REGION FOCUS: WORLDWIDE

The Business Value of SAP S/4HANA on AWS

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Executive Summary

Companies run enterprise resource planning (ERP) systems to manage their critical business processes (Sales & Services, Research & Development, Procurement, Manufacturing, Logistics). These mission critical systems collect, store, manage, and analyze data from many business activities. For businesses that seek to expand their differentiation in the digital era, modernizing their ERP environments is a strategic priority. For these organizations, modernizing the environment not only means upgrading the application stack but also selecting the right type of deployment environment that offers agility, flexibility, and scalability with an operationally friendly cost structure. Infrastructure choices are of paramount importance, given the operational complexity of many ERP applications. While the choice of public cloud environment appears simple, reality tells another story. Fortunately, leading public cloud service providers like Amazon Web Services (AWS) offer optimized and certified options that make it attractive for organizations to deploy their SAP S/4HANA environments as a part of their ERP modernization initiatives.

IDC interviewed organizations that upgraded their ERP environments by moving to SAP S/4HANA on AWS. Study participants described leveraging stronger functionality and capabilities of S/4HANA to establish a better business foundation and the efficiency, agility, and performance of the AWS cloud to establish more cost-effective and impactful ERP platforms.

IDC's analysis shows that these organizations will achieve significant value through use of S/4HANA on AWS worth an annual average of $11.19 million per interviewed customer by:

- **Optimizing spending on infrastructure and licensing,** which occurs through rightsizing infrastructure requirements and making more efficient use of licenses
- **Reducing staff time required to manage and support,** which frees up staff time for business-generating activities and lowers overall costs of operations
- **Improving data analytics capabilities,** which makes operational data more impactful

Business Value Highlights

Click each highlight below to navigate to related content within this document.

- **503%** three-year ROI
- **11 months** to payback
- **60%** faster S/4HANA migrations and upgrades
- **24%** lower infrastructure costs
- **32%** more efficient IT infrastructure teams
- **29%** lower three-year cost of operations
- **74%** higher query volume
- **16%** faster to market for new products/services
- **$28.88M** higher revenue per organization
- **15%** higher productivity impacted line-of-business teams

- **Increasing agility and flexibility,** which allows them to better meet business needs and support more agile development activities
- **Bettering ERP performance and capabilities,** which helps generate higher revenue and increases employee productivity levels

Situation Overview

Thriving in a digital-first economy pushes businesses in unforeseen ways. On one side they must maintain their revenue-generating operations, and on the other side they must prioritize new initiatives with the objective of expanding their competitive differentiation.

- Generational upgrades, also known as "run and maintain" approaches, are designed to maintain business as usual to ensure consistent business outcomes. Timely upkeep of core business applications is the equivalent of "keeping their lights on"; it is integral to meeting tactical business objectives.
- Rip-and-replace upgrades, also called "create new" approaches, enable the business to foresee potential disruptors in the industry and chart its course accordingly. "Create new" approaches for business applications can be influenced by a variety of external and internal factors. Replacing certain kinds of applications with new ones ensures the organization can meet strategic objectives.

The common substrate that binds both approaches is IT infrastructure. Digitally transformed organizations recognize the strategic role played by IT infrastructure in delivering consistent business performance. They recognize that business innovation and business resiliency in tandem require suitable and proactive investments in IT infrastructure.

Core business applications such as enterprise resource planning applications are specifically thrust into the spotlight when it comes to these approaches. ERP applications support internal operations, market insights, customer engagement, and revenue capture and recognition. Modernizing and/or replacing ERP applications ensure that the business continues to generate consistent revenue and profits. However, given the overall complexity of many ERP applications, any initiatives to modernize and/or replace them can be tricky. Considerations for IT infrastructure transformation that accompanies "run and maintain" and "create new" approaches add an extra element of complexity.

SAP ERP Environments

The benefits offered by SAP via its suite of solutions to business worldwide is well established. In a 2021 study on infrastructure adoption trends for SAP HANA and S/4HANA environments (IDC #US48416021, December 2021), IDC found that more than 50% of North America–based firms with investments in SAP applications consider those environments essential for their business, with another third saying they play a significant role. Another 8% say that without SAP, meaning if they had not implemented SAP solutions, their business would be in peril. Businesses that have invested in SAP's suite of ERP applications continue to reap benefits. Their loyalty to SAP — despite many having endured an arduous implementation and go-live journey — is what makes SAP a strategic partner to leading IT vendors and service providers worldwide.

SAP is very prescriptive when it comes to in-place modernization ("run and maintain") and modernize and transform ("create new"). The modernization road map calls for organizations to shift their SAP ERP environments to SAP S/4HANA.

The stated business benefits of SAP S/4HANA are:

- Simplification and consolidation of the entire environment with a single in-memory database; ease of use with a modern design, regardless of device or deployment
- Cost-effectiveness and better decision making by tying together all the analytical and transactional capabilities of a variety of systems at one location
- Accelerated innovation with an application stack that can leverage speed, context, and data accessibility
- Improved performance that enables the organization to provide better response times for customer-facing and internal applications

A key challenge with SAP environments is determining the infrastructure requirements of the SAP HANA in-memory database that powers SAP S/4HANA and other modern SAP environments. SAP HANA is a multi-model database that keeps the data in memory instead of accessing it on persistent media (like flash or disk). The column-oriented, in-memory database design enables advanced analytics alongside high-speed transactions in a single system. It lets businesses process massive amounts of data with near-zero latency and gain instant responses to queries. By storing data in column-based tables in main memory and bringing online analytical processing (OLAP) and online transactional processing (OLTP) together, SAP HANA is significantly faster than other traditional database management systems (DBMSs). SAP HANA databases require performance-intensive, memory-optimized, computing platforms. Limitations with maximum memory supported by the platform limit the ability of some businesses to scale their SAP environments.

SAP S/4HANA on AWS

Leading cloud service providers like AWS are addressing these concerns, making it simpler for organizations of any size to embrace a public-cloud-first strategy for their S/4HANA environments. With appropriate memory- and performance-optimized compute and storage instances, AWS aims to make an SAP modernization journey—and especially those that involve a migration to SAP HANA or S/4HANA—a less arduous and complex initiative.

AWS makes it easier for businesses to fully realize the benefits of their SAP S/4HANA investments. As a part of a modernization or a greenfield initiative, businesses can:

- Achieve faster time to value with the AWS on-demand infrastructure
- Rapidly provision infrastructure for SAP S/4HANA with no upfront cost or long-term commitment
- Pay for only what they need, without spending upfront costs purchasing hardware for what they can't forecast

Key differentiators of the AWS S/4HANA solution include:

- **Amazon EC2 High Memory instances with up to 24 TB of memory in a single instance.** These instances offer 6, 9, 12, 18, and 24 TB of memory and are purpose-built to run large production deployments of the SAP HANA in the cloud. They enable businesses to run large in-memory databases and business applications that rely on these databases in the same shared Amazon Virtual Private Cloud (VPC), reducing the management overhead associated with complex networking and ensuring predictable performance.
- **Support for up to 48 TB of memory for SAP S/4HANA environments.** Businesses can leverage scale-out setups for extremely large SAP S/4HANA workloads with up to four nodes, totaling 48 TB of memory. They can benefit from AWS Nitro System, a combination of purpose-built hardware and software components that provide infrastructure-related performance, security, isolation, elasticity, and efficiency necessary for S/4HANA environments.
- **Flexible deployment options.** SAP S/4HANA can be deployed in the AWS Cloud by using the standard SAP S/4HANA installation process. AWS also offers comprehensive documentation to streamline the installation process. Businesses also have the option

to bring their own licenses for the software component. AWS provides operating system licenses, and relevant license fees are combined with the base hourly fee of the respective Amazon EC2 instance type.

- **AWS Launch Wizard for SAP.** This is a service that guides organizations through the sizing, configuration, and deployment of SAP applications on AWS.
- **AWS SAP Competency Partners.** These make up an ecosystem of providers with technical proficiency and demonstrated success in SAP implementation, migration, and innovation, providing experience, tooling, methods, and best practices to streamline an organization's migration or transformation.

The Business Value of SAP S/4HANA on AWS

Study Demographics

IDC conducted in-depth interviews with eight organizations running SAP S/4HANA on AWS to understand the impact on their IT and ERP costs, performance, and business outcomes. Interviews were in-depth in nature and designed to obtain information about the impact of S/4HANA and AWS.

Table 1 (next page) presents information about the organizations interviewed for this study. Overall, study participants had an enterprise-level profile, with average employee bases of 23,616 and annual revenues of $3.19 billion (medians of 5,700 employees and revenue of $1.75 billion, respectively). Most interviewed organizations were based in the United States, but several had global operations, and two organizations were headquartered in the Asia/Pacific (APAC) region. Further, study participants provided insight into experiences from diverse industry verticals, including the financial services, automotive, consumer, healthcare, insurance, and retail sectors.

TABLE 1

Demographics of Interviewed Organizations

	Mean Average	Median
Number of employees	23,616	5,700
Number of IT staff	2,005	625
Number of business applications	1,214	168
Revenue per year	$3.19B	$1.75B
Countries	United States (6), Philippines, Vietnam	
Industries	Financial services (2), automotive, consumer, healthcare, insurance, retail	

n = 8; Source: IDC In-Depth Interviews, April 2023

Choice and Use of SAP S/4HANA on AWS

IDC interviewed organizations about their use of the combined S/4HANA on AWS solution and platform, asking them to compare it with their previous ERP and infrastructure environments. For the most part, study participants moved to the AWS cloud from legacy on-premises environments, and either moved to S/4HANA from legacy SAP systems or other ERP vendor platforms.

When asked about their decision to move to S/4HANA on AWS, study participants coalesced around their conclusion that they needed a more robust and functional ERP environment, given the criticality to their businesses. They needed the ability to scale to meet business demand, ensure performance levels required by customers and employees, and expand in a more cost-effective manner. They concluded that running S/4HANA on AWS was the right approach that would meet their current business needs and help them future proof their ERP and business platforms.

Study participants spoke to their unique decision criteria:

Industry-specific capabilities and scalability:

"We have been growing exponentially with mergers and acquisitions and we needed a solution with the right reputation from a healthcare standpoint and the scalability to handle aggressive acquisitions. … We chose AWS for S/4HANA because it has a good reputation for healthcare organizations."

Maximize productivity:

"We chose S/4HANA on AWS because we needed to make our higher cost resources more productive. … We chose AWS to simplify and centralize our administrative processes, along with cost effectiveness and higher performance."

Reduce cost of operations:

"We chose S/4HANA on AWS because of the technology and the ability to reduce our total cost of ownership. We chose AWS after doing an RFP with other public cloud providers. … We also looked at on-premises but concluded that using AWS was around 10% more cost effective."

Needed higher-quality platform:

"We gathered information about possibilities based on experiencing technical issues and downtime with [our previous environment]—once a week on different development, UAT, and production servers. We were also mandated to find a cost savings strategy and running S/4HANA on AWS came out less expensive."

Table 2 shows how study participants were using S/4HANA on AWS at the time of interviews. As shown, these S/4HANA environments run on an average of 71 AWS virtual instances and use more than one petabyte of data (1,259 TBs, on average). More than 8,000 employees use the 17 S/4HANA-related applications that support an average of 59 sites and branches and 626 business partners/suppliers.

TABLE 2

S/4HANA on AWS Environments, Interviewed Organizations

	Mean Average	Median
Number of AWS virtual instances	71	44
Number of TBs	1,259	200
Number of SAP S/4HANA-related applications	17	4
Number of internal users	8,001	7,880
Number of sites/branches supported	59	8
Number of suppliers supported	626	100

n = 8; Source: IDC In-Depth Interviews, April 2023

Business Value and Quantified Benefits of SAP S/4HANA on AWS

IDC's study demonstrates the strong value for study participants of upgrading their ERP and IT environments with S/4HANA on AWS. Interviewed organizations repeatedly cited their ability to better address business needs in a meaningful and robust way with the combined S/4HANA and AWS solution as they gain agility and the ability to use data to better run their businesses. Further, they valued the cost, operational, and business efficiencies of using S/4HANA in the AWS cloud, expressing the fact that they gain more from using S/4HANA and AWS together than they would by using only one on its own.

Study participants spoke in their own words about the most important ways that they have benefited from running S/4HANA on AWS:

Provides necessary flexibility and speed to move with business:

"S/4HANA on AWS has given us what we didn't have before in terms of we pay for what we now need—we didn't have that flexibility before with an on-premises environment. … We've been able to future proof our S/4HANA environment because we can rapidly provision infrastructure and new technology and we can move quickly when needed."

Simplicity, efficiency, flexibility:

"S/4HANA on AWS is simple and easy to use and more efficient, so that means there are fewer possibilities for errors. … AWS provides better technical support and flexibility for our computing services as well as better security and reliability."

Enhanced agility, new technologies:

"With S/4HANA on AWS we can now add modules easily and are looking into AI, including for automating our call centers. … We've been able to future proof our environment and we're now set to be agile for the next several years."

IDC's analysis of the impact for study participants of running S/4HANA on AWS shows that they are realizing significant value, which IDC calculates will be worth an average of $11.19 million per year per organization. The ways in which interviewed organizations gain from using S/4HANA on AWS are explored in the further sections of this study.

Infrastructure and Licensing Cost Benefits

Interviewed organizations mentioned cost optimization as a driver of their decision to run S/4HANA on AWS. They recognized the criticality of their ERP platforms but concluded that they had to establish ways to keep costs in check, especially as their data and business environments grow.

Study participants cited two primary ways that running S/4HANA on AWS is advantageous from a cost perspective. First, running S/4HANA in the AWS cloud enables them to move away from capital-intensive on-premises environments that often require the maintenance of excess capacity to address potential business demand. The ability to add or remove capacity as needed is especially important for study participants, as it allows them to tie infrastructure and licensing costs more closely to business use. Further, they noted that infrastructure consolidation and the ability to leverage existing SAP and other software licenses bring additional cost savings for their ERP environments.

Interviewed organizations provided examples of cost savings:

More cost-effective as overall platform for business:

"S/4HANA on AWS is in line with our general strategy as a company to move out of on-premises datacenters that require maintenance and move to the cloud."

Close entire datacenter:

"We had our own datacenter before S/4HANA on AWS that we were running just for this that probably cost around $500,000 per year. We've closed a whole datacenter by using S/4HANA on AWS that included hundreds of racks."

Scale down to minimize overprovisioning, scale up when needed:

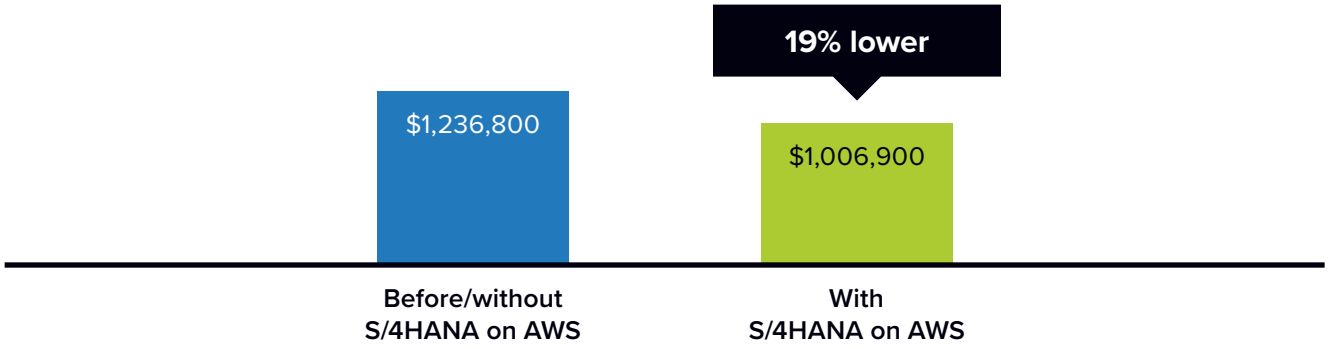
"With S/4HANA on AWS, we can easily scale down as needed to save money. When we need to increase capacity, it just takes 15–30 minutes so we can use the upgraded version of the specification. Also, we've been able to implement another SAP disaster recovery environment."

As shown in **Figure 1** (next page), IDC calculates that study participants can run their S/4HANA on AWS environments at a 19% lower cost, including 24% average infrastructure capacity and 8% average licensing savings. On a per-organization basis, these savings average almost $230,000 per year.

FIGURE 1

Average Annual Cost per Organization

($ per year per organization)



n = 8; Source: IDC In-Depth Interviews, April 2023

IT Staff Efficiencies

Study participants also connected their use of S/4HANA on AWS to efficiency gains for teams responsible for managing and running these environments. They spoke about how moving to a highly functional, automated, and consolidated AWS environments allows their IT infrastructure teams to shift focus from day-to-day operational tasks such as patching and troubleshooting to broader initiatives. Further, several noted that they now require less staff time to support migrations, deployments, and updates to their ERP environments and can drive business activities such as acquisitions while requiring less staff time.

They provided specific examples of these IT team efficiencies:

Substantial staff time savings for retail company in supporting IT for acquisitions:

"With S/4HANA on AWS, we're no longer worrying about operating systems and the hardware not being available. … We recently purchased another company and integrated them more quickly with S/4HANA on AWS. It took six months but probably would have taken a year before, with 25 technical staff at one-third of their time supporting the acquisition."

Features and new technologies generate staff efficiencies:

"We can use features in S/4HANA on AWS such as virtualization, stronger security, and machine learning that are easier to use on the AWS platform. … Our IT infrastructure team would need around one-third more time without S/4HANA on AWS."

Table 3 (next page) shows IDC's assessment of the impact of running S/4HANA on AWS for IT infrastructure teams. On average, IDC calculates that these teams realize 32% efficiencies, thus freeing up the time of an average of 3.6 full-time equivalents (FTEs) per organization.

TABLE 3

Impact on IT Infrastructure and Administration Teams

	Before/Without S/4HANA on AWS	With S/4HANA on AWS	Difference	Benefit
Equivalent FTEs required for same workloads	11.0	7.4	3.6	32%
Staff hours per S/4HANA on AWS VM per year	292.0	197.0	95.0	32%
Value of equivalent FTE time required ($ per organization per year)	$1.1M	$743,200	$357,700	32%

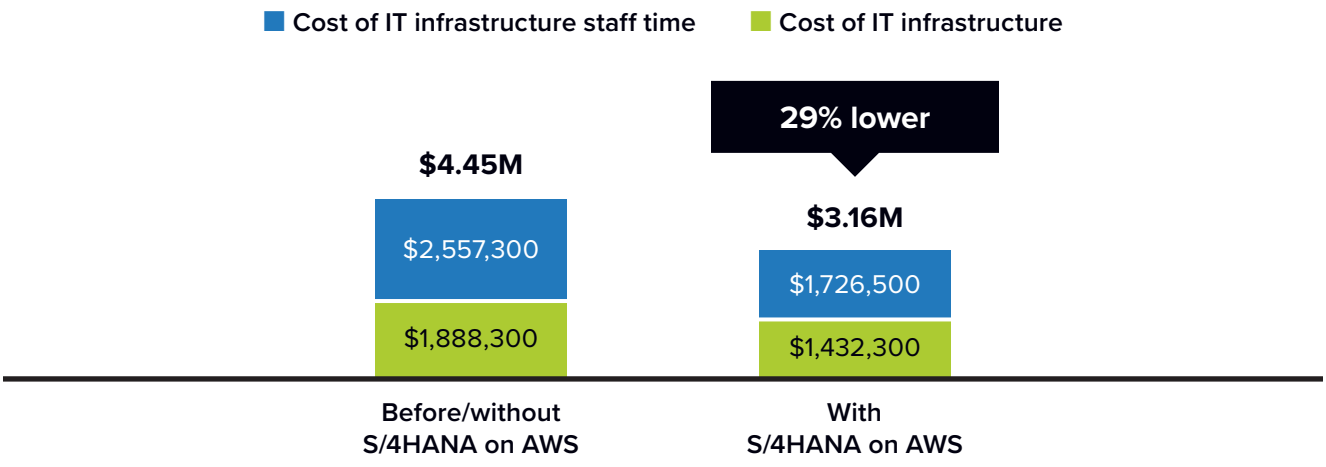
n = 8; Source: IDC In-Depth Interviews, April 2023

Study participants' ability to reduce direct infrastructure and licensing costs and minimize staff time requirements allows them to establish more cost-effective ERP environments. **Figure 2** shows IDC's assessment of total cost of operations for running S/4HANA on AWS versus their previous ERP environments, with an average combined cost efficiency of 29%, thus lowering total costs by an average of $1.29 million per organization over three years.

FIGURE 2

Total Cost of Operations per Organization, Three Years

($ over three years per organization)



n = 8; Source: IDC In-Depth Interviews, April 2023
For an accessible version of the data in this figure, see Figure 2 Supplemental Data in Appendix 3.

Data and Analytics Benefits

Study participants also reported strong gains in their ability to use and apply data and analytics in support of their business activities with S/4HANA on AWS. They attributed these gains to the strong core functionality of S/4HANA, including its strong integration, query, and analytics capabilities, as well as the underlying performance of the AWS platform.

For study participants, timely access to high-quality data and relevant data-driven insights have become fundamental to business success. They uniformly reported that S/4HANA on AWS helps them better use data in support of their businesses, which can contribute directly to business gains as expressed by one study participant: *"Our employees have better access to data and because they have more information that is higher quality faster with S/4HANA on AWS, it contributes to our overall revenue gain of around one percent per year."*

Study participants reported improvements across their data-related activities through use of S/4HANA on AWS.

As a core matter, they tied increased analytics capacity and ability to deliver insights to use of the combined S/4HANA on AWS solution, including:

- **Handling a 74% increase** in a query volume
- **Executing queries 38% faster** in support of business needs

Further, teams that are most responsible for handling and using operational data are more efficient with S/4HANA on AWS. For example, interviewed organizations attributed an average efficiency of 25% for their database administrator (DBA) teams to use of S/4HANA on AWS, as they benefit from a more seamless infrastructure foundation as well as more robust capabilities of the S/4HANA platform.

TABLE 4

Impact on DBA Teams

	Before/Without S/4HANA on AWS	With S/4HANA on AWS	Difference	Benefit
Equivalent FTEs required for same workloads	6.4	4.8	1.6	25%
Value of equivalent FTE time required ($ per organization per year)	$636,600	$475,000	$161,600	25%

n = 8; Source: IDC In-Depth Interviews, April 2023

Analytics teams responsible for delivering timely and impactful data-driven insights also reported benefiting from use of S/4HANA on AWS. These teams depend on timely access to relevant and high-quality data and insights through queries. Interviewed organizations connected use of S/4HANA on AWS to enhanced performance and ultimately value of these teams as they work to support business activities, with IDC calculating an average 14% productivity gain for these teams.

TABLE 5

Impact on Analytics Teams

	Before/Without S/4HANA on AWS	With S/4HANA on AWS	Difference	Benefit
Equivalent FTEs required for same workloads	11.4	13.0	1.6	14%
Value of equivalent FTE time required ($ per organization per year)	$798,000	$907,700	$109,700	14%

n = 8; Source: IDC In-Depth Interviews, April 2023

Agility and Development Benefits

Study participants reported that running S/4HANA on AWS has provided them with an ERP platform that can move at the speed and with the flexibility required by their business operations. Previously, they were often slowed by siloed ERP operations without sufficient integration and infrastructure foundations that required time and capital investment to expand. However, with S/4HANA on AWS, interviewed organizations have reduced friction associated with these factors substantially, enabling them to provide capacity and functionality to their business operations as needed.

Study participants reported realizing immediate gains with S/4HANA on AWS due to their ability to first migrate and stand up their S/4HANA environments much faster than they otherwise could have and then to extend capacity as needed for development and business activities. They take advantage of having a more integrated platform with easy access to AWS automation and best practices, reporting that they require an average of 60% less time to complete a migration or update to any aspect of their S/4HANA environment, thus saving an average of 1.4 weeks per effort. Thus, they can redirect valuable staff time away from supporting these migrations and updates and begin leveraging enhanced S/4HANA functionality at an earlier time.

Interviewed organizations described the ease with which they can now access new capacity and move to extend their S/4HANA environments, comparing it with the friction they often faced with their previous ERP environments and infrastructure:

Service model for provisioning new capacity:

"With S/4HANA on AWS, we don't have to provision capacity for an upgrade because it's turned into a service model. … We have a partner that can do it within 48 hours whereas it was a Herculean effort before and would have taken weeks because we had to order equipment and get various groups involved."

Much faster to deliver new business capacity:

"By re-architecting our SAP environment with S/4HANA on AWS, we can spin up new instances within an hour whereas we used to need a week. Now, we need an hour of staff time compared to several hours previously."

Spin up and spin down resources as needed:

"With S/4HANA on AWS, we have flexibility and don't need to go through change orders to spin up or down instances. It was more bureaucratic before and we're saving time because of this flexibility. It depends on the project, but we're probably saving 10–15 hours per month."

As noted in the next section, this much-enhanced agility provides the foundation for substantial business benefits. It also enables study participants to maintain more effective and proactive development activities for their ERP and S/4HANA environments.

As a result, developers working on the S/4HANA platform are more effective and can better meet business demand:

More effective development activities:

"We're getting more development done with S/4HANA on AWS and the quality of development is better. We have six team members who have certification with AWS and if we were trying to do the same things on-premises, we would need 12 people."

Establish digital development model:

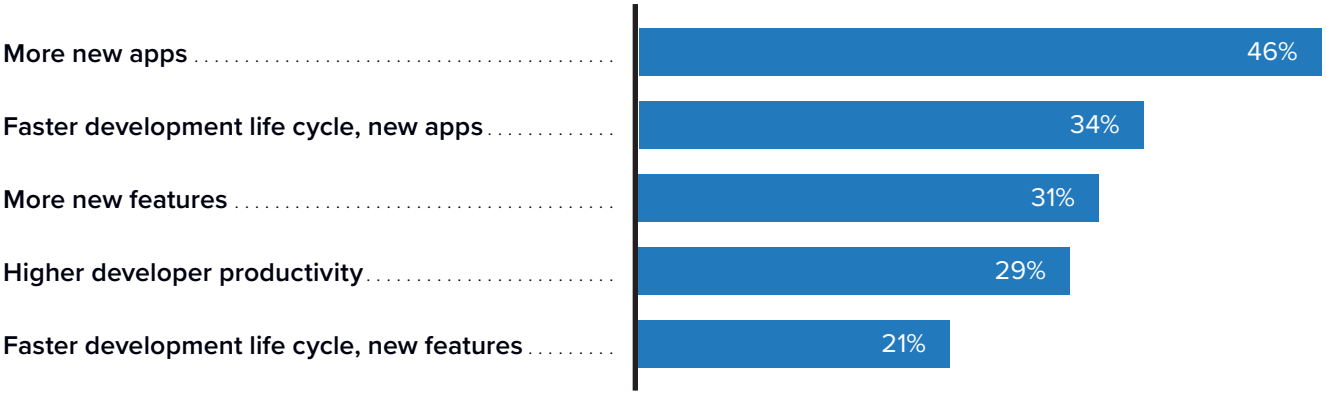
"We've been able to establish a digital development platform with S/4HANA on AWS and we've been able to introduce digital access across all business areas. Before, it was not as well coordinated."

Figure 3 shows the extent to which running S/4HANA on AWS has enabled development efforts. Not only do study participants deliver more new applications (46%) and features (31%), but they do so also cutting development life cycles by 34% for entirely new applications and 21% for new features. These improvements are reflected in 29% average higher productivity for impacted developers, demonstrating their enhanced value to their organizations.

FIGURE 3

Impact on Application Development KPIs

(% benefit with S/4HANA on AWS)



n = 8: Source: IDC In-Depth Interviews, April 2023

Performance and Business Benefits

Study participants rely on their ERP platforms for running their day-to-day business operations as well as making and implementing strategic business decisions. This places a premium on performance, availability, and capabilities. Study participants unanimously reported that running S/4HANA on AWS provides a better business foundation than their previous ERP systems and infrastructure platforms. Moreover, even organizations using S/4HANA on AWS primarily for back office purposes noted how it has helped them future proof these operations, with a media company explaining: *"S/4HANA on AWS helps us future proof because of the continual innovation and increase in SAP services, for example, by providing APIs, tools for data extraction, and reporting capabilities related to AI and ML."*

As shown in **Table 6** (next page), interviewed organizations benefit from enhanced reliability and availability of S/4HANA on AWS. They experience 55% fewer ERP-related outages on S/4HANA on AWS and reduce business productivity losses associated with unplanned outages by an average of 58%. Thus, they face fewer business interruptions and risk associated with critical systems and applications not being available to employees and customers.

TABLE 6

Unplanned Downtime and Performance Impact

	Before/Without S/4HANA on AWS	With S/4HANA on AWS	Difference	Benefit
Number of unplanned outages per year	18.1	8.1	9.9	55%
Mean time to repair, hours	2.0	1.8	0.2	11%
Hours of productive time lost per user per year	1.4	0.6	0.8	58%
Productivity loss per year in FTEs per organization	5.8	2.5	3.4	58%
Value of lost productivity time per organization per year	$408,700	$172,800	$235,900	58%

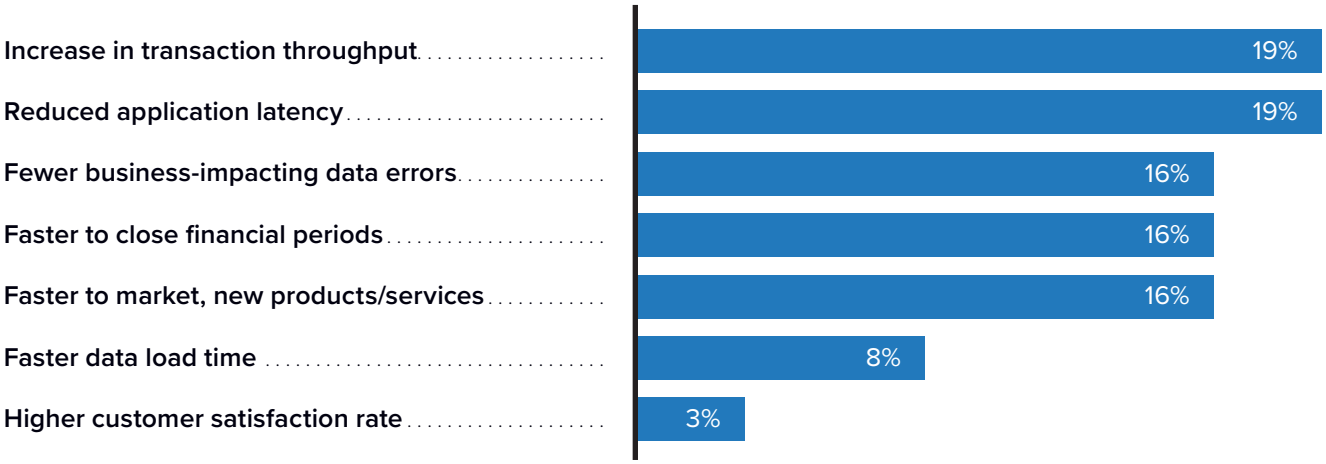
n = 8; Source: IDC In-Depth Interviews, April 2023

Study participants also linked their use of S/4HANA on AWS to incremental but important gains in performance and capabilities. These benefits ranged from greater throughput for transactions (19% on average) to better performance (19% lower latency on average) to higher quality (16% fewer data-related errors on average). Study participants translate these gains into tangible positive business outcomes such as getting new products and services faster to market (16% on average) and closing financial books sooner (16%) (see **Figure 4**).

FIGURE 4

Impact on Performance and Business Key Performance Indicators

(% benefit with S/4HANA on AWS)



n = 8; Source: IDC In-Depth Interviews, April 2023

Ultimately, these types of gains with S/4HANA on AWS lead to quantifiable value in higher revenue and operational efficiencies in the form of higher productivity levels.

Interviewed organizations specifically cited improved business decisions and moving faster to support expansion as drivers of revenue gains, explaining:

Improved overall organizational productivity:

"The overall ability to make decisions faster with S/4HANA on AWS cannot be underestimated in terms of value. … Our C-level executives are not spending their time looking at spreadsheets and all our employees, including in hospitals and on the floor, are more productive."

Necessary platform to grow business:

"We've been able to support business expansion with S/4HANA on AWS. It's been a lot of additional revenue—overall, we're talking about 5–10% of our revenue being because we moved to S/4HANA on AWS."

Trustworthy finance platform:

"We are still a new company, and we need investment, so S/4HANA on AWS makes us more trustworthy in terms of our financial reporting. Having this for reports on financial health can make our company more attractive to investors."

Interviewed organizations also spoke to how S/4HANA on AWS has driven their core business activities. A retailer noted that *"faster access to and higher quality of data"* helps it make decisions that have generated incremental revenue gains. An interviewed insurance company explained that the functionality of S/4HANA in the context of the AWS cloud has enabled it to *"achieve business value in terms of business processes and what we can support and the features we can offer our customers."* Meanwhile, an interviewed automotive company explained that savings it achieves with S/4HANA on AWS can be reinvested *"on product development, instead of IT operations."*

Table 7 (next page) shows IDC's analysis of improved business outcomes for study participants in the form of higher revenue. On average, IDC calculates that they will realize revenue gains worth an average of $28.88 million per organization per year. For purposes of IDC's financial model, a 15% margin assumption is applied, meaning that IDC's ROI calculations consider average net revenue gains of $4.33 million per organization per year.

TABLE 7

Business Productivity Benefits, Higher Revenue

	Per Organization	Per Application
Higher revenue per year	$28.88M	$1.74M
Assumed operating margin	15%	15%
Higher net revenue per year	$4.33M	$261,400

n = 8; Source: IDC In-Depth Interviews, April 2023

In addition to higher revenue, various teams that rely on their organizations' ERP for timely data, information, and processes, perform better with S/4HANA on AWS. As shown in **Table 8**, interviewed organizations identified an average of 953 employees on lines-of-business teams such as finance, manufacturing, HR, and sales teams that benefit from improved performance, access to data, and capabilities with S/4HANA on AWS. They reported average productivity gains of almost 15% on average for these impacted employees, which results in significant additional value, as these employees work with more impact and agility.

TABLE 8

Impact on Lines-of-Business Productivity Gains

	Per Organization	Per Application
Gross productivity gain, FTEs per year	953	58
Number of additional hours of productivity per year	1.79M	108,100
Average productivity gain, impacted users	15%	15%
Net productivity gain, FTEs per year	143	9
Annual value of higher net productivity	$10.01M	$604,000

n = 8; Source: IDC In-Depth Interviews, April 2023

ROI Summary

Table 9 presents IDC's analysis of the benefits and investment costs for study participants related to their use of S/4HANA on AWS. IDC calculates that interviewed organizations will realize discounted three-year benefits in cost savings, IT staff efficiencies, employee productivity gains, and higher revenue worth an average of $28.07 million per organization ($1.69 million per application). These benefits compare with total three-year discounted investment costs, including staff time required for migration and third-party costs, of $4.65 million per organization ($280,900 per application). Based on these levels of benefits and investment costs, IDC projects that study participants will realize an average three-year ROI of 503% and break even in their investments in an average of 11 months.

TABLE 9

ROI Analysis

	3-Year Average per Organization	3-Year Average per Application
Benefit (discounted)	$28.07M	$1.69M
Investment (discounted)	$4.65M	$280,900
Net present value (NPV)	$23.42M	$1.41M
Return on investment (ROI)	503%	503%
Payback period	11 months	11 months
Discount rate	12%	12%

n = 8; Source: IDC In-Depth Interviews, April 2023

Opportunities for AWS

S/4HANA implementations in public cloud infrastructure are relatively new. Further, the current landscape of SAP deployments continues to be fragmented. Businesses run their SAP landscape in multiple deployment scenarios, including on premises, on public cloud infrastructure, via software as a service, and with a managed service provider.

Businesses are no doubt unsure of their short- and long-term business and technical implications of running their core ERP applications outside of their own datacenters, leave alone in a shared-tenancy, public cloud environment. This situation presents an opportunity for AWS.

AWS must continue to implement tools to improve the process of implementing, migrating, and/or modernizing SAP's suite of applications, and then showcase that relatively lower complexity. It must showcase the technical benefits of partnering with a public cloud services leader like AWS with migration tools, security, and try-before-commit options. Crucially, it must articulate long-term business value to businesses that are still on the fence about shifting workloads to the public cloud. AWS must discuss the benefits of consolidating SAP HANA, SAP S/4HANA, and/or BW/4HANA on to a single cloud environment.

Conclusion

Organizations rely on their enterprise applications and enterprise resource planning environments to drive their businesses. This means that they find the right solutions both in terms of ERP application stack capabilities and deployment environments. Without the right application stack, they will not have the right mix of functionality, capabilities, and new technologies; without the right deployment environment, they risk incurring burdensome costs and not having the agility, flexibility, and scalability that their business operations require. This IDC study assesses the impact for organizations of modernizing and upgrading their ERP environments to SAP S/4HANA in the AWS public cloud.

IDC's analysis demonstrates the broad-based value that organizations can achieve by upgrading to S/4HANA on AWS. In terms of business impact, study participants described leveraging enhanced ERP functionality and capabilities to streamline and strengthen their ability to communicate with customers, create and distribute their products and services, and ultimately provide high-quality products and services to their customers. Further, they reported moving with greater agility and scalability, thus minimizing the extent to which their internal ERP environments create friction that can slow their business operations. They noted that running S/4HANA in the AWS cloud allows them to optimize infrastructure resource and licensing use and to require less staff time for day-to-day management and support. Taken together, these benefits of using SAP S/4HANA on AWS create a compelling value proposition for interviewed organizations, which IDC projects will result in a three-year ROI of more than 500% and investment breakeven in less than one year.

Appendix 1: Methodology

IDC's standard Business Value/ROI methodology was utilized for this project. This methodology is based on gathering data from organizations currently running S/4HANA on AWS.

Based on interviews with organizations using S/4HANA on AWS, IDC performed a three-step process to calculate the ROI and payback period:

1. **Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of using S/4HANA on AWS.** In this study, the benefits included IT infrastructure and licensing cost savings, IT staff efficiencies, user productivity gains, and higher revenue.
2. **Created a complete investment (three-year total cost analysis) profile based on the interviews.** Investments go beyond the initial and annual costs of using S/4HANA on AWS and can include additional costs related to migrations, planning, consulting, and staff or user training.
3. **Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of S/4HANA on AWS over a three-year period. ROI is the ratio of the net present value (NPV) and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

IDC bases the payback period and ROI calculations on several assumptions, which are summarized as follows:

- Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and manager productivity savings. For purposes of this analysis, based on the geographic locations of the interviewed organizations, IDC has used assumptions of an average fully loaded salary of $100,000 per year for IT staff members and an average fully loaded salary of $70,000 per year for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).
- The net present value of the three-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.
- Because IT solutions require a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits monthly and then subtracts the deployment time from the first-year savings.

Note: All dollar figures in this white paper are in U.S. dollars. All numbers in this document may not be exact due to rounding.

Appendix 2: Quantified Benefits of Use of SAP S/4HANA on AWS

Table 10 provides details about the financial value that IDC calculates study participants will achieve on an annual basis over three years, including drivers of value and relevant assumptions, by using SAP S/4HANA on AWS.

TABLE 10

Annual Quantified Financial Benefits

Category of Value	Average Quantitative Benefit	Operating Margin Assumption Applied	Calculated Average Annual Value*
IT infrastructure cost savings	24.0% savings, $196,300 per year	No	$152,000
Licensing cost savings	8.0% savings, $33,600 per year	No	$26,000
IT infrastructure team efficiencies	32.0% more efficient, 3.6 FTEs, $100,000 salary	No	$276,900
DBA team efficiencies	25.0% more efficient, 1.6 FTEs, $100,000 salary	No	$125,200
Application development team productivity gains	29.0% more productive, 1.8 FTEs, $100,000 salary	No	$141,600
Productivity gains, reduced unplanned downtime	58.0% less impact, 0.8 hours per user, 3.4 FTEs, $70,000 salary	No	$182,700
Revenue gains, improved performance	$28.88M higher revenue, 15% margin applied	Yes	$3.35M
Productivity gains, improved performance	14.8% higher productivity, 953.0 FTEs productivity gain, $70,000 salary	Yes	$7.75M
Higher analytics team productivity	14.0% higher productivity, 1.6 FTEs, $70,000 salary	No	$85,000
Total annual benefits	**$11.19M per organization**		

n = 8 (*includes average 8.1 months' deployment time, year 1); Source: IDC In-Depth Interviews, April 2023

Appendix 3: Supplemental Data

The table in this appendix provide an accessible version of the data for the complex figure in this document. Click “Return to original figure” below the table to get back to the original data figure.

FIGURE 2 SUPPLEMENTAL DATA

Total Cost of Operations per Organization, Three Years

	Before/without S/4HANA on AWS	With S/4HANA on AWS
Cost of IT infrastructure	$1,888,300	$1,432,300
Cost of IT infrastructure staff time	$2,557,300	$1,726,500
Total	**$4.45M**	**$3.16M**
Difference		**29% lower**

n = 8; Source: IDC In-Depth Interviews, April 2023

Return to original figure

About the IDC Analysts

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Peter Rutten is a research vice president within IDC's Worldwide Infrastructure Practice, covering research on computing platforms. Peter is IDC's global research lead on performance-intensive computing solutions and use cases. This includes research on High-Performance Computing (HPC), Artificial Intelligence (AI), and Big Data and Analytics (BDA) infrastructure and associated solution stacks. In this role, he leads three IDC programs: High-Performance Computing Trends and Strategies, High-Performance Computing as a Service, and Infrastructure Trends and Strategies: Artificial Intelligence and Analytics. His coverage of performance-intensive computing includes supercomputing as well as institutional and mainstream high-performance computing, high-end, accelerated, in-memory and heterogeneous computing infrastructure systems, platforms, and technologies. It includes computing platforms with GPUs, FPGAs, ASICs, and other accelerators that are deployed in the cloud as well as on-premises. It also includes research on mission-critical x86 platforms, mainframes, and RISC-based systems as well as their operating environments (Linux, z/OS, Unix). Peter also examines emerging technologies and platforms such as quantum computing, neuromorphic computing, and technologies that are potentially disruptive to mature infrastructure markets. As part of his role, he performs quantitative (market sizing and forecasting) and qualitative (primary research-based) analysis as well as custom market sizing for IDC's clients.

More about Peter Rutten

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Matthew is responsible for carrying out custom business value research engagements and consulting projects for clients in a number of technology areas with a focus on determining the return on investment (ROI) of their use of enterprise technologies. Matthew's research often analyzes how organizations are leveraging investment in digital technology solutions and initiatives to create value through efficiencies and business enablement.

More about Matthew Marden

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