

A Forrester Total Economic Impact™
Study Commissioned By SAP
September 2019

The Total Economic Impact™ Of SAP S/4HANA

Cost Savings And Business Benefits
Enabled By SAP S/4HANA

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Key Benefits



Increased revenue enabled by SAP S/4HANA capabilities over three years:

\$156 million (+5.8%)



Reduced customer turnover enabled by features of SAP S/4HANA:

4.1% lower



Improved productivity of employees in business units and the IT organization:

\$2.6 million

Executive Summary

SAP S/4HANA is an ERP system designed specifically for in-memory computing and reengineering business processes around key business functions such as financial systems and supply chain management. To better understand the benefits, costs, and risks associated with an SAP S/4HANA investment, Forrester interviewed four customers with experience using SAP S/4HANA and surveyed an additional 110 customers to validate Forrester's observations and support the analysis with empirical data.

Prior to using SAP S/4HANA, most customers already used SAP applications. SAP S/4HANA enhanced the organizations' ability to reach new markets, accelerate revenue, increase customer retention, and improve business capabilities. In fact, in a survey of 110 SAP S/4HANA customers, 37% reported capabilities that increased revenue. Respondents also indicated that capabilities within SAP S/4HANA enabled them to reduce customer turnover by 4% per year. Of course, the companies also needed to adapt business processes and change internal operations, but SAP provided an enabling foundation on which to build change.

In the words of a VP of technology: "SAP S/4HANA is a game changer. It changed my role and contribution as a VP in my company — I'm more involved in solving business problems. It changed the efficiency of our technology team by making us more efficient. It also changed the experience of our end users. They don't know why run times are faster and previous problems are gone, but they appreciate how things are working and are accomplishing more in their workday."

Key Findings

Quantified benefits. The following risk-adjusted present value (PV) quantified benefits are representative of those experienced by the companies interviewed:

- › **Increased revenue from functionality enabled by SAP S/4HANA of nearly \$156 million, resulting in a net profit of \$25.2 million.** The interviewed companies and the surveyed customers indicated that SAP S/4HANA enabled new business offerings. Thirty-seven percent of survey respondents indicated that their companies realized an average revenue increase of 3.2%, and 30% of those responding indicated that they generated new revenue streams that added an average of 2.6% in incremental revenue. Based on a baseline of \$1.5 billion in revenue, the increase generated \$25.2 million in incremental net profit over three years.
- › **Increased customer retention due to capabilities enabled by SAP S/4HANA valued at \$8.4 million.** The transparency into business activities enablement by SAP S/4HANA improved customer relationships, including delivery schedules, invoicing accuracy, and elevating Net Promoter Scores.¹ In the survey, respondents told Forrester that their companies averaged an annual customer turnover rate of 6% and that the features of SAP S/4HANA reduced that churn by 4.1%.



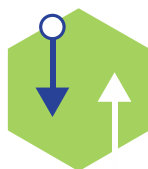
ROI
134%



Benefits PV
\$38.2 million



NPV
\$21.9 million



Payback
13 months

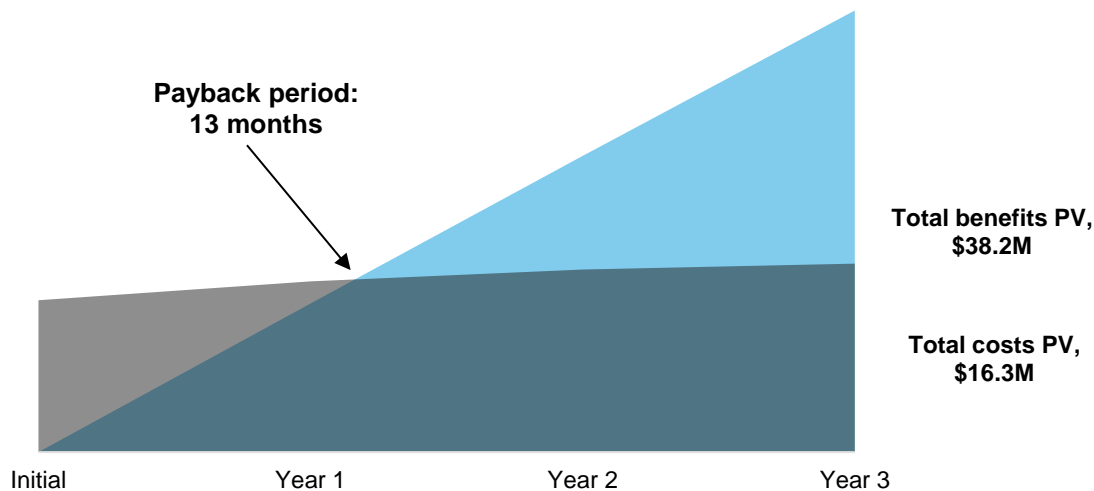
- › **Increased end user productivity due to reduced run times valued at over \$2.1 million.** Fifty-three percent of survey respondents indicated that their companies experienced reduced run times, and 35% said the shorter run times increased the productivity of business employees. The average reduced time equated to 100 minutes per week or 4% of an employee's productivity. Forrester assumed that employees recovered 50% of this time in other productive tasks. For a population of 400 employees who were impacted, the savings still accumulated to more than \$2.1 million over three years.
- › **Avoided cost of previously licensed software and hardware of \$524,042.** From interviews and survey responses, Forrester determined that the typical company was eventually able to retire \$200,000 of software licenses and maintenance cost in the second year and \$400,000 in the third year. These savings are separate from the cost of SAP S/4HANA licenses. Customers realized the savings starting only in the second year as most companies ran their old environments concurrently with SAP S/4HANA for a period of time.
- › **Increased productivity of IT organization employees worth \$442,971.** After implementing and transitioning to SAP S/4HANA, the organizations reduced the workload for traditional roles such as Basis admins, database administrators (DBAs), and others. In the survey, 62% of respondents indicated that their companies experienced a productivity gain of 5%. Forrester assumed that employees recovered only 50% of this time in other productive tasks.
- › **Accelerated cash flow managing customer orders valued at \$439,675.** One interviewee detailed the ability to simplify the company's customer order process to accelerate customer shipments from 14 months to two months. As a result of faster delivery, customers paid faster. The result was accelerated revenue of \$2.6 million due to improved order-to-cash business process.
- › **Accelerated collections due to simplified accounting capabilities worth \$1.1 million.** Several organizations reported an impact to their day-to-day cost of doing business. One example was an interviewed company that reduced the average days outstanding for accounts received from 117 days to 101 days. The improvement came from reduced errors in invoices, faster invoicing, and a clearer history of shipments, returns, and other transaction-related exceptions.

Costs. The interviewed organizations experienced the following risk-adjusted PV costs:

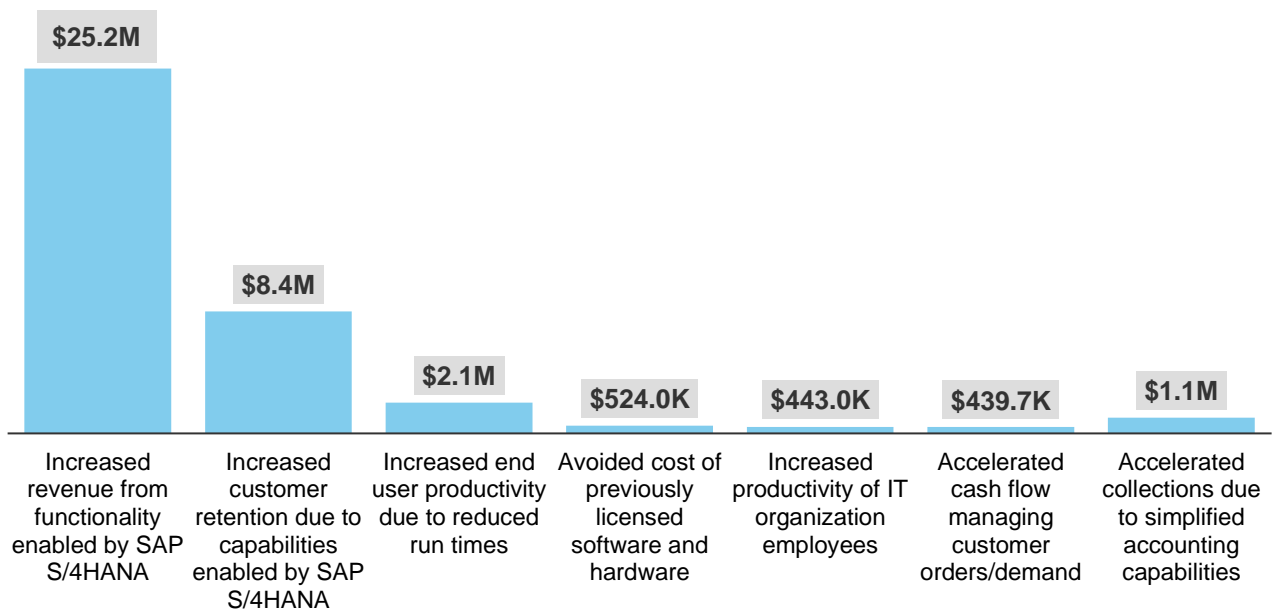
- › **Cost of SAP licenses totaling \$4.6 million over three years.**
The cost for an enterprise SAP S/4HANA license included a perpetual software license and annual maintenance fees.
- › **Cost of infrastructure to host S/4HANA, totaling \$2.6 million.**
Hosting the S/4HANA environment required an initial capex purchase of infrastructure.
- › **Cost of staff to design, build, and manage transition valued at \$9 million.** Additional costs to set up and configure SAP S/4HANA included the effort of 36 employees for 1.5 years with a cumulative total of \$2.7 million in contractor fees over several years.

Forrester's interviews with four existing customers and survey of 110 user companies that resulted in a subsequent financial analysis found that an organization based on these interviewed organizations experienced benefits of \$38.2 million over three years versus costs of \$16.3 million, adding up to a net present value (NPV) of \$21.9 million and an ROI of 134%.

Financial Summary



Benefits (Three-Year)



The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

TEI Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing SAP S/4HANA.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that SAP S/4HANA can have on an organization:



DUE DILIGENCE

Interviewed SAP stakeholders and Forrester analysts to gather data relative to SAP S/4HANA.



CUSTOMER INTERVIEWS AND SURVEY

Interviewed four organizations using SAP S/4HANA and surveyed 110 customers to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewed and surveyed organizations.



FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.



CASE STUDY

Employed four fundamental elements of TEI in modeling SAP S/4HANA's impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by SAP and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in SAP S/4HANA.

SAP reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

SAP provided the customer names for the interviews but did not participate in the interviews. Survey was double blind and neither Forrester nor SAP has the ability to identify the participants.

The SAP S/4HANA Customer Journey

BEFORE AND AFTER THE SAP S/4HANA INVESTMENT

Interviewed Organizations

For this study, Forrester conducted four interviews with SAP S/4HANA customers. Interviewed customers include the following:

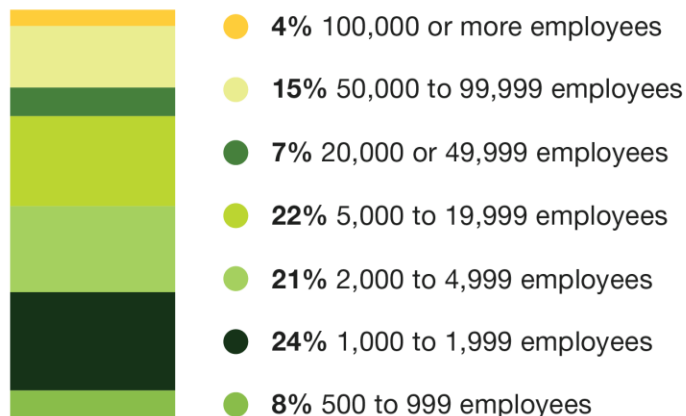
INDUSTRY	REGION	INTERVIEWEE	OBJECTIVES
Healthcare	Global	Vice president, enterprise application solutions	Maintained global supply of medical products and services and found that every order created thousands of line items and literally millions of calculations. Merely opening a sales order took 7 to 9 minutes for any person who needed to edit the transaction. In addition, executives wanted to become proactive in managing currency risk.
Manufacturing	Global	Vice president of IT applications	Grew inorganically and faced constant pressure to integrate the technology, operating cultures, and supply chain of the combined organization. Different facilities around the globe managed inventory separately, and imbalances between locations, inventory, and manufacturing capacity created inefficiencies that hindered company profitability.
Healthcare	North America	Chief digital officer	Rebuilt financial systems in 2015 using another financial application. Subsequently standardized the entire manufacturing facilities on SAP S/4HANA, which motivated the company to also migrate to S/4 HANA for better integration and visibility into company operations and financials.
Manufacturing	North America	Chief information officer	Managed multiple, vertically integrated businesses, and executives sought better insight into cross-functional opportunities for current operations and to integrate future acquisitions. The company chose SAP S/4HANA as a technology platform to more uniformly manage the business and break down organization silos.

Surveyed Organizations

For this study, Forrester surveyed 110 IT decision makers responsible for or involved in their companies' transitions to SAP S/4HANA. Survey respondents represented companies:

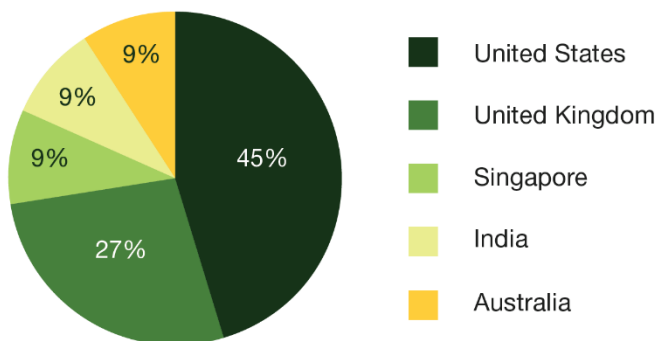
- › Located around the globe with 72% of respondents located in North America or Europe.
- › Staffed with from as few as 500 employees to more than 100,000 employees.

“Using your best estimate, how many employees work for your organization worldwide?”



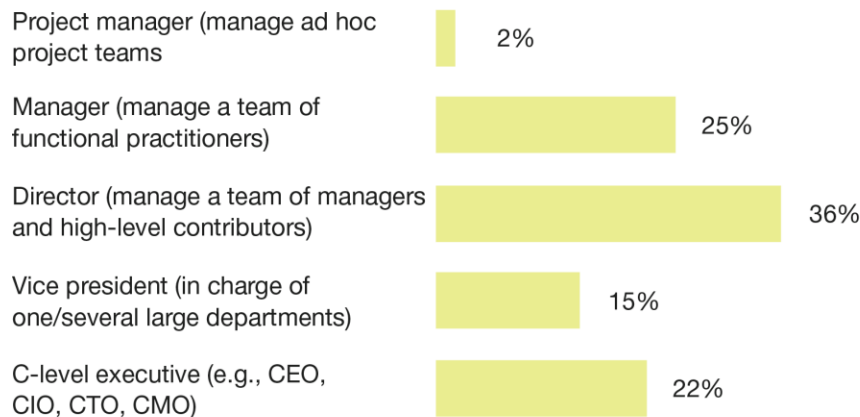
Base: 110 SAP S/4HANA users
 Note: Percentages may not total 100 because of rounding.
 Source A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2019

“In which country are you located?”



Base: 110 SAP S/4HANA users
 Note: Percentages may not total 100 because of rounding.
 Source A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2019

“Which title best describes your position at your organization?”



Base: 110 SAP S/4HANA users
Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2019

Key Challenges

During interviews, the executives shared key challenges or problems that drove their need for an alternate solution. Those issues included:

- › **Productivity losses.** A healthcare executive told Forrester: “When the processing takes minutes every time that we need to touch a transaction, it creates a productivity loss. We had people who would start a transaction, go get coffee, come back to make the changes. Then they would have to do it all over again for the next change.”
- › **Treasuring management challenges.** The same executive added: “As a global company, we have a lot of currency risk, and our treasury management team works hard to minimize the impact of currency fluctuation on our earnings. Not too long ago, we had a major loss that was tens of millions of dollars in one year. We wanted visibility into our financials that would improve our ability to reduce financial risk.”
- › **Integrating companies after merger or acquisition.** The manufacturing CIO said: “As a company, we have grown inorganically, and managing acquisitions is a key function for our team. Our challenge is to integrate technology operating models, different cultures, and the consolidation of a lot of sites and assets.”
- › **Creating visibility into a multilevel supply chain.** The same CIO continued: “We have a complex supply chain that includes multiple levels of manufacturing and processing. In other words, we buy raw materials, process it into something different, and then ship that product to another factory that processes it into a higher-level product that we sell to customers. We needed technology that blended our manufacturing with finance so that we could optimize inventory flows across this entire supply chain.”
- › **Providing audit trails for compliance reporting.** “We wanted to bring in compliance and controls into our management process and move beyond our manual processes. We wanted to create audit trails, ensure proper security, and maintain data integrity across the company.”

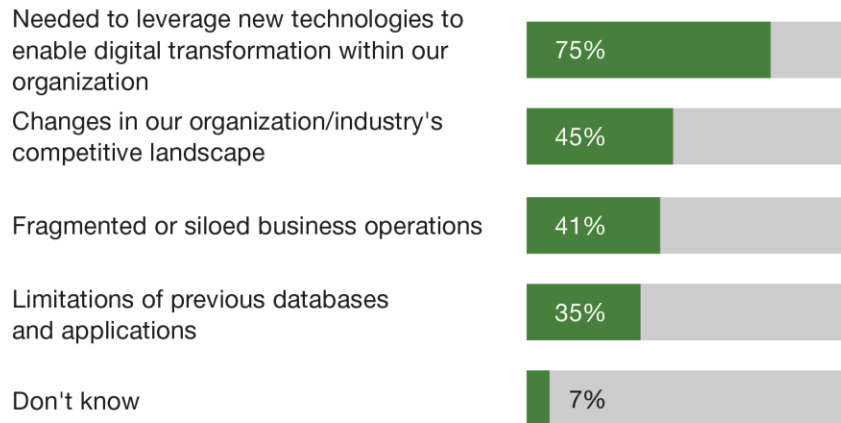
“We have a complex supply chain that includes multiple levels of manufacturing and processing. In other words, we buy raw materials, process it into something different, and then ship that product to another factory that processes it into a higher-level product that we sell to customers. We needed technology that blended our manufacturing with finance so that we could optimize inventory flows across this entire supply chain.”

Vice president of IT applications, manufacturing



In the survey, 75% of respondents indicated that the capabilities of S/4HANA were crucial to their companies' ability to implement digital channels and support digital transformations that were critical to business.

"Which of the following key factors drove your organization to invest in SAP S/4HANA?"



Base: 110 SAP S/4HANA users
Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2019

Solution Requirements

The interviewed organizations searched for a solution that could:

- › **Accelerate the migration to SAP S/4HANA.** One executive commented: "People ask me all the time why we were in a hurry to migrate. I feel that the change is inevitable and that we might as well bite the bullet of the migration and get the value of the new capabilities sooner rather than later. I also believe that as we get closer to 2025, demand for SAP resources will spike, making it hard to hire the right people and exceedingly expensive to hire integrators or professional services firms."

Key Results

The interviews revealed that key results from the SAP S/4HANA investment include:

- › **Reducing average run times.** A healthcare executive reported: "Our company is a backlog-driven company, meaning that we sell products and then we produce the products to fill that demand. We previously had a process that reconciled our backlog, and it averaged 3.5 hours of run time. We built a prototype and found that processing this same task in an S/4HANA environment took less than 5 minutes to run. I personally tracked every run time improvement, and our most extreme reduction was one process that dropped from 8 hours to 28 seconds."

"People ask me all the time why we were in a hurry to migrate. I feel that the change is inevitable and that we might as well bite the bullet of the migration and get the value of the new capabilities sooner rather than later. I also believe that as we get closer to 2025, demand for SAP resources will spike, making it hard to hire the right people and exceedingly expensive to hire integrators or professional services firms."

Vice president, enterprise application solutions, healthcare



- › **Understanding higher order of business dynamics.** “Our product management team always struggled to understand probability of margin on orders in the backlog,” explained one executive. “With HANA Views, the process is simplified, and it is enabling us to venture into new areas such as tweaking which product to push more, which to promote less, and anticipate the kinds of add-ons or bundles that should be more profitable for the company.”
- › **Communicating clearer expectations to customers.** A manufacturing executive told Forrester: “We previously ended up sitting on a pile of inventory with some items that we couldn’t use and too few of things we needed. Today, we are able to commit to customer orders very efficiently with fewer iterations and mistakes than before. We are looking at inventory. We are looking at customer demand. We can look at our supply and demand to determine the precise value of a customer order and even alter prices based on market conditions.”
- › **Gaining insight into machine-level manufacturing diagnostics.** The same executive added: “We’re getting some real-time visibility into what’s going on at the machine level. We know every step of the fabrication process for a particular product. We can also see the integration between machines, data going back and forth, feeding into a planned maintenance schedule module that we didn’t have before.”
- › **Streamlining quality control and reducing errors.** A healthcare executive described: “With S/4HANA visibility into our product manufacturing we reduced our error rate by 85%. We achieved that by going fully to electronic batch records. It also reduced the number of people that we have on the manufacturing floor by 40%. Some of this is due to other changes, but SAP S/4HANA is certainly a key factor and enabler.”

Survey respondents also indicated specific benefits from using S/4HANA. Specifically:

- › 88% said that S/4HANA helped their organizations deploy new capabilities.
- › 88% indicated that it improved visibility into data sets.
- › 84% told Forrester that S/4HANA helped expand existing business offerings or enable new capabilities.

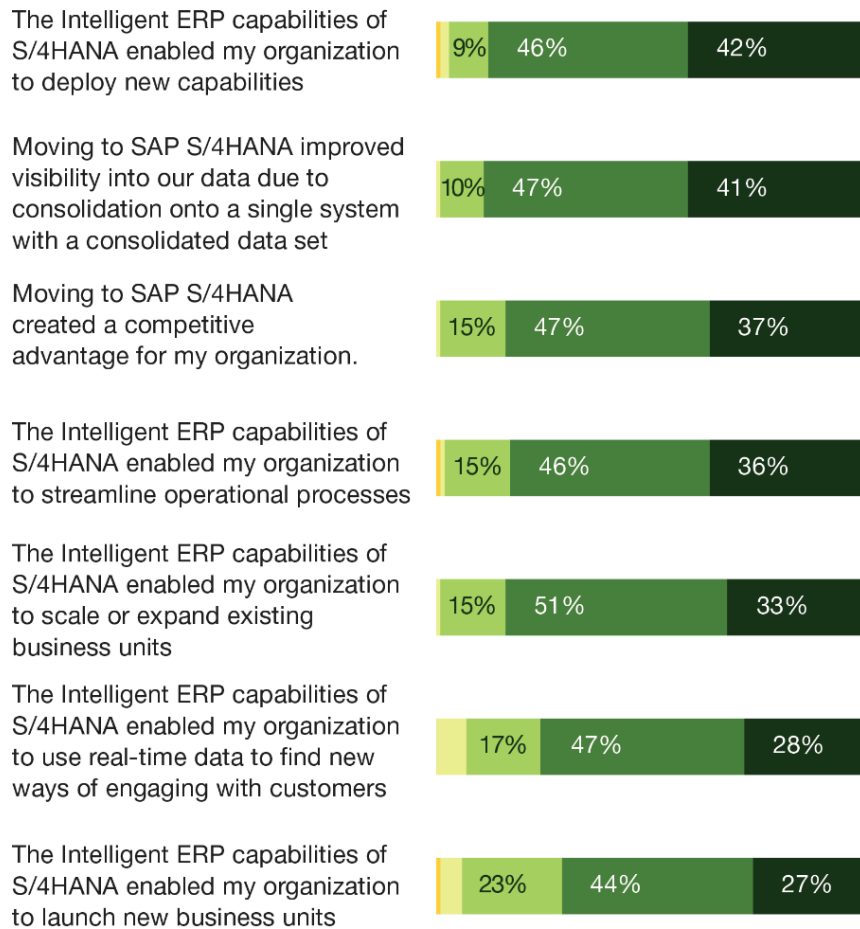
“We’re getting some real-time visibility into what’s going on at the machine level. We know every step of the fabrication process for a particular product. We can also see the integration between machines, data going back and forth, feeding into a planned maintenance schedule module that we didn’t have before.”

*Chief information officer,
manufacturing*



“On a scale of 1 to 5, how much do you agree with the following statements about the intelligent ERP capabilities of S/4HANA?”

■ Do not agree at all - 1
 ■ 2
 ■ Neutral - 3
 ■ 4
 ■ Completely agree - 5

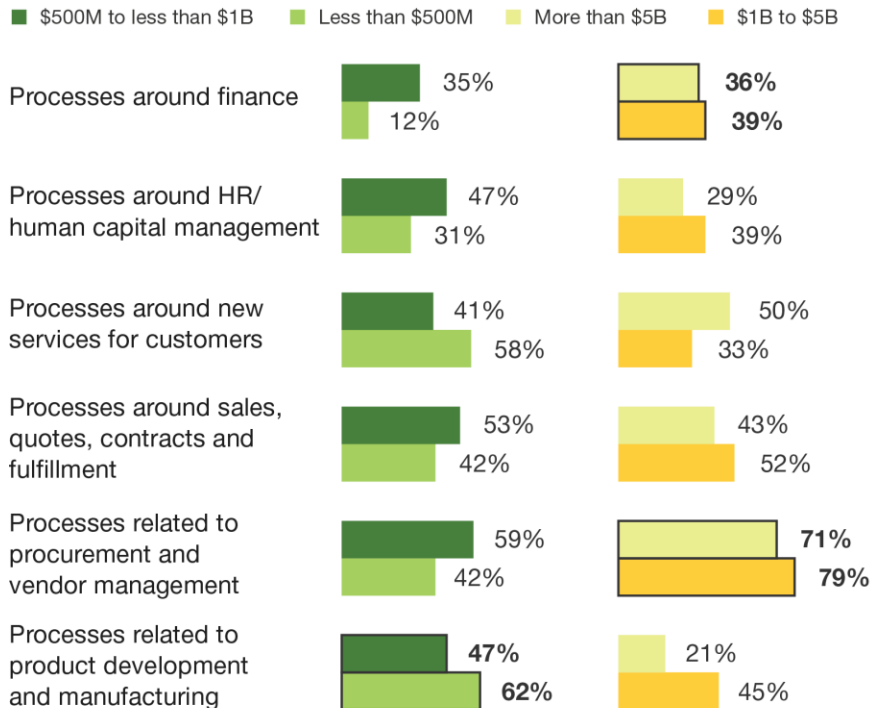


Base: 110 SAP S/4HANA users
 Source A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2019

Larger companies indicated that they improved their financial operations, often by combining manufacturing and inventory systems with financial data to optimize inventory and understand the related cost of management decisions.

Smaller companies gained better insights into customers and transactions and streamlined their ability to improve products and services that met those customers' expectations.

“Which operational processes were you able to streamline?”



Base: 91 SAP S/4HANA users
Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2019

Composite Organization

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative of the four companies that Forrester interviewed and the 110 customers surveyed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews had the following characteristics:

- › Generated revenue of \$1.5 billion that grew 8% per year.
- › Maintained a net profit margin of 12%.
- › Averaged customer turnover of 6% annually.
- › Reduced average days outstanding for accounts receivable from a starting point of 117 days to 101 days, for a reduction of 16 days.
- › Deployed SAP S/4 applications including Cash Management, Receivable Management, Supply Chain, and Procure To Pay within SAP's Finance and Supply Chain product categories.

Analysis Of Benefits

QUANTIFIED BENEFIT DATA AS APPLIED TO THE COMPOSITE

Total Benefits						
Ref.	Benefit	Year 1	Year 2	Year 3	Total	Present Value
Atr	Increased revenue from functionality enabled by SAP HANA	\$9,396,000	\$10,147,680	\$10,959,494	\$30,503,174	\$25,162,361
Btr	Increased customer retention due to capabilities enabled by SAP HANA	\$3,136,500	\$3,387,420	\$3,658,414	\$10,182,334	\$8,399,505
Ctr	Increased end user productivity due to reduced run times	\$855,000	\$855,000	\$855,000	\$2,565,000	\$2,126,258
Dtr	Avoided cost of previously licensed software and hardware	\$0	\$225,000	\$450,000	\$675,000	\$524,042
Etr	Increased productivity of IT organization employees	\$178,125	\$178,125	\$178,125	\$534,375	\$442,971
Ftr	Accelerated cash flow managing customer orders/demand	\$176,800	\$176,800	\$176,800	\$530,400	\$439,675
Gtr	Accelerated collections due to simplified accounting capabilities	\$408,994	\$441,714	\$477,051	\$1,327,758	\$1,095,281
Total benefits (risk-adjusted)		\$14,151,419	\$15,411,739	\$16,754,884	\$46,318,041	\$38,190,093

Increased Revenue From Functionality Enabled By SAP S/4HANA

Based on the functionality of SAP S/4HANA, customers launched new revenue streams. One executive told Forrester: “SAP S/4HANA streamlined many of our data requirements across departments and divisions. Rather than staffing middle managers to organize, interpret, and reenter data into other systems, we managed it all in one data repository — S/4HANA. As a result, a significant number of managers shifted their focus onto activities that reached to new customers and targeted new markets.”

In addition to examples from the interviewed companies, survey respondents indicated that SAP S/4HANA:

- › Improved customer satisfaction (44%).
- › Created opportunities to upsell or cross-sell (37%).
- › Increased revenue (37%).
- › Generated new revenue streams (30%).

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of nearly \$38.2 million.

On average, survey respondents indicated the following level of impact on revenue:

- › Existing revenue streams of 3.2%.
- › Newly developed markets or customer sets of 2.6%.

Because a high percentage of customers experienced a revenue uplift, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of nearly \$25.2 million.

Increased Revenue From Functionality Enabled By SAP HANA: Calculation Table

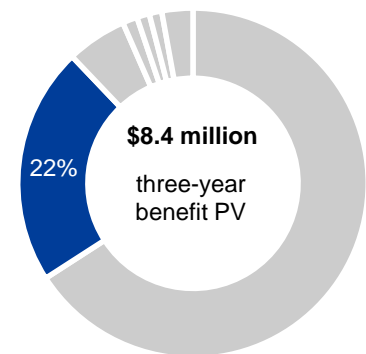
Ref.	Metric	Calculation	Year 1	Year 2	Year 3
A1	Average revenue stream impacted	8% growth	\$1,500,000,000	\$1,620,000,000	\$1,749,600,000
A2	Increase in revenue	3.2%*A1	\$48,000,000	\$51,840,000	\$55,987,200
A3	New revenue streams	2.6%*A1	\$39,000,000	\$42,120,000	\$45,489,600
A4	Profit margin	Assumption	12%	12%	12%
At	Increased revenue from functionality enabled by SAP S/4HANA	(A2+A3)*A4	\$10,440,000	\$11,275,200	\$12,177,216
	Risk adjustment	↓10%			
Atr	Increased revenue from functionality enabled by SAP S/4HANA (risk-adjusted)		\$9,396,000	\$10,147,680	\$10,959,494

Increased Customer Retention Due To Capabilities Enabled By SAP S/4HANA

Using SAP S/4HANA, customers gained increased visibility into their supply chains and improved the quality of service to their customers. Examples from interviews included informing customers when purchased products would arrive to managing resources and availability. In addition, 32% of survey respondents indicated that SAP S/4HANA helped their companies improve customer retention.

Based on the interviews and survey responses, the average cost of customer turnover averaged 6% per year, or \$90 million in Year 1. The functionality of SAP S/4HANA reduced level of turnover by an average of 4.1% or nearly \$3.7 million in the first year.

Because customer retention and the cost of acquiring new customers varies widely across industry and geography, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of nearly \$8.4 million.



Increased customer retention due to capabilities enabled by SAP S/4HANA: 22% of total benefits

Increased Customer Retention Due To Capabilities Enabled By SAP HANA: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
B1	Annual cost of customer turnover	6%*A1	\$90,000,000	\$97,200,000	\$104,976,000
B2	Reduction in turnover	4.1%*B2	\$3,690,000	\$3,985,200	\$4,304,016
Bt	Increased customer retention due to capabilities enabled by SAP HANA	=B2	\$3,690,000	\$3,985,200	\$4,304,016
	Risk adjustment	↓15%			
Btr	Increased customer retention due to capabilities enabled by SAP HANA (risk-adjusted)		\$3,136,500	\$3,387,420	\$3,658,414

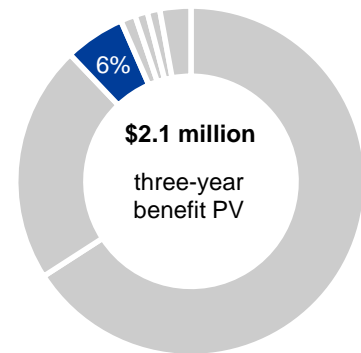
Increased End User Productivity Due To Reduced Run Times

The average run time for many applications can be onerous. Some executives described the morning return for employees as coming into the office, starting their SAP jobs, and then going to get coffee and visit with coworkers. The S/4HANA database runs entirely in-memory, which dramatically reduced the runtime for even complex queries. Survey respondents indicated improvements in:

- › System performance or reduced run times (53%).
- › Productivity by line-of-business employees (35%).

For the purposes of this financial model, and based on the interviews, Forrester applied this productivity improvement to 600 employees. We have taken the increased productivity from survey respondents who indicated that on average, employees spent 100 fewer minutes every week waiting for SAP, which equates to an increase in annual productivity of 4%. Forrester also assumed that employees applied only 50% of their freed-up time into other productive efforts.

A high number of interviewees and respondents experienced productivity improvements from SAP S/4HANA. As such, Forrester adjusted this benefit downward by only 5%, yielding a three-year risk-adjusted total PV of \$2.1 million.



Increased end user productivity due to reduced run times: 6% of total benefits

Increased End User Productivity Due To Reduced Run Times: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
C1	Number of employees affected	From interviews	600	600	600
C2	Percent change in productivity due to run time improvements	From survey	4%	4%	4%
C3	Average burdened salary	Assumption	\$75,000	\$75,000	\$75,000
C4	Percentage of efficiency recovered		50%	50%	50%
Ct	Increased end user productivity due to reduced run times	$C1 \times C2 \times C3 \times C4$	\$900,000	\$900,000	\$900,000
	Risk adjustment	↓5%			
Ctr	Increased end user productivity due to reduced run times (risk-adjusted)		\$855,000	\$855,000	\$855,000

Avoided Cost Of Previously Licensed Software And Hardware

Some customers avoided the licensing cost of previous software that they retired after deploying and transitioning to SAP S/4HANA. Customers were able to retire servers, storage systems, databases, and sometimes applications. Most customers realized these cost savings two to three years after deploying SAP S/4HANA because they ran the older systems concurrently with the new environment for an average of 8.8 months after an implementation period average 18 months. Customers who completed the survey indicated that they reduced their previous costs by an average of 24%.

Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

In the financial model, Forrester began with zero savings in Year 1 due to running concurrent systems, adjusted to savings of \$250,000 in Year 2, and increased to savings of \$500,000 in Year 3. Because customers ran the old environment concurrently with SAP S/4HANA for at least nine months, Forrester reduced Year 2 savings by 50%.

To account for the wide range of operating environments and different costs of customers' previous environments, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$524,042.

Avoided Cost Of Previously Licensed Software And Hardware: Calculation Table					
Ref.	Metric	Calculation	Year 1	Year 2	Year 3
D1	Avoided software costs	From interviews and survey	\$0	\$200,000	\$400,000
D2	Avoided cost of hardware depreciation	D1*25%	\$0	\$50,000	\$100,000
Dt	Avoided cost of previously licensed software and hardware	D1+D2	\$0	\$250,000	\$500,000
	Risk adjustment	↓10%			
Dtr	Avoided cost of previously licensed software and hardware (risk-adjusted)		\$0	\$225,000	\$450,000

Increased Productivity Of IT Organization Employees

SAP S/4HANA simplified the management tasks for the IT organization. Of the 110 surveyed customers, 62% told Forrester that SAP S/4HANA resulted in a productivity improvement for their IT employees.

Specifically, respondents indicated that they were able to reduce the need and focus the employees to higher-value tasks from management, including:

- › Basis admins of 4.1 full-time equivalents (FTEs).
- › Database admins of 5.2 FTEs.
- › Application managers of 4.3 FTEs.
- › Infrastructure admins of 4.4 FTEs.

Based on a group of 100 IT employees who were impacted by SAP S/4HANA and an average improvement in productivity of 5%, the composite organization saved \$187,500 per year.

Given the high degree of consistency among survey respondents, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of \$442,971.

Increased Productivity Of IT Organization Employees: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
E1	Number of IT employees affected	From interviews and survey	100	100	100
E2	Percentage impact on IT employee productivity	From surveys	5%	5%	5%
E3	Average burdened salary	Assumption	\$75,000	\$75,000	\$75,000
E4	Percentage of efficiency recovered	Assumption	50%	50%	50%
Et	Increased productivity of IT organization employees	$E1 * E2 * E3 * E4$	\$187,500	\$187,500	\$187,500
	Risk adjustment	↓5%			
Etr	Increased productivity of IT organization employees (risk-adjusted)		\$178,125	\$178,125	\$178,125

“Which of the following cost reduction benefits have you experienced because of your investment in SAP S/4HANA?”

48% Reduced number of FTEs (full-time equivalents) required to support retired systems and applications

47% Reduced costs associated with retired/ decommissioned applications due to consolidation onto single system

47% Reduced costs associated with retired/ decommissioned databases/systems due to consolidation onto single system

36% Reduced costs associated with backup/recovery/disaster recovery

36% Reduction in storage capacity requirements

35% Reduction in hardware infrastructure requirements previously used to support multiple systems

23% Reduced costs associated with regulatory compliance fines and penalties

5% None of the above

3% Don't know

Base: 110 SAP S/4HANA users

Source A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2019

Accelerated Cash Flow Managing Customer Orders/Demand

A second type of business benefit is based on one interviewee whose organization was able to reduce the time to set up new customers by one full year. Because the particular business involved significant setup and configuration, deploying customer environments was usually about 16 months; SAP S/4HANA reduced this to four months. The revenue that was accelerated was relatively minor at \$2.6 million. Forrester calculated the benefit using a value of money of 8%.

Because the benefit is unique and likely to apply to only some readers, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$439,675.

Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

Accelerated Cash Flow Managing Customer Orders/Demand: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
F1	Cash flow that was freed up	From interviews	\$2,600,000	\$2,600,000	\$2,600,000
F2	Value of money	Assumption	8%	8%	8%
Ft	Accelerated cash flow managing customer orders/demand	$F1 \times F2$	\$208,000	\$208,000	\$208,000
	Risk adjustment	↓ 15%			
Ftr	Accelerated cash flow managing customer orders/demand (risk-adjusted)		\$176,800	\$176,800	\$176,800

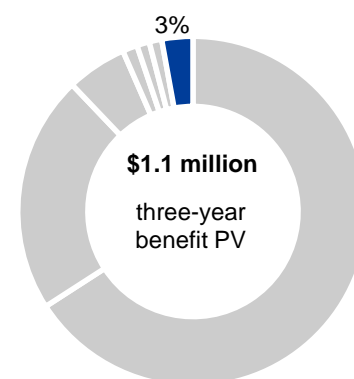
Accelerated Collections Due To Simplified Accounting Capabilities

Several of the interviewed companies experienced improvements to business operations. This benefit is taken directly from one interview and is used to represent a broader range of benefits that readers are likely to experience, even though the specific way a benefit is realized will vary.

In this case, improved information and visibility into business operations dramatically reduced the number of errors in the billing process, reduced the time spent with customers handling invoice disputes, and streamlined collections. As such, the outstanding accounts receivable (AR) was reduced from an average of 117 days to 101 days.

The overall revenue is based on \$1.5 billion in Year 1, meaning that at any given point in time, the company had approximately \$675 million in AR outstanding. In addition, the reduction represents a decrease of 6% of a year, and Forrester used an 8% value of money percentages. As a result, the reduction in outstanding AR resulted in a positive cash flow of more than \$5.5 million in Year 1, which was financially worth \$454,438.

While readers are less likely to experience this direct impact in AR, based on the interviews, Forrester believes that most companies will experience a similar benefit. To account for this risk, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of nearly \$1.1 million.



Accelerated collections due to simplified accounting capabilities: 3% of total benefits

Accelerated Collections Due To Simplified Accounting Capabilities: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
G1	Average accounts receivable	$A1/260 \times 117$	\$675,000,000	\$729,000,000	\$787,320,000
G2	Lower average accounts receivable	$A1/260 \times 101$	\$582,692,308	\$629,307,692	\$679,652,308
G3	Reduced accounts receivable outstanding	$C1 - C2$	\$92,307,692	\$99,692,308	\$107,667,692
G4	Percentage of a year by which accounts receivable were reduced (rounded value shown)	$(117 - 101)/260$	6.154%	6.154%	6.154%
G5	Value of money	Assumption	8%	8%	8%
Gt	Accelerated collections due to simplified accounting capabilities	$C3 \times C4 \times C5$	\$454,438	\$490,793	\$530,056
	Risk adjustment	↓10%			
Gtr	Accelerated collections due to simplified accounting capabilities (risk-adjusted)		\$408,994	\$441,714	\$477,051

Unquantified Benefits

In addition to the benefits outlined above, the interviewed executives shared other benefits that did not have specific financial implications. Specifically, the companies benefited in the following way:

- › **Releasing resources to focus on higher-priority objectives.** One manufacturing executive said: “Our management focus is in freeing up resources to move from technology-debt activities to innovation and leadership roles. A typical IT resource pool is highly static, but we are increasing the efficiency of many functions, which results in needing less people. We don’t want to reduce headcount but focus those people on solving new problems. We had a data center manager who became a great business analyst, just to give one example.”

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. Customers that implement SAP S/4HANA later realized additional uses and business opportunities, including:

- › **Elevating from regional to global decision making.** One executive indicated: “In manufacturing, we have a limited amount of capacity. It’s critical to our success to have a master scheduler. Traditionally, we have one person at each site, but with S/4HANA, we believe that we will be able to elevate to a companywide master scheduler. This will be an amazing step forward for a global manufacturing firm.”
- › **Layering other SAP solutions into a solution stack.** A healthcare executive said: “We are looking at SAP Leonardo and all the AI tools to help us on the procure-to-pay and record-to-report processes. There are some very neat features that require us having an up-to-date SAP environment to leverage. In addition, we are looking at SuccessFactors for learning management and AWM for warehouse management. We expect that these tools will provide a tight link between clinical trials and our downstream products supply.”

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

Analysis Of Costs

QUANTIFIED COST DATA AS APPLIED TO THE COMPOSITE

Total Costs							
Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Htr	Cost of SAP licenses	\$3,000,000	\$660,000	\$660,000	\$660,000	\$4,980,000	\$4,641,322
Itr	Cost of infrastructure for S/4 HANA	\$2,646,000	\$0	\$0	\$0	\$2,646,000	\$2,646,000
Jtr	Cost of staff to design, build, and manage transition	\$7,486,500	\$1,123,500	\$609,000	\$0	\$9,219,000	\$9,011,169
	Total costs (risk-adjusted)	\$13,132,500	\$1,783,500	\$1,269,000	\$660,000	\$16,845,000	\$16,298,491

Cost Of SAP Licenses

The organization paid two distinct fees to SAP, including:

- › Perpetual license of \$3 million paid at the contract inception. The licenses included SAP HANA and S/4 modules:
 - Cash Management.
 - Receivables Management.
 - Supply Chain.
 - Procure To Pay.
- › Annual application maintenance fee of \$660,000.

Forrester did not risk-adjust this cost, yielding a three-year risk-adjusted total PV of more than \$4.6 million.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of \$16.3 million.

Cost Of SAP Licenses: Calculation Table						
Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
H1	License cost for SAP HANA		\$3,000,000			
H2	Annual maintenance			\$660,000	\$660,000	\$660,000
Ht	Cost of SAP licenses	H1+H2	\$3,000,000	\$660,000	\$660,000	\$660,000
	Risk adjustment	0%				
Htr	Cost of SAP licenses (risk-adjusted)		\$3,000,000	\$660,000	\$660,000	\$660,000

Cost Of Infrastructure For SAP S/4HANA

The infrastructure cost is based on public pricing of a mainstream provider and totaled just over \$2.5 million in capex. The list price for these systems includes a three-year warranty, Linux for SAP licenses, hypervisor licenses, and support for three years. The servers include sufficient memory to support an 8-terabyte HANA database.

To account for variation in the time required to implement SAP S/4HANA, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of \$2.6 million.

Cost Of Infrastructure For S/4 HANA: Calculation Table

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
I1	Cost of server infrastructure		\$2,520,000			
It	Cost of infrastructure for S/4 HANA	=I1	\$2,520,000	\$0	\$0	\$0
	Risk adjustment	↑5%				
Itr	Cost of infrastructure for S/4 HANA (risk-adjusted)		\$2,646,000	\$0	\$0	\$0

Cost Of Staff To Design, Build, And Manage Transition

S/4HANA combines the functionality of data and information that most companies manage in separate databases or applications. Thus, implementing SAP S/4HANA required a team of employees to design and configure the environment. In the case of the composite company, it incurred:

- › **Internal costs.** Thirty-six employees worked on the project for 1.5 years, which is valued at a cost of over \$5.1 million
- › **External costs.** The organization incurred \$2 million for professional services during implementation and then hired contractors for specific functions over the following two years.

To account for variation in the time required to implement SAP S/4HANA, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of \$9 million.

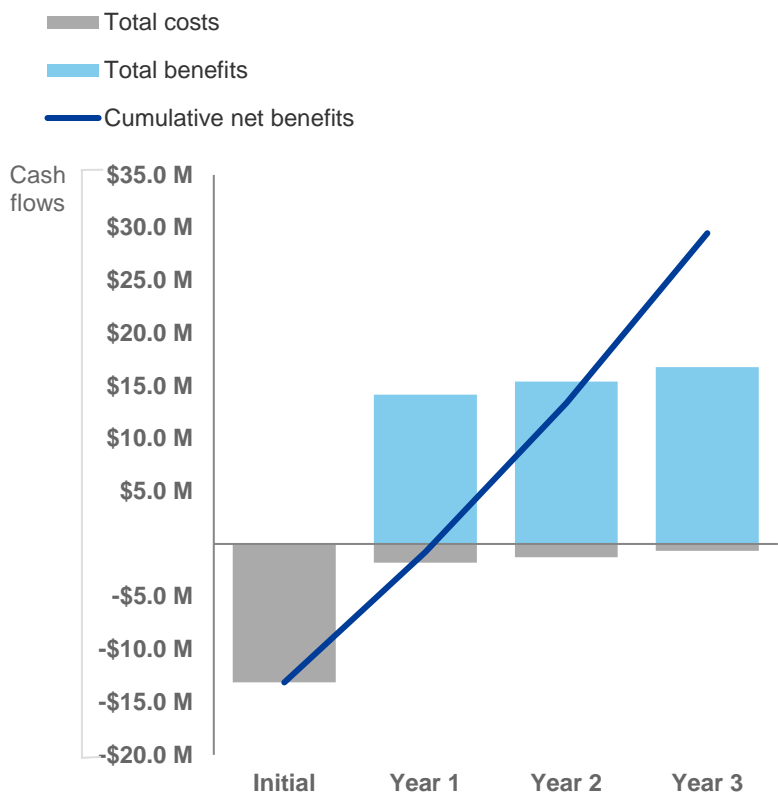
Cost Of Staff To Design, Build, And Manage Transition: Calculation Table

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
J1	Length of implementation (years)	From interviews	1.5			
J2	Number of employees	Assumption	36	6	4	
J3	Annual burdened salary	Assumption	\$95,000	\$95,000	\$95,000	
J4	Internal cost: total	J1*J2*J3	\$5,130,000	\$570,000	\$380,000	
J5	External cost: professional services	\$250,000 per consultant per year	\$2,000,000	\$500,000	\$200,000	
It	Cost of staff to design, build, and manage transition	J5+J6	\$7,130,000	\$1,070,000	\$580,000	\$0
	Risk adjustment	↑5%				
Itr	Cost of staff to design, build, and manage transition (risk-adjusted)		\$7,486,500	\$1,123,500	\$609,000	\$0

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.



These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (risk-adjusted estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$13,132,500)	(\$1,783,500)	(\$1,269,000)	(\$660,000)	(\$16,845,000)	(\$16,298,491)
Total benefits	\$0	\$14,151,419	\$15,411,739	\$16,754,884	\$46,318,041	\$38,190,093
Net benefits	(\$13,132,500)	\$12,367,919	\$14,142,739	\$16,094,884	\$29,473,041	\$21,891,602
ROI						134%
Payback period						13 months

SAP S/4HANA: Overview

The following information is provided by SAP. Forrester has not validated any claims and does not endorse SAP or its offerings.

SAP S/4HANA is an intelligent ERP that enables companies to capture every opportunity in today's digital world. It removes hurdles common to legacy ERP applications such as batch latency, complex landscapes, and manually driven processes.

Intelligent ERP is built on three core principles:

- › **Digital-age user experience.** An award-winning user experience across the entire organization including a context-aware, business-savvy digital assistant.
- › **Automation.** Intelligence and learning capabilities powered by artificial intelligence technologies such as machine learning, natural language processing, and predictive analytics, combined with real-time insight to action, for automation of key functions as well as smarter and faster decision making.
- › **Next-generation processes.** Rethinking the way business gets done through the smart application of technology and innovation.

SAP S/4HANA enables companies to:

- › **Flexibly transform business models.** As markets rapidly change and evolve, so too can your business and your supporting business systems.
- › **Naturally change how work gets done.** Consider new approaches to business processes and processing itself.
- › **Act in real time.** Your business operates in the moment, so too should your ERP.
- › **Relentlessly deliver customer value.** Focus your entire enterprise — and your entire value chain — on one thing: delivering customer value.
- › **Confidently predict the future.** Leverage your ERP to help you understand the business environment, simulate different scenarios, and focus on the future.

Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

Total Economic Impact Approach



Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.



Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.



Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.



Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.



Present value (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.



Net present value (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.



Return on investment (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.



Discount rate

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.



Payback period

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Appendix B: Endnotes

¹ Net Promoter and NPS are registered service marks, and Net Promoter Score is a service mark, of Bain & Company, Inc., Satmetrix Systems, Inc., and Fred Reichheld.