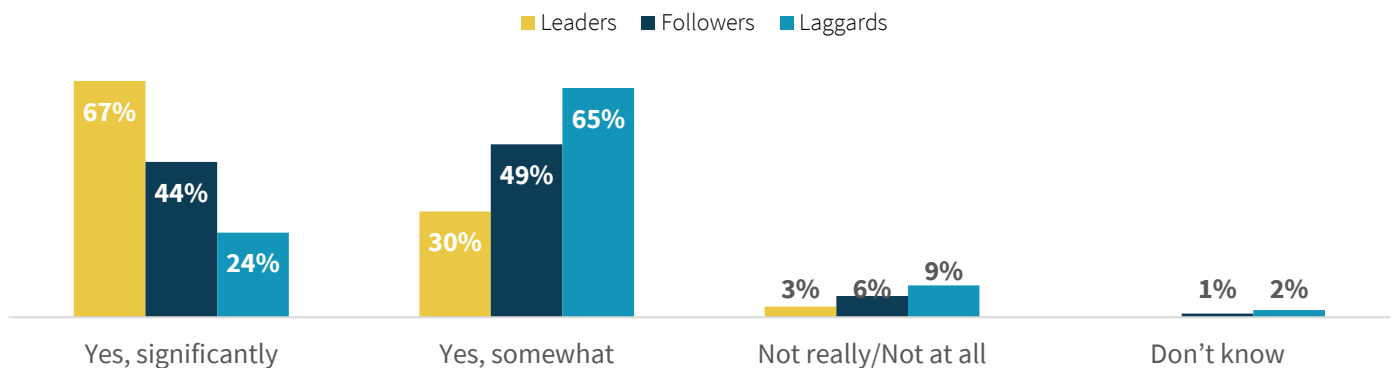
Leaders were 2.8x more likely than Laggards to report that their organizations' cloud usage has put them in a significantly better business position for the future.

It is inarguable that the correlation between Cloud Migration Maturity and cloud benefits achieved to date is strong and positive. But does an organization's adherence to best practices impact its likelihood of business success into the future? The answer is a definitive yes. ESG asked respondents if the use of public cloud infrastructure has put the organization in a better position to succeed over the next 3-5 years. Leaders were 2.8x more likely than Laggards to report that their organizations' cloud usage has put them in a significantly better

business position for the future (see Figure 9). ESG believes that because these organizations have been so successful driving business results with the cloud to date, they logically believe the cloud will continue to help them differentiate over the next few years.

Figure 9. Cloud Migration Maturity Leaders See the Cloud as a Point of Differentiation

Has your organization's use of IaaS/PaaS for production workloads put your company in a better position to succeed in its market over the next 3-5 years? (Percent of respondents)



Source: Enterprise Strategy Group

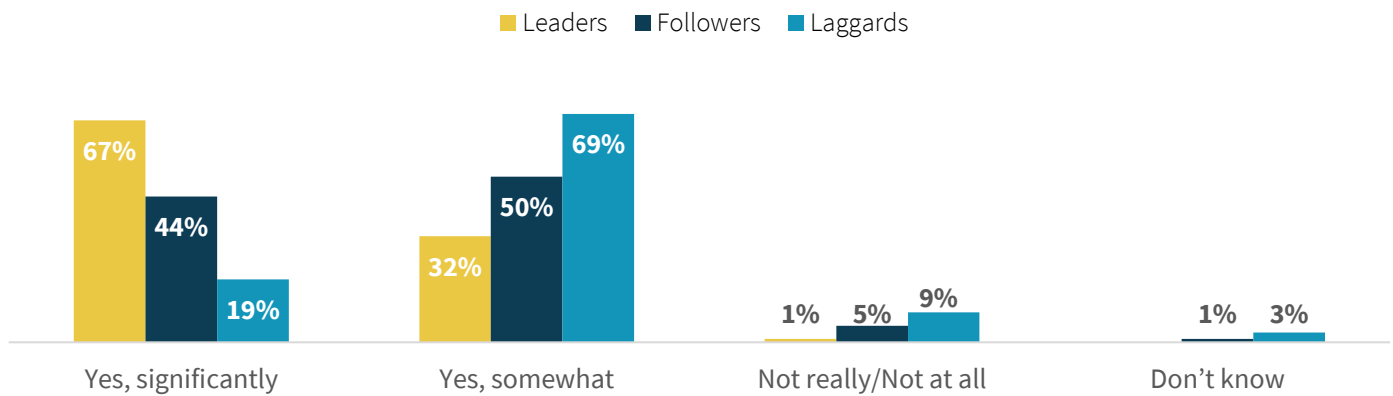
Some in the IT profession have been resistant to cloud utilization. They view the use of public cloud infrastructure as threatening to their position and importance in the organization. However, ESG’s research uncovered a trend running counter to this conventional wisdom. ESG asked all respondents if the migration of workloads to public cloud infrastructure had impacted executives’ view of the IT function. Two-thirds of Leaders (67%) reported cloud usage had led to a significantly more favorable view of the IT team, 3.5x the rate reported by Laggards

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(see Figure 10). IT strategists looking to increase the standing of their teams in a cloud-enabled future would be well served to learn from the best practices Leaders follow to drive positive change at their organizations.

Figure 10. Cloud Migration Maturity Leaders Are More Apt to Appreciate IT’s Cloud Enablement

Has your organization’s use of IaaS/PaaS for production workloads led your company’s executive management to have a more favorable opinion of the IT organization?
(Percent of respondents)



Source: Enterprise Strategy Group

The Bigger Truth

Based on ESG's research, Cloud Migration Maturity Leaders are the exception to the rule. More than four-fifths of the market (84%) needs to transform their cloud migration practices in order to achieve a Leader designation. However, this research shows that the benefits that can be achieved are definitively worth the effort. Moreover, it validates that each step an organization takes delivers results: Followers outperform Laggards and Leaders outstrip Followers.

This research shows how organizations driving the most value from the cloud get to the cloud fundamentally differently. They:

- **Build a solid business case prior to migrations.**
- **Ensure the cloud services in question can satisfy workload requirements.**
- **Are methodical, conducting non-mission-critical migrations first to find their way.**
- **Use each migration to enhance a consistent migration methodology.**
- **Make large investments in cloud training and certification.**

ESG believes organizations should follow this outline for cloud migration success to maximize cloud results.

How AWS Can Help

This ESG Research Insights Paper was commissioned by Amazon Web Services. With over 1-million active enterprise customers, AWS is the authority on optimizing cloud migrations. There is no better source for education, tools, and professional services.

Learn more [here](#).

Appendix I – Research Methodology and Respondent Demographics

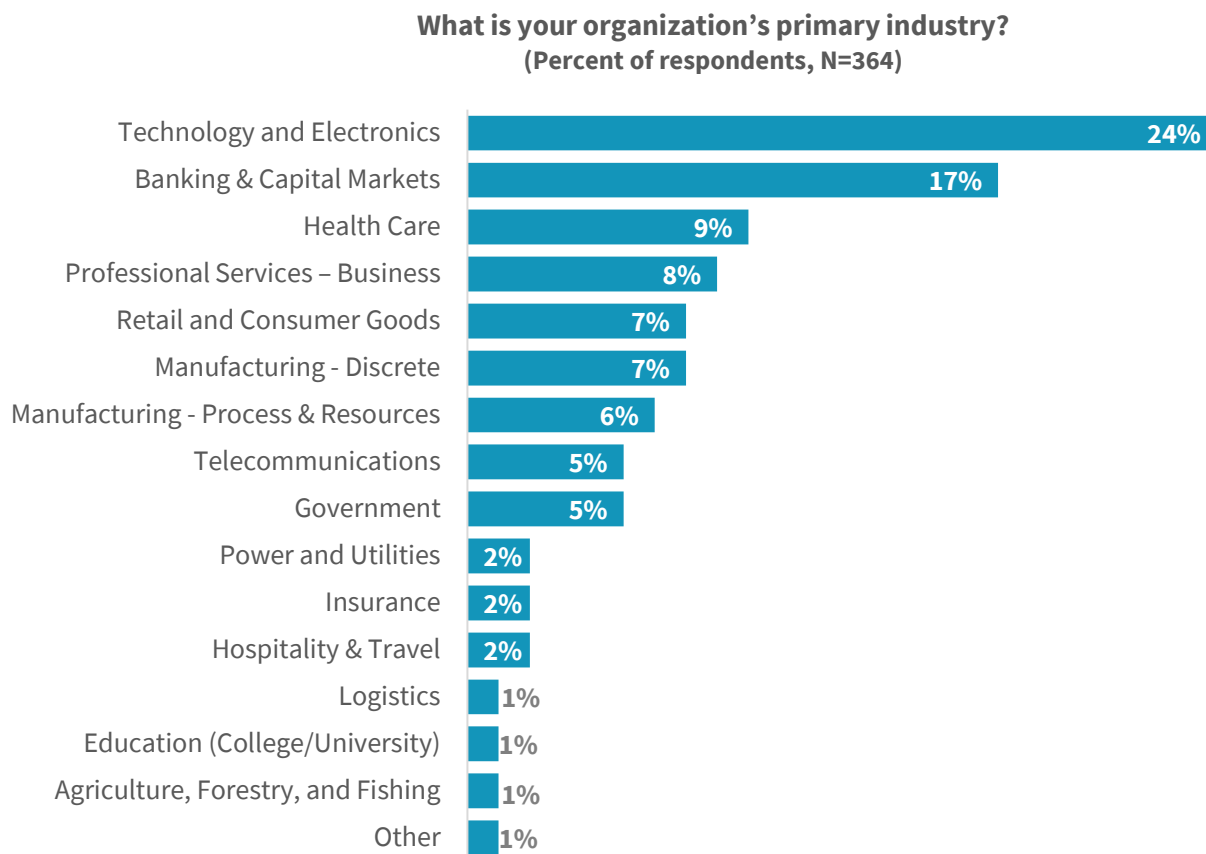
To gather data for this report, ESG conducted a comprehensive online survey of IT decision makers from private- and public-sector organizations in North America. The survey was fielded in October of 2018. To qualify for this survey, respondents were required to be IT decision makers directly involved in the planning, implementation, and/or operations of public cloud infrastructure at their organizations. Furthermore, all respondents must have been employed at organizations with annual revenue of \$250M or more that have migrated at least one production workload to public cloud infrastructure.

After filtering out unqualified respondents, removing duplicate responses, and screening the remaining completed responses (on several criteria) for data integrity, a final sample of 364 respondents remained.

All respondents were provided an incentive to complete the survey in the form of cash awards and/or cash equivalents. Note: Totals in figures and tables throughout this report may not add up to 100% due to rounding.

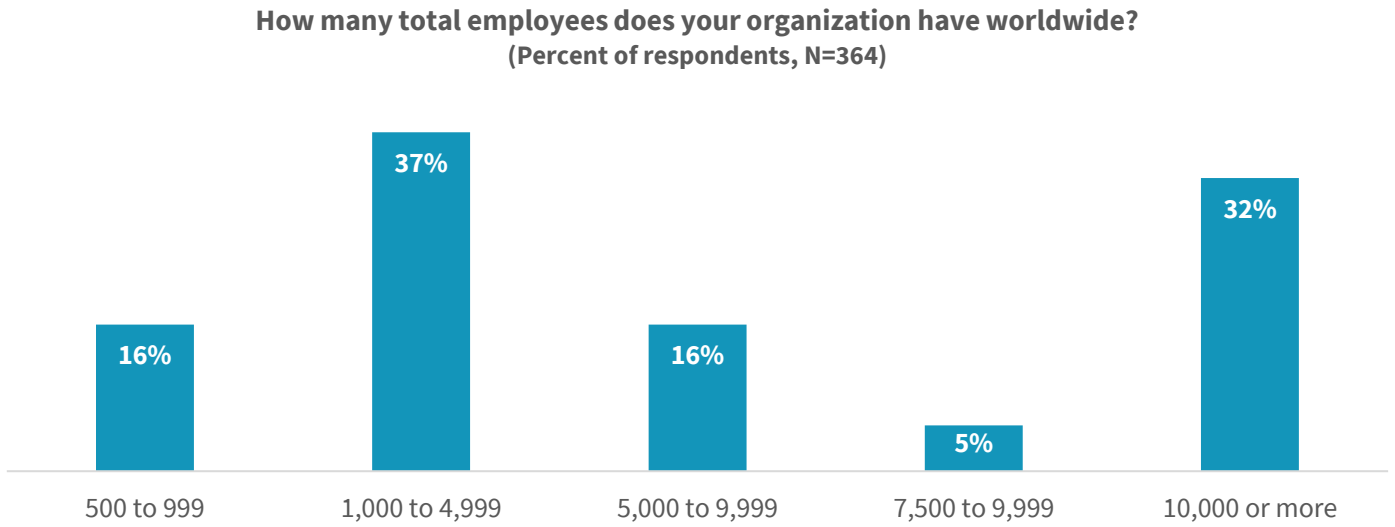
The figures below detail the firmographics of the respondent base, including organization industry, organizations’ total number of employees, annual revenue, and cloud spend.

Figure 11. Survey Respondents, by Organization Industry



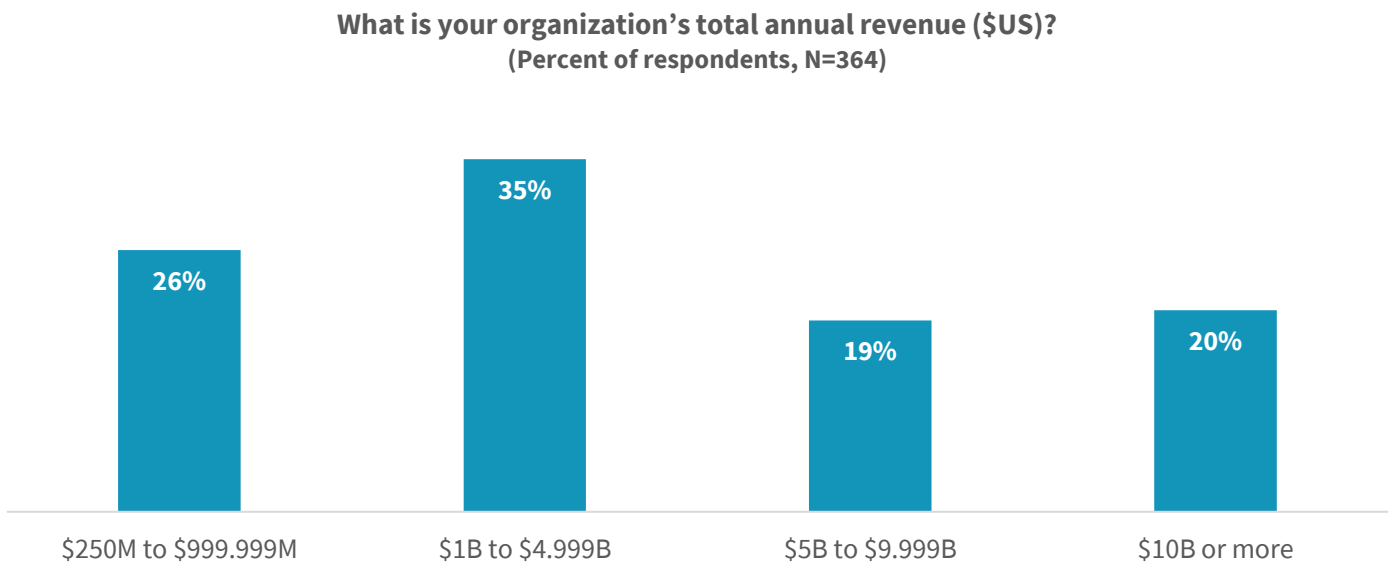
Source: Enterprise Strategy Group

Figure 12. Survey Respondents, by Company Size (Number of Employees)



Source: Enterprise Strategy Group

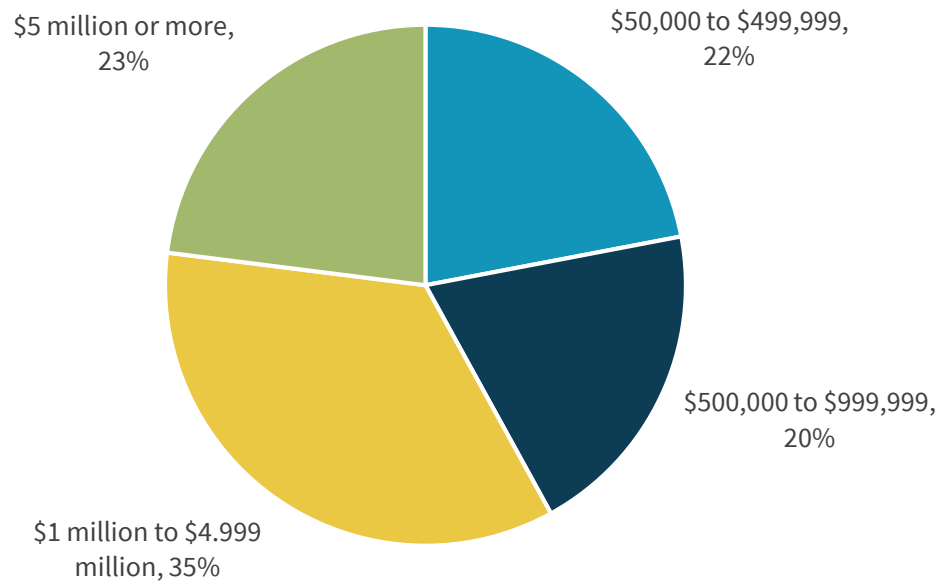
Figure 13. Survey Respondents, by Organization’s Revenue



Source: Enterprise Strategy Group

Figure 14. Survey Respondents, by IaaS/PaaS Spend

How much do you expect your organization will spend on IaaS/PaaS in this year?
 (Percent of respondents, N=364)



Source: Enterprise Strategy Group

Appendix II – Criteria for Evaluating Organizations’ Cloud Migration Maturity

In order to evaluate how best practice adherence is linked to cloud outcomes, ESG developed a Cloud Migration Maturity framework that put forward five concrete migration best practices against which organizations could be assessed. To assess these five best practices, ESG asked five corresponding questions in its survey. Organizations in alignment with at least five best practices were placed in the cloud migration “Leader” category. Organizations in alignment with three or four best practices were placed in the cloud migration “Follower” category. And organizations in alignment with fewer than three best practices were placed in the “Laggard” category.

The questions ESG asked to assess Cloud Migration Maturity are shown in the following figures. The responses aligned with migration best practices are highlighted.

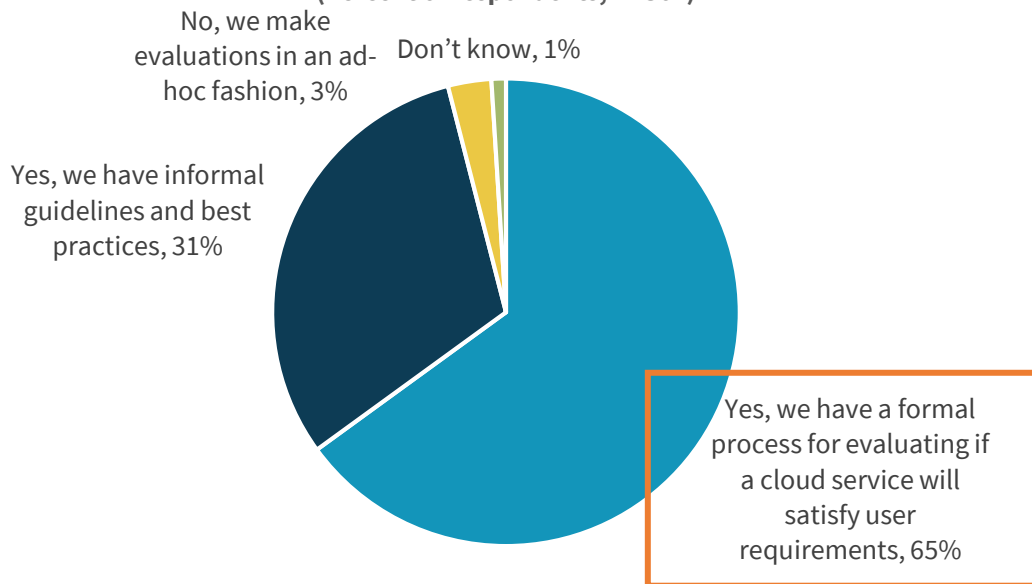
Figure 15. Propensity of Organizations to Develop a Sound Cloud Migration Business Case



Source: Enterprise Strategy Group

Figure 16. Propensity of Organizations to Evaluate How Cloud Services Will Satisfy User Requirements

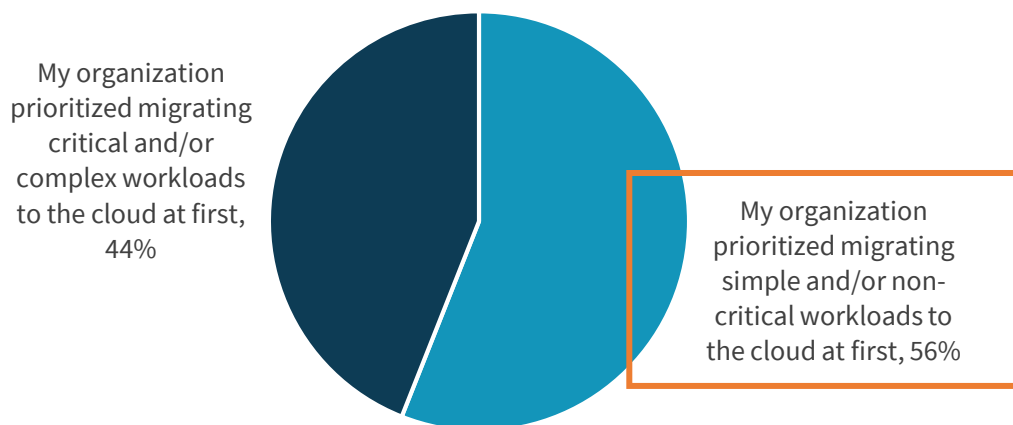
Prior to migrating production workloads to IaaS/PaaS, does your organization have an established process for evaluating if end-user requirements can be satisfied by the cloud service?
 (Percent of respondents, N=364)



Source: Enterprise Strategy Group

Figure 17. Propensity of Organizations to Migrate Simple, Non-critical Workloads First

Which better describes your organization's IaaS/PaaS migration experience to date?
 (Percent of respondents, N=364)

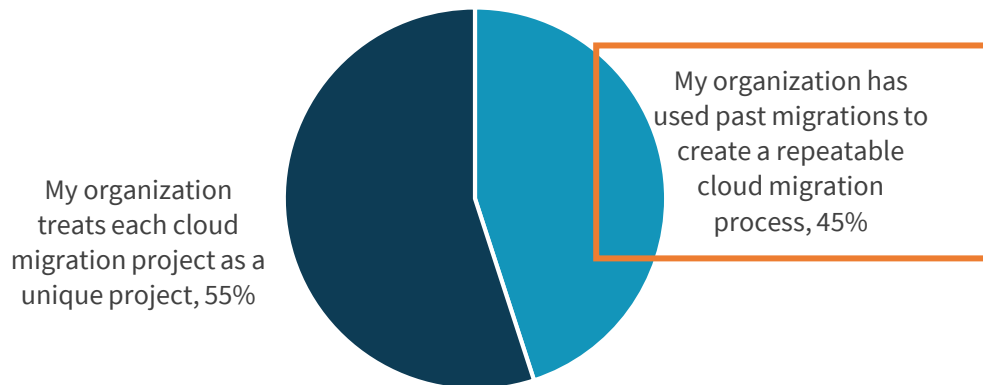


Source: Enterprise Strategy Group

Figure 18. Propensity of Organizations to Develop a Repeatable Migration Process Over Time

Which better describes your organization’s IaaS/PaaS migration experience to date?

(Percent of respondents, N=364)

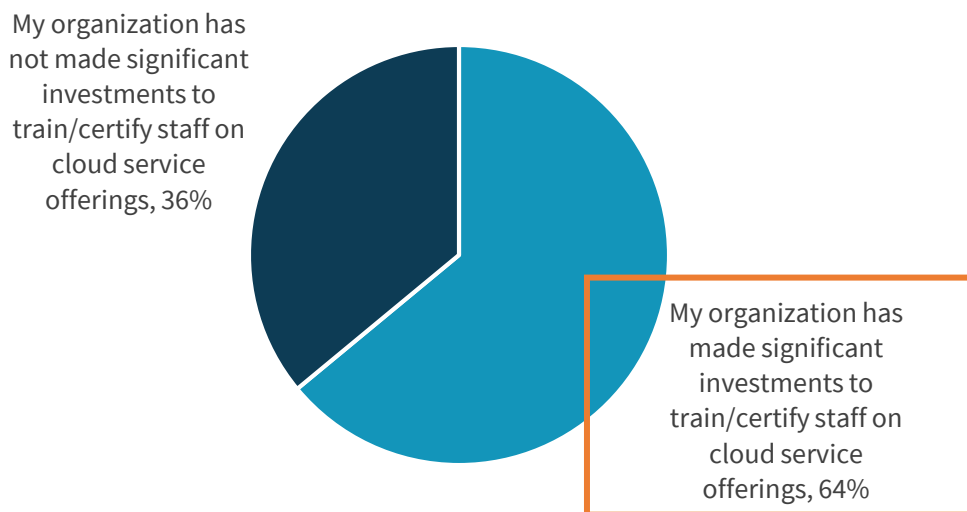


Source: Enterprise Strategy Group

Figure 19. Propensity of Organizations to Invest in Cloud Training and Certification

Which better describes your organization’s IaaS/PaaS migration experience to date?

(Percent of respondents, N=364)



Source: Enterprise Strategy Group

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