

Cloud Financial Management Maximizes Business Value on Amazon Web Services

By Richard Pastore, Michael Fuller, and Justin Gillespie

EXECUTIVE SUMMARY

Cloud Financial Management (CFM), also known as Cloud FinOps, is the application of cloud cost management best practices and financial governance to cloud usage, to achieve the most cost-efficient business outcomes. The Hackett Group's Cloud Services Study reveals CFM best practices that many top-performing enterprises adopt to achieve improved business outcomes. Below are examples in each of four fundamental CFM practice pillars and their impacts:

- **Planning and forecasting:** Conducting detailed analyses of variances between forecasts and actual cloud spend leads to a 35% increase in cloud spend forecast accuracy.
- **Measurement and accountability:** Consistent, systematic monitoring and measurement of cloud cost and usage increases the rate at which cloud service-level agreements (SLAs) are met by 74%.
- **Cost optimization:** Utilizing commitment-based and excess-capacity pricing models achieves a 35% greater savings in ongoing cloud costs.
- **Cloud financial operations:** Centralized governance of cloud activities (e.g., security, financials, demand) boosts incremental cloud cost savings by 38%.

Additionally, two practices stand out as having the broadest impact on improving multiple performance metrics, and increasing the use and effectiveness of other best practices. These two "force multipliers" are the allocation of cloud spend to the consuming business unit or team (enabling a strong level of cost accountability), and a partnership between finance and technology functions (promoting a unified, comprehensive view of cloud usage and costs, and integrating financial planning and budgeting into cloud service delivery).

These, and other CFM practices outlined in this report, should be adopted or enhanced when pursuing new cloud migrations or improving the performance of current cloud deployments.

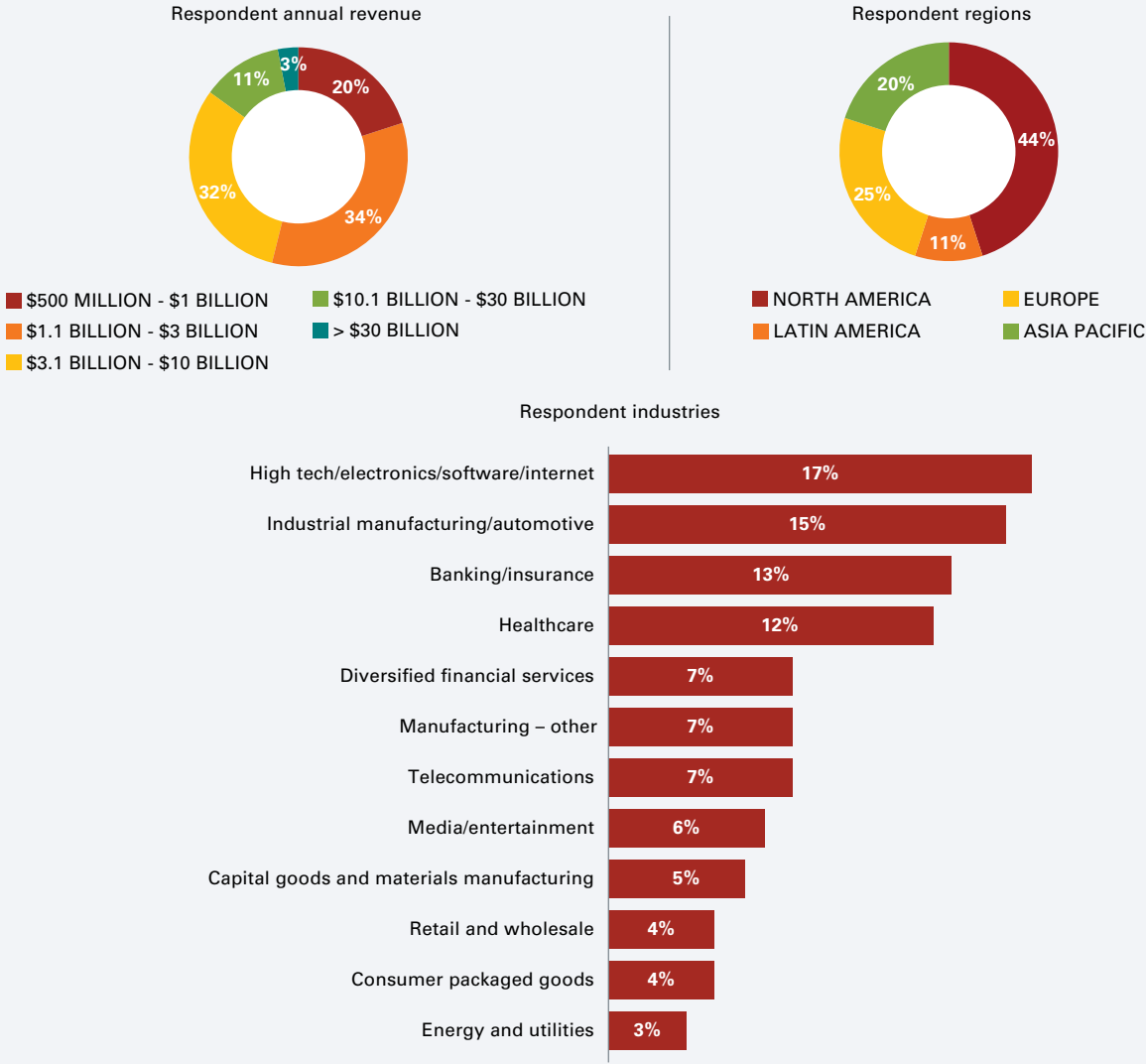
About the study

The Hackett Group conducted its global Cloud Services Study of more than 1,000 organizations from October through December 2021. Its purpose was to evaluate the business value of migrating from on-premises to cloud-hosted infrastructure, and CFM practices that help organizations maximize that value. The study was commissioned by Amazon Web Services (AWS). The analysis and perspectives in this report are solely those of The Hackett Group. This data was collected from organizations that have had applications in the cloud for at least 12 months.

Study respondents included technology executives, infrastructure and operations directors, IT architects, and IT engineers. Respondents were interviewed over the phone, answered questions about their overall cloud migration, CFM practices, and provided details on up to three individual applications migrated to the cloud. See Fig. 1 for details on respondents' organization sizes, locations, and industries.

The first published report revealed the average pre- and post-migration business value metrics,

FIG. 1 Survey respondent demographics



Source: Cloud Services Study, The Hackett Group, 2022

and improvement rates for overall respondents.⁷ For comparison, the report also showed the achievement of the study's top performers, designated based on their weighted-average score in 22 post-migration business value metrics. (See "Appendix" for details.)

In this second report, we investigate the correlation between CFM practice adoption and performance. To provide maximum contrast, the analysis compares the actions of top performers to non-top performers (referred to as the "peer group" in this report; defined as all respondents excluding top performers).

INTRODUCTION

Migrating applications to AWS delivers significant business value in four key areas: cost savings, staff productivity, resiliency, and agility, according to the results from The Hackett Group's Cloud Services Study. Fig. 2 shows improvement rates in several specific cloud business value metrics. The improvement rates for the study's top performers are significantly superior

to those of overall respondents (see "About the study" for the definition of top performers). This is remarkable, given that top-performing companies generally have higher pre-migration performance levels than the other organizations, and, therefore, less opportunity for significant improvement. Yet, survey results indicate top-performer improvement rates are 50% higher than the overall respondents' gains.

FIG. 2 Post-migration business value improvement

Value category	Key performance indicator	Overall respondents	Top performers
		Post-migration % change	Post-migration % change
Cost savings	Total enterprise technology infrastructure spend	-20%	-47%
	Level of overprovisioning of applications as to anticipate capacity spikes	-23%	-40%
Staff productivity	Infrastructure staff time redirected to planning, architecture, orchestration, and innovation	17%	43%
	Development staff time redirected to creating new features and functionality	29%	31%
Resiliency	Security-related incidents per month	-45%	-64%
	Mean time to detect security incidents	-39%	-54%
Agility	Time to market for new application features	-43%	-59%
	Average time for production release	-34%	-56%

Source: Cloud Services Study, The Hackett Group, 2022

⁷ The Business Value of Migration to Amazon Web Services, The Hackett Group, February 2022

This report examines how top performers achieve these superior improvement rates using practices that fall under the discipline of CFM. CFM is the application of cost management best practices and financial governance to cloud usage, enabling the delivery of superior business outcomes in the most cost-efficient manner.

CFM practices are grouped into four pillars:

- 1. Planning and forecasting:** The use of tools and best practices to plan future cloud cost and consumption.
- 2. Measurement and accountability:** Monitoring and measurement of consumption, cost, and performance metrics to inform and improve financial management, and enable more accountability.
- 3. Cost optimization:** Application of strategies, such as resource and demand management, modernization, as well as pricing models to incrementally reduce the cost of cloud hosting associated with required service levels.
- 4. Cloud financial operations:** The systematic and standardized application of financial tools and business processes to govern cloud operations, and ensure ongoing efficiency and effectiveness.

CFM is a virtuous cycle: As each application progresses in its migration journey, CFM acts to accelerate pre- to post-migration progress and to increase the business value attained through cloud hosting. When done well, it can also create a new level of visibility, ownership, and self-determination by stakeholders for the value of migrated systems, as described by one of the study's top performers:

"One of the biggest conundrums with traditional infrastructure is that no one is sure of the cost impact of their actions, and there is no central way of managing and reporting it," says the director of solutions architecture for an energy technology provider. "Migrating to the cloud gives us the ability to visualize what these systems are actually costing and how they are being used." The director adds that the new cost visibility allows business teams to take responsibility for optimization, with advice from IT.

CFM BEST PRACTICES

The four CFM pillar sections below present the following:

- Overview of the pillar and the principal key performance indicators (KPIs) that measure the effectiveness of each pillar.
- The best practices that drive the KPIs and lead to top-performer-level business value.
- The relative use of the best practices by top performers, compared to the peer group.

Tables in each section highlight the post-migration improvement rates from the use of best practices in comparison to not using the practices at all, or applying them infrequently or inconsistently.

#1: Planning and forecasting

Forecast accuracy is the KPI for effective planning and forecasting of cloud cost and consumption. Top performers' average cloud spend forecast accuracy is 78%, compared to 63% for the peer group.

Forecast accuracy enables cost saving by reducing the overprovisioning of resources and capacity, which are typically done to accommodate uncertainty associated with demand. Top performers reduce overprovisioning of applications after migration to AWS by an average of 45%; the peer group realize a 23% reduction.

Best practices

The four practices below are among those with the largest impact on the forecast accuracy KPI. On average, 44% of the study's top performers apply these best practices, while only 26% of the peer group do so. With a minority of both top performers and peer group members leveraging these practices, there is ample opportunity to further improve forecasting. Indeed, when multiple practices are used in tandem, the benefits are compounded. When three or four of the following practices are applied, accuracy increases an additional 14%, compared to the use of two or fewer practices.

Regularly performed trend- and driver-based forecasting with detailed variance analysis –

Forecasting best practices include maintaining a regular cadence and analyzing trend drivers in addition to the trends themselves. It is also a best practice to

perform regular and frequent variance analyses that compare forecasts to actuals.

Consistent and systematic actioning of audit findings – Respondents that action their financial reviews or audit findings (e.g., regarding usage levels or workload placement) as consistently and systematically as possible, achieve greater accuracy, compared to respondents that do so in an ad hoc manner or not at all.

Centralized spend management – Centralized management of cloud spend (typically by the procurement organization) significantly improves forecast accuracy. Organization-wide perspectives and consistent accounting practices feed better cost data into the forecast funnel.

Cloud training – Organizations that conduct consistent and systematic employee cloud training realize higher forecast accuracy than those that offer limited or no training. Training enhances understanding of cloud economics and the relationship of consumption and other drivers of cost. This, in turn, boosts the efficacy of forecasts (Fig. 3).

FIG. 3 Planning and forecasting practices and their KPI impacts

Best practice	Increase in cloud spend forecast accuracy*
Regular trend- and driver-based forecasting with detailed variance analysis	35%
Audit findings are actioned consistently and systematically	40%
80% or more of cloud spend is managed centrally	45%
Cloud training is conducted consistently and systematically	40%

*Compared to accuracy of respondents not using or suboptimally using the practices (e.g., infrequently, to a lesser degree).

Source: Cloud Services Study, The Hackett Group, 2022

#2: Measurement and accountability

It would be difficult to effectively manage cloud costs and performance without ongoing visibility of spend, consumption, and service levels, which is why consistent and systematic monitoring is a fundamental CFM best practice. Accountability for cloud costs and consumption is also fundamental. Allocating cloud spend to consuming business units or teams (e.g., in the form of budgetary assignment, chargeback, or showback) creates a powerful incentive for business stakeholders to maximize efficiency of cloud costs and consumption.

One KPI for this CFM practice pillar is the percentage of *incremental savings in cloud costs*. Where accountability is established among the consuming business units or teams, the resulting demand and cost diligence will impact ongoing cloud costs. Another CFM KPI is *performance against cloud SLAs* that specify service-level targets for system availability, response times, and scalability. When cloud costs, consumption, and performance are monitored and visible to the consuming business units or teams, more realistic service targets can be established and, therefore, met more consistently.

Best practices

On average, 55% of top performers monitor cost, consumption and SLA performance consistently and systematically, compared to only 33% of the peer group. To drive maximum accountability, top performers allocate 80% of their organization’s cloud spend to the consuming business units or teams. The peer group allocates 55%.

Monitoring application cost and consumption – More consistent and systematic monitoring results in better performance in meeting SLAs. Disciplined monitoring is also associated with cloud cost savings.

Monitoring SLA performance – Consistent and systematic tracking and reporting of SLA performance contributes to a very strong gain in meeting SLAs, compared to limited or no use of monitoring.

Allocating cloud spend to the consuming business unit or team – Cloud spend accountability establishes a strong incentive for disciplined demand and cost management. The result is significantly greater cloud cost savings for organizations that allocate most of their cloud spend to consuming business units or teams (Fig 4).

Cost allocation – Direct allocation (e.g., chargeback) is not realistic in all cases; however, providing full transparency via showback of cloud costs helps the consuming business units understand the connection between their activity, cloud spend, and performance. As mentioned previously, correctly tagging workloads– in this case, with metadata describing application environments, consumption, and ownership – is a fundamental step for building accountability.

However, the impact of spend allocation goes well beyond savings and SLAs. In fact, this practice should be considered a force multiplier for its ability to boost the use and impact of other CFM best practices. For example, organizations that allocate more than 70% of spend are 3X more likely to have adopted the best practice of centralized cloud governance, compared to organizations with 40% or less of spend allocated.

Respondents with higher levels of cost allocation apply nearly 2X the number of cloud cost-optimization strategies to reduce cloud spend. They are also more likely to monitor cloud cost, consumption, and SLA performance systematically. It is apparent that cost accountability is closely associated with a more disciplined approach to CFM.

#3: Cost optimization

Organizations must develop a comprehensive cloud cost-optimization strategy that strikes a balance between cost, performance, availability, and scalability. Workloads should be built considering business and technical requirements, pricing models, and optimization strategies, as well as changes in workload demand over time. The primary KPI is the *incremental savings in cloud costs* over time, and survey respondents reduced their costs by a median 50%.

Best practices

To drive incremental cloud cost savings, top performers utilize 30% more cost-optimization strategies, compared to the peer group.

Use of cost-optimization strategies – The cost-optimization strategies that are most used, including rightsizing and pricing models, also have the largest

FIG. 4 Measurement and accountability practices and their KPI impacts

Best practice	Increase in incremental cloud cost savings*	Increase in SLAs consistently met*
Cloud cost and usage monitored consistently and systematically	22%	74%
Cloud SLA performance monitored consistently and systematically	27%	87%
More than 70% of cloud spend allocated to the consuming business unit or team	52%	29%

*Compared to savings and SLAs met for respondents not using or suboptimally using the practices (e.g., infrequently, to a lesser degree).

Source: Cloud Services Study, The Hackett Group, 2022

impact on incremental cloud cost savings (see the "Appendix" for cost-optimization strategy definitions). Respondents in the highest quartile of cost savings (average 73% cost reduction) adopt various cost-optimization strategies, at the rates shown in Fig. 5.

FIG. 5 Cost-optimization strategy adoption by respondents with greatest savings rates*

Strategy**	Adoption rate
1. Rightsizing of cloud resources	76%
2. Pricing model-based optimizations	75%
3. On-demand or elastic cloud usage	66%
4. Use of cloud providers' excess capacity	35%
5. Serverless computing (or serverless architectures)	29%
6. Active modernization of cloud resources	22%

* Respondents with top-quartile incremental cloud cost savings (average of 73%).

** See "Appendix" for definitions of strategies.

Source: Cloud Services Study, The Hackett Group, 2022

Choice of pricing models – The primary pricing model for each cloud-hosted workload is a highly strategic decision because it must be best suited to the way the workload will be utilized going forward. Finding the right combination of pricing models for the cloud portfolio is key to optimal cost savings (see "Appendix" for definitions of pricing models).

The Fig. 6 pie chart shows the average spend allocation by pricing model for overall respondents. The table shows the average improvement in cloud cost savings achieved by organizations with more than 65% of spend subject to the most efficient pricing models – commitment-based and/or excess compute capacity.

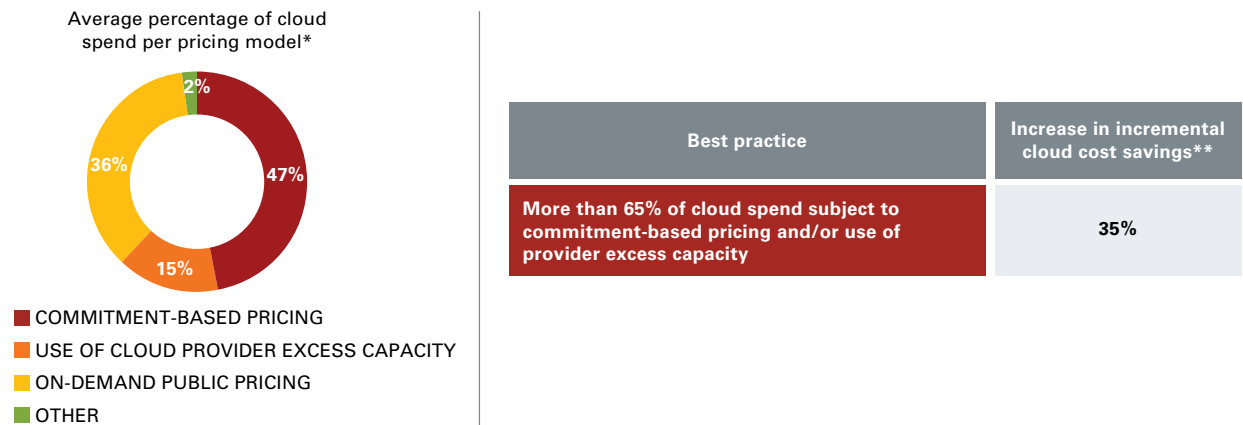
#4: Cloud financial operations

This set of practices enables continuous, seamless cloud financial operations with the smallest amount of manual intervention and actions triggered by exceptions. Once cloud financial operations practices are implemented, KPIs across all the other pillars of CFM will improve – *forecast accuracy, incremental cloud spend reduction, and performance against SLAs.*

Best practices

Centralized governance provides the all-encompassing perspective and management continuity necessary for the optimization of cloud financial operations. On average, 63% of top performers govern cloud activities by centralized teams, compared to 48% of the peer

FIG. 6 Pricing model usage and impact on cost savings



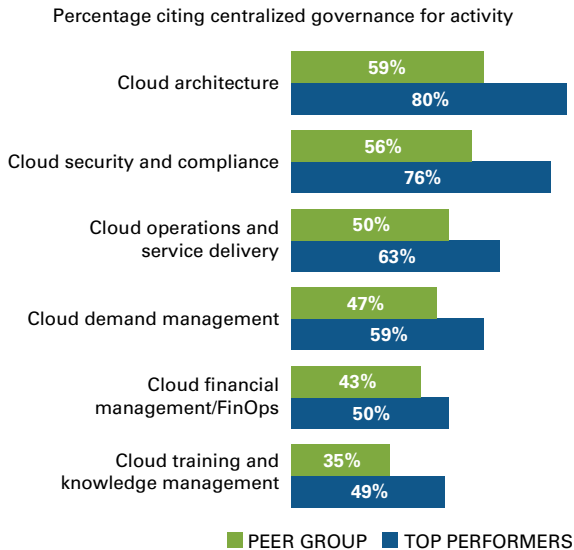
*See "Appendix" for definitions of pricing models.

** Compared to savings of respondents not using or suboptimally using pricing models.

Source: Cloud Services Study, The Hackett Group, 2022

group (Fig. 7). Top performers are also more likely to have a formal and strategic partnership between the finance and technology functions (67%) compared to the peer group (41%). The partners meet regularly and have a unified comprehensive view of cloud usage and costs. In these organizations, finance planning and budgeting are integrated into cloud service delivery.

FIG. 7 Cloud activities governed centrally – peers versus top performers



Source: Cloud Services Study, The Hackett Group, 2022

Centralized governance – Centralizing and concentrating cloud governance boosts forecast accuracy, has a significant savings impact on cloud costs, and also improves performance against SLAs. The use of centralized governance is often a factor of volume and complexity of an organization’s cloud-hosted infrastructure. Respondents with the highest proportion of workloads in the cloud (more than 40%) are nearly twice as likely to govern cloud centrally. As usage of cloud rises, so does the need for more effective and efficient oversight of critical activities.

However, centralized governance should not be viewed only as a means of control – like CFM in general, it is a broad enabler of business value. The study’s top performers realize this more than most:

“The entire cloud paradigm has advantages beyond financial cost savings,” states the vice president of network engineering and delivery at a global

communications technology company. Post-migration, the organization has seen its time to market for new application features accelerate from an average of 30 days to seven. “In today’s world, if you have a product and are not able to bring it to market in a timely manner, it becomes stale and loses its value.”

Specifically, organizations with centralized governance are more likely to achieve the most substantial improvements in business agility, compared to those without centralized governance, including:

- 45% more likely to reduce the average time for production releases by 35 days or more.
- 56% more likely to reduce the time it takes to reach actionable insights from data by 120 hours or more.
- 45% more likely to reduce time to market for new application features and functionality by 30 days or more.

Technology and finance partnership – With technology and finance functions involved in planning and budgeting of cloud service delivery, the combined technology and financial acumen significantly increases forecast accuracy, boosts savings in cloud costs, and contributes to better SLA performance.

Much like the allocation of cloud spend to the consuming business unit, formal partnerships between technology and finance functions are associated with increased use of other CFM best practices. For example, organizations with formal and strategic partnerships allocate 2X more cloud spend to the consuming business unit than organizations that lack partnerships. They are also 3X more likely to govern cloud activities with centralized teams, compared to those with limited or no partnership. Finally, those with optimal partnerships are 2X more likely to monitor cloud costs and consumption consistently and systematically.

Managed services – Managed cloud services are provided directly by the cloud-hosting vendor for ongoing management of cloud infrastructure. It relieves organizations of the work of administering CFM activities – for example, automating cost and consumption monitoring and reporting, scaling capacity up and down, and leveraging excess compute capacity.

Higher levels of workloads under managed services correspond with higher levels of forecast accuracy, incremental cloud cost savings, and SLA performance.

However, managed services should not be considered a hand-off of responsibility. Its effectiveness depends on collaboration with the managed services provider on budget setting and establishment of forecasting cadences, tagging strategy, and SLAs among other factors (Fig. 8).

RECOMMENDATIONS

The full business value of cloud migration will elude organizations unless they effectively apply CFM strategies, tools, and disciplines. The practices should not be narrowly viewed as “controls” that are focused primarily on delivering cost savings. They are a holistic set of capabilities that are mutually reinforcing – measurement facilitating forecasting, spend accountability motivating cost optimization, and finance expertise elevating operational effectiveness. The impact of these practices on business value is evinced by the study’s top performers. Top performers leverage CFM practices more broadly and apply them more systematically to attain 50% greater improvements in cost savings, staff productivity, resiliency, and agility, compared to the overall group.

The next report in this series will explore the broader business impacts of cloud-hosted infrastructure. In

the meantime, organization leaders should assess and invest in the following essential CFM capabilities. (Additionally, see “Checklist of CFM Actions to Maximize Business Value,” in this report.)

- **Spend management:** What is being done to optimize cloud costs? Are structures such as centralized spend management and governance of cloud financial operations in place across the enterprise cloud portfolio? Is systematic cost and consumption monitoring, and variance analysis well established? Are cost-optimization strategies, such as rightsizing and pricing-model selection, being applied regularly? If not, organizations may be paying as much as 50% more than necessary in ongoing cloud costs.
- **Cost allocation:** How much of the organization’s cloud spend is allocated to consuming business units or teams? When that level exceeds 70%, the resulting accountability will drive behaviors that maximize cost savings and boost the effective use of other CFM disciplines such, as governance and monitoring.
- **Partnering:** What is the relationship between the technology and finance functions when it comes to cloud operations? Both functions should meet regularly and follow a well-defined process to review cloud usage and costs. Finance’s own planning and budgeting disciplines should be integrated into cloud service delivery.

FIG. 8 Cloud financial operations practices and their KPI impacts

Best practice	Increase in cloud spend forecast accuracy*	Increase in incremental cloud cost savings*	Increase in SLAs consistently met*
Cloud activities managed centrally**	10%	38%	15%
Formal and strategic partnership with finance***	46%	22%	32%
More than 50% of cloud workloads supported by provider’s managed services	16%	45%	9%

*Compared to accuracy, savings, and SLAs met for respondents not using or suboptimally using the practices (e.g., infrequently, to a lesser degree).

** Results for respondents managing four or more of the following activities centrally: Security and compliance, architecture, demand management, operations and service delivery, cloud financial management, and cloud training and knowledge management.

*** Technology and finance meet regularly and have a unified comprehensive view of cloud usage and costs; finance planning and budgeting is integrated into cloud service delivery.

Source: Cloud Services Study, The Hackett Group, 2022

APPENDIX

KPIs determining top-performer status

Top-performing organizations in the Cloud Services Study (referred to in this report's text and figures as "top performers") achieved a top-10% (decile) weighted-average score across 22 KPIs, based on their direct responses to survey questions and on calculated metrics.





The KPIs used for this analysis are listed in Fig. 9. Each was weighted equally, and scores were based on post-migration values only. Where one or more applications is indicated, scores were averaged across all of the AWS-migrated applications submitted for analysis by respondents.

Checklist of CFM actions to maximize business value

The following are general recommendations based on the study's CFM best-practice findings:

- 1. Baselines.** Measure and establish baseline costs and consumption for applications being considered for migration to the cloud. Market solutions include AWS Migration Evaluator. Set CFM performance targets based on the impacts associated with optimal use of practices shown in this report.
- 2. Strategy and guidelines.** Create a well-defined cloud migration strategy, roadmap, and funding model; set expectations for their application consistently and organization-wide. An example resource that can assist with this is AWS Migration Acceleration Program.

FIG. 9 KPIs used to determine top performers

Key performance indicator category	Performance metric
 <p>General performance</p>	Percentage of company's/business unit technology programs and initiatives that achieve anticipated return on investment
	Average forecast accuracy for company's/business unit cloud spend
	Average employee satisfaction rating for the migrated application(s)
	Average customer satisfaction rating for the migrated application(s)
	Change in number of issues related to response time of the application(s)
 <p>Cost savings & productivity</p>	IT infrastructure spend as a percentage of current year annual revenue
	Number of virtual machines (VMs) managed per server administrator
	Total terabytes of storage managed per storage administrator
	Percentage of infrastructure staff focused on day-to-day operations activities such as purchasing, repairs, installation, upgrades, testing, and monitoring (versus strategic activities such as capacity planning, budgeting, roadmapping, and other activities)
	Migrated application(s) infrastructure spend as a percentage of current year annual revenue
	Percentage of application development team's effort directed toward developing new features and functionality (versus minor enhancements, updates, and break-fixes)
 <p>Resiliency/security</p>	Number of critical incidents per billion of current year annual revenue
	Number of outages per billion of current year annual revenue
	Hours of unplanned downtime experienced during 12-month period
	Number of security-related incidents per billion of current year annual revenue
	Mean time to detect or identify security incidents
	Percentage of infrastructure SLAs consistently met
 <p>Agility</p>	Average frequency of production releases for the application(s)
	Average time for a production release for the application(s)
	Average time to market for new features for the application(s)
	Length of time to produce actionable insights from when data is made available for the application(s)
	Percentage of projects/applications using agile/DevOps methodologies

Source: Cloud Services Study, The Hackett Group, 2022

3. **Education.** Enroll in cloud training and awareness programs that have broad, positive effects on cloud value and CFM compliance, as these are often overlooked. Relevant training and certification offerings include AWS Cloud Financial Management for Builders and AWS Cloud for Finance Professionals courses.
4. **Governance.** As infrastructure expands in the cloud, concentrate cloud governance in centralized, dedicated teams, such as cloud business offices. Assign governance performance targets relevant to all CFM pillars – forecast accuracy, SLAs consistently met, cloud cost-optimization rates, alignment with migration strategy, and consistency of cloud management activities. Support governance teams by leveraging governance tools and automation. Example solutions include AWS Control Tower, AWS Service Catalog, and AWS Config.
5. **Visibility.** Adopt and consistently deploy a cost transparency tool to monitor and make key metrics visible to governance teams and business stakeholders. Example resources include AWS Cost Explorer or AWS Cost and Usage Report integrated with Amazon QuickSight. Apply cost allocation tags to cloud workloads relevant to cost and consumption, to increase granularity of visibility.
6. **Monitor and forecast.** Establish a regular cadence in cloud cost trend and driver analysis. Conduct cost and consumption monitoring, and address audit and forecast variance findings consistently and systematically. Identify and limit cloud waste and automate resource allocation, usage monitoring, cost management, and incident management. Cloud providers are increasingly leveraging machine learning to help customers monitor and detect cost anomalies, e.g., AWS Cost Anomaly Detection, AWS Budgets' reports and alerts.
7. **Accountability.** Establish ownership and maximize accountability and compliance by allocating as much cloud spend as possible to consuming business units or teams. If necessary, leverage relevant finance accounting rules and expertise to ensure that cloud spend responsibility is assigned appropriately. Cloud provider features, such as cost allocation tags, AWS Cost Categories and AWS Billing Conductor, can help.
8. **Optimize costs.** Apply cost-optimizing techniques and tools in combination. Key strategies should include using a combination of pricing models, resource rightsizing, and elasticity tools such as autoscaling. Modernize cloud resources by leveraging the latest provider innovations, e.g., migrating to AWS Graviton family of processors. Tools to aid visibility can be developed, purchased, or obtained from the cloud provider, e.g., AWS Trusted Advisor, AWS Compute Optimizer, as well as rightsizing recommendations available through AWS Cost Explorer. If the organization lacks sufficient skill or time to actively optimize costs, the cloud provider's managed services offering is an option.
9. **Tailor pricing models.** Select cloud pricing models that work best for the needs of given applications, such as discounted commitment-based (i.e., Savings Plans and Reserved Instances) and excess compute capacity models (i.e., Amazon EC2 Spot Instances); and/or more costly but flexible on-demand pricing. Provider tools can help manage resource elasticity and automate capacity scaling, e.g., AWS Auto Scaling.
10. **Partner with finance.** Invest in a strong collaborative relationship between the technology and finance functions. Ensure that relationship liaisons are in place to be responsible for defined partnership goals and performance. Conduct periodic assessments of satisfaction levels with the partnership, and address shortcomings.

Definitions

The following are definitions for terms used in this report:

Application overprovisioning: Purchasing or commissioning excess compute or storage capacity for IT services to accommodate exceptional circumstances, such as seasonal peaks in demand. Overprovisioned resources include central processing unit cores, virtual machines, and storage.

Centralized governance of cloud spend: Oversight of activities related to purchase orders that are required to approve cloud spend, or centralized cost-management and/or procurement activities. In contrast, a decentralized approach may deliver more speed and agility, but less financial control and

consistency. Cloud center of excellence (CCOE) and cloud business office (CBO) are centralized governance models for organizations that migrate applications to the cloud. They play a consultative role for cloud service users and/or consumers in the business.

Chargeback/showback: Chargeback is a cost allocation accounting strategy that applies the costs of technology hardware, software, cloud services, or other shared services to the business unit or function in which they are used. Showback is an alternative accounting strategy in which costs are not directly allocated to a consuming business unit or team, but made visible through reporting.

Cloud pricing model: A method of pricing cloud resources. Common models include:

- **Commitment-based pricing:** This model gives cloud users the option to commit to resources for a set period, with the option to pay some of the amount upfront. This model grants discounts that vary depending on the cloud provider and the level of commitment. This does not include long-term cloud contracts, which may offer other discounts. Examples include Savings Plans or Reserved Instances.
- **On-demand public pricing:** A cloud pricing model that allows paying per hour or per second, without long-term commitments or upfront payments. Cloud users can increase or decrease available resources at will.
- **Use of cloud provider excess compute capacity:** This model lets cloud users provision unused cloud provider capacity, provided with the highest level of discount compared to on-demand costs, e.g., Amazon EC2 Spot Instances.

Cloud-spend optimization: Use of tools and strategies to incrementally reduce the ongoing cost of cloud hosting. The following is a list of such tools and strategies:

- **Pricing model-based optimization:** Takes advantage of cloud provider discounts and flexible pricing options.

- **Rightsizing of cloud resources:** Optimizing consumption of cloud resources to reduce overspending.
- **On-demand or elastic cloud usage:** Use of flexible options to allocate resources (workload scheduling, dynamic resource allocation, autoscaling, etc.).
- **Use of cloud providers' excess compute capacity:** Use of Amazon EC2 Spot Instances to reduce the cost of cloud resources.
- **Serverless computing/serverless architectures:** A cloud execution model in which the cloud provider allocates resources on demand, taking care of the servers on behalf of customers. No dedicated computing resources are allocated to an application when it is not in use.
- **Active modernization of cloud resources:** Adoption of the latest technological innovation from the cloud provider, e.g., new families of solutions and/or updates.

Forecasting: Trend-based forecasting involves analyzing historical cloud spend to project future spend. Driver-based forecasting involves identifying and analyzing the key drivers of cloud spend, and how changes to those drivers will impact future spend. Accuracy is a measure of predicted spend to actual.

Managed cloud services: An enterprise service provided directly by a cloud provider or its partners for ongoing management of the customer's cloud infrastructure.

Service-level agreement (SLA): A contract specifying levels of service for critical technology infrastructure elements, and service categories such as availability, speed, and scalability.

Tagging: Metadata elements attached to cloud workloads that provide consistency and granularity for better governance of cloud-based resources. Sets of tags can pertain to the cloud providers, financial aspects of the workload, application features, the environment, etc.

About the Advisors



RICHARD PASTORE

Senior Director, IT Research Advisor

Mr. Pastore develops and delivers research and related resources for The Hackett Group's Advisory programs, including IT. He has over 25 years of experience working with CIOs and their teams to apply thought leadership and best practices to help them extract the maximum business value from strategic investments in technology. Mr. Pastore has spent the last 15 years designing, implementing and managing IT and business transformation leadership programs, including best practices research, seminars, workshops, and conferences, assessment tools and frameworks for Fortune 1000 organizations. He is former editor of CIO magazine and vice president of the CIO Executive Council.



MICHAEL FULLER

Principal and Co-Leader, Technology Transformation Practice

Mr. Fuller has over 25 years of management consulting and IT experience, primarily working in financial services, utilities and energy, and consumer product goods. He has had hands-on experience in designing and implementing IT operational models, aligning IT with its business partners, and in the development of highly efficient and effective IT organizations.



JUSTIN GILLESPIE

Principal, Digital Enablement Services

In addition to his work with The Hackett Group, Mr. Gillespie is a faculty member of the Security Executive Council. Previously, he was Principal and Global Practice Leader for The Hackett Group's Analytics and Data Management Practice. Prior roles included Vice President of Business Intelligence at OSI Consulting and Principal Systems Consultant at Brio Technology. Mr. Gillespie also founded 1Answer Solutions, an analytics and business intelligence services provider.

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The Hackett Group
1000 Abernathy Road NE
Suite 1400
Atlanta, GA 30328

T. +1 770 225 3600
T. 1 888 842 2538 (toll-free)
W. www.thehackettgroup.com

London
20 St Dunstan's Hill
London
EC3R 8HL, UK

T. +44 20 7398 9100